Llywodraeth Cymru
Welsh Government

A55 Junctions 16 and 16A Improvements

Environmental Statement

Volume 3B Appendices Chapters 6

March 2021



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European Regional Development Fund

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A55 JUNCTION 16 ENVIRONMENTAL STATEMENT VOLUME 3 APPENDICES

RAMBOLL Bright ideas. Sustainable change.

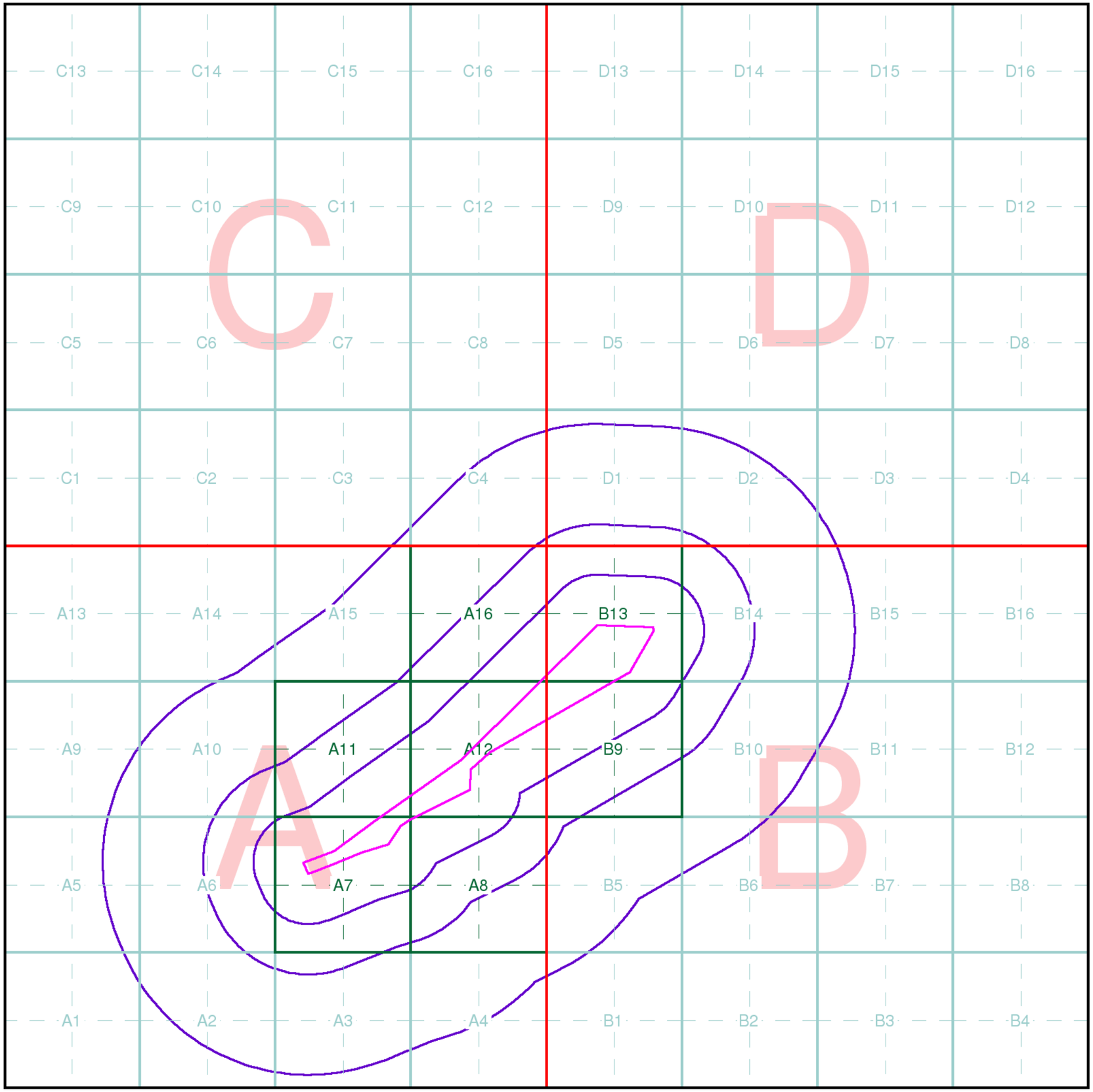
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APPENDIX 6.1
ENVIROCHECK REPORT AND HISTORICAL ORDNANCE SURVEY MAPS



RAMBOLL

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Cyfoeth Naturiol Cymru
Natural Resources Wales

Envirocheck reports are compiled from 136 different sources of data.

Client Details
Mr S Miller, Ramboll UK Ltd, 2nd Floor, The Exchange, Chester, CH 1 1DA

Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273390, 377630
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details
Site at, Penmaenmawr, Conwy

Full Terms and Conditions can be found on the following link:
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Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
272580, 377150

Slice:
A

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

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Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 5	23	10	18	7
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 19	1			
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 19	Yes			
Pollution Incidents to Controlled Waters	pg 19		1		21
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 23				(*27)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 29	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 30	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 30	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 30	Yes	Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 30	Yes		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 31	6	16	6	27

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Potentially Infilled Land (Non-Water)	pg 38				4
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Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
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Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
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BGS Estimated Soil Chemistry	pg 39	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 42				3
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 42	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 42	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 42	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 43	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 43	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 43	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 43	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 43	Yes	n/a	n/a	n/a
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Points of Interest - Education and Health					
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Points of Interest - Public Infrastructure	pg 47	2	1	3	5
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Summary

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	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (E)	0	1	273100 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	1	273600 377850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	1	273250 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	1	273350 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	0	1	272850 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	272900 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (E)	0	1	272950 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NE (NE)	0	1	272583 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	1	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (E)	0	1	272900 377250
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	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	1	273700 377700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	1	273750 377700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	273100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SE)	0	1	273000 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	273150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (NE)	0	1	273200 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	273050 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	273100 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (NE)	0	1	273150 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	1	273550 377800
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	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	272950 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	1	273200 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (NE)	0	1	273250 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (E)	4	1	272950 377154
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	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (E)	116	1	273000 377100
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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
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	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	294	1	272100 376800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	303	1	272450 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (SW)	312	1	272300 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	326	1	272900 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A7SW (SW)	328	1	272250 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	345	1	273700 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	349	1	273450 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	349	1	273400 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	353	1	272450 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	354	1	274150 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	354	1	272350 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	360	1	272050 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	363	1	273300 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (SE)	372	1	272900 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	381	1	274100 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	383	1	273450 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	389	1	273400 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6SE (SW)	394	1	272200 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	397	1	274150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (S)	403	1	272400 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	404	1	272350 376500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	404	1	272450 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6SE (SW)	413	1	272050 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	415	1	274100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	420	1	272900 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	420	1	273850 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	420	1	273400 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (SW)	422	1	272250 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	431	1	273550 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	445	1	272050 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	448	1	272100 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	452	1	273350 376900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SE (SE)	453	1	272850 376600
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	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	462	1	272150 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	467	1	272900 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	475	1	273600 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	475	1	273700 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	489	1	272100 376500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0099501 Permit Version: 2 Effective Date: 20th July 2001 Issued Date: 19th July 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Gyrach **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A12NE (NE)	0	2	273530 377800
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0099501 Permit Version: 2 Effective Date: 20th July 2001 Issued Date: 19th July 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Gyrach **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A12NE (NE)	0	2	273530 377800
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works - Water Company Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0393901 Permit Version: 1 Effective Date: 1st June 2001 Issued Date: 19th July 2001 Revocation Date: 31st October 2001 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Of Conwy Bay **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12NE (NE)	0	2	273530 377800
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works - Water Company Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0393801 Permit Version: 1 Effective Date: 19th July 2001 Issued Date: 19th July 2001 Revocation Date: 31st October 2001 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Of Conwy Bay **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12NE (NE)	0	2	273530 377800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Penamenmawr Dwygyfylchi - Sso Authority: Natural Resources Wales Catchment Area: Afon Gyrach Reference: CG0099501 Permit Version: 1 Effective Date: 15th April 1980 Issued Date: 15th April 1980 Revocation Date: 19th July 2001 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Gyrach **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A12NE (NE)	0	2	273520 377800
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132204 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272454 376939
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132205 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272449 376947
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132206 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272449 376948

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132207 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272448 376947
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132208 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272448 376948
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132203 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	4	2	272461 376931
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132202 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	5	2	272461 376930

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132201 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	10	2	272461 376925
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132209 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272421 376977
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132210 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272421 376978
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132211 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272422 376977

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132212 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272422 376978
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132213 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272428 376968
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132214 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272428 376967
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132215 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272427 376968

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132216 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	0	2	272427 376967
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132218 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	18	2	272412 377000
3	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132217 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No30 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	19	2	272412 377001
4	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132302 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (S)	0	2	272629 377018

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132301 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (SE)	11	2	272649 377001
5	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132303 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (S)	0	2	272599 377050
5	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132304 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (S)	0	2	272592 377061
5	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132305 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (S)	0	2	272586 377070

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132306 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 8th April 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No4 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NE (S)	0	2	272586 377071
6	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132101 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No29 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	63	2	272310 376897
6	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132102 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No29 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	63	2	272310 376898
7	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132001 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No28 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	154	2	272233 376846

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0132002 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No 28 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	154	2	272233 376845
8	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Penmaenmawr Promenade Ps, Gwynedd Authority: Natural Resources Wales Catchment Area: CONWY BAY Reference: Cg0148301 Permit Version: 3 Effective Date: 22nd March 2002 Issued Date: 21st March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A11SW (W)	258	2	272240 377190
8	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Penmaenmawr Promenade Ps, Gwynedd Authority: Natural Resources Wales Catchment Area: CONWY BAY Reference: Cg0148301 Permit Version: 3 Effective Date: 22nd March 2002 Issued Date: 21st March 2002 Revocation Date: Not Supplied Discharge Type: Miscellaneous Discharges - Emergency Discharges Discharge Environment: Controlled Sea Receiving Water: Coastal Waters **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A11SW (W)	258	2	272240 377190
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: CG0141501 Permit Version: 2 Effective Date: 16th March 1994 Issued Date: 16th December 1993 Revocation Date: 12th March 2002 Discharge Type: Sewerage System Discharge Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A6NE (W)	275	2	272130 377120

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: CG0148301 Permit Version: 2 Effective Date: 23rd February 1993 Issued Date: 23rd November 1992 Revocation Date: 21st March 2002 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A6NE (W)	275	2	272130 377120
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0141501 Permit Version: 1 Effective Date: 24th September 1987 Issued Date: 24th September 1987 Revocation Date: 15th March 1994 Discharge Type: Sewerage System Discharge Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A6NE (W)	275	2	272130 377120
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0148301 Permit Version: 1 Effective Date: 24th September 1987 Issued Date: 24th September 1987 Revocation Date: 22nd February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A6NE (W)	275	2	272130 377120
10	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Dwygyfylchi Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: CG0141401 Permit Version: 2 Effective Date: 23rd February 1993 Issued Date: 23rd November 1992 Revocation Date: 30th March 2001 Discharge Type: Saline Water - Non Designated Bathing Beaches Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A16SE (NE)	283	2	273240 377970

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Dwygyfylchi Penmaenmawr, Conwy Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0141401 Permit Version: 1 Effective Date: 24th September 1987 Issued Date: 24th September 1987 Revocation Date: 22nd February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Coastal Waters **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A16SE (NE)	283	2	273240 377970
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131901 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	294	2	272116 376767
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131902 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	294	2	272116 376766
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131903 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	294	2	272112 376773

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131904 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	295	2	272112 376772
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131905 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	297	2	272105 376782
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131906 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	297	2	272105 376781
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131907 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	299	2	272098 376792

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131908 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No27 A55 **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	300	2	272098 376791
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: CONWY BAY Reference: Cg0393801 Permit Version: 2 Effective Date: 1st November 2001 Issued Date: 31st October 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Of Conwy Bay **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A16SW (NE)	396	2	273220 378110
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works Location: Penmaenmawr Wwtw Penmaenmawr, Gwynedd Authority: Natural Resources Wales Catchment Area: CONWY BAY Reference: Cg0393901 Permit Version: 2 Effective Date: 1st November 2001 Issued Date: 31st October 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Of Conwy Bay **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A16SW (NE)	396	2	273220 378110
13	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Station Road Cso, Penmaenmawr, Conwy, Wales, Ll34 6at Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0412401 Permit Version: 2 Effective Date: 31st March 2007 Issued Date: 18th September 2006 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Via Sw Culvert **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	619	2	271842 376591

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Station Road Cso, Penmaenmawr, Conwy, Wales, Ll34 6at Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Cg0412401 Permit Version: 1 Effective Date: 11th August 2006 Issued Date: 11th August 2006 Revocation Date: 4th October 2006 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Controlled Sea Receiving Water: Coastal Waters Via Sw Culvert **Status:** **New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	644	2	271843 376541
15	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131803 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No26 A55 **Status:** **Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	668	2	271778 376605
15	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131801 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No26 A55 **Status:** **Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	669	2	271791 376579
15	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131802 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Diverted Culvert No26 A55 **Status:** **Consent expired** Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	669	2	271778 376604

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Discharge Consents** Operator: A.R.C. Northern Property Type: Extraction Of Stone, Gravel Etc. Location: Penmaenmawr Kingston Minerals Ltd Authority: Natural Resources Wales Catchment Area: Afon Graiglwyd Reference: Cg0104901 Permit Version: 1 Effective Date: 13th May 1982 Issued Date: 13th May 1982 Revocation Date: 27th May 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Culvert **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	909	2	271600 376430
17	**Discharge Consents** Operator: Welsh Office - Highways Group Property Type: Undefined Or Other Location: Penmaenmawr A55 Stage 3 Authority: Natural Resources Wales Catchment Area: Boundary Of HA 65 & HA 66 Reference: Cg0131701 Permit Version: 1 Effective Date: 21st January 1987 Issued Date: 21st January 1987 Revocation Date: 26th February 1993 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Conwy Bay **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A5SE (SW)	960	2	271500 376511
18	**Local Authority Pollution Prevention and Controls** Name: Shell Orme View Location: Orme View, Ysgubor Wen Road, Dwygyfylchi, PENMAENMAWR, Gwynedd, LL34 6UN Authority: Conwy County Borough Council, Environmental Health Department Permit Reference: PVR 42 Dated: 22nd December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A12NE (NE)	0	3	273459 377625
	Nearest Surface Water Feature	A12SW (E)	0	-	273068 377348
19	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Other Location: Iron Bridge, PENMAENMAWR Authority: Environment Agency, Welsh Region Pollutant: Farm Effluent/Slurry Note: Not Supplied Incident Date: 19th May 1995 Incident Reference: 23988 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Bypass Of Treatment Facilities Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SE (NE)	50	4	273500 377900
20	**Pollution Incidents to Controlled Waters** Property Type: Railways Location: Railway Station, PENMAENMAWR Authority: Environment Agency, Welsh Region Pollutant: Oils - Diesel (Including Agricultural) Note: Mechanical Failure Incident Date: 15th January 1996 Incident Reference: 27222 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SW (SW)	607	4	271850 376600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Tributary Of Anafon; Bypass Of Treatment Facilities Incident Date: 1st February 1998 Incident Reference: 34700 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	712	4	272215 376210
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Inadequate Design Incident Date: 10th May 1997 Incident Reference: 32264 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	713	4	272210 376210
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Mountain Stream; Effluent Quality Incident Date: 14th March 1998 Incident Reference: 35195 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	716	4	272215 376205
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Detergents/Surfactant Note: Mountain Stream; Effluent Quality Incident Date: 14th March 1998 Incident Reference: 35195 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	718	4	272210 376205
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 25th June 1996 Incident Reference: 29045 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	718	4	272230 376200
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Mountain Stream Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 6th June 1996 Incident Reference: 28746 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	719	4	272225 376200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Detergents/Surfactant Note: Mountain Stream; Effluent Quality Incident Date: 18th March 1998 Incident Reference: 35198 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	722	4	272210 376200
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Paints / Dyes Note: Deliberate Incident Date: 7th May 1997 Incident Reference: 32261 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	722	4	272235 376195
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Heavy Fuel Oil Note: Inadequate Design/Capacity Incident Date: 10th July 1996 Incident Reference: 29334 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	723	4	272230 376195
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 9th June 1996 Incident Reference: 28745 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	724	4	272225 376195
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Brook, 11 Bryn Helyd Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 3rd May 1991 Incident Reference: 2758 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	725	4	272200 376200
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Mountain Stream; Effluent Quality Incident Date: 18th March 1998 Incident Reference: 35198 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Inadequate Design/Capacity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	727	4	272210 376195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Treated Water Distribution System Location: Penmaenmawr Str, Eam Through Garden Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Deliberate Act Incident Date: 20th May 1991 Incident Reference: 2749 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	730	4	272200 376195
22	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Farm Effluent/Slurry Note: Poor Operational Practise Incident Date: 19th January 1995 Incident Reference: 22350 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Spillage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	757	4	272300 376150
22	**Pollution Incidents to Controlled Waters** Property Type: Building Sites Location: Stream, From Moel Llys Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Deliberate Act Incident Date: 14th February 1996 Incident Reference: 27378 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	766	4	272310 376140
22	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Stream Flows From, Moellys Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Deliberate Act Incident Date: 14th February 1996 Incident Reference: 27378 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	771	4	272310 376135
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Opposite Roland Young Yard Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 10th April 1995 Incident Reference: 23648 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SW (SW)	759	4	271680 376600
24	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Algae Note: Not Supplied Incident Date: 10th June 1996 Incident Reference: 28806 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	862	4	272255 376050

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Surface Runoff Location: Reservoir Used, For Course, OLD Authority: Environment Agency, Welsh Region Pollutant: Natural Foam Note: Poor Operational Practise Incident Date: 10th October 1995 Incident Reference: 26339 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2SE (S)	920	4	272200 376000
25	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Surface Runoff Location: Stream Authority: Environment Agency, Welsh Region Pollutant: Cement/Mortar Note: Poor Operational Practise Incident Date: 10th October 1995 Incident Reference: 26339 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2SE (S)	925	4	272200 375995
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream Near Plas Uchaf Farm, Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Aquaculture: Fish Farm/Cress Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craiglwyd Fishery Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1208	4	272620 375720
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream Near Plas Uchaf Farm Authority: Environment Agency, Welsh Region Abstraction: Private Non-Industrial Amenity: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craig Lwyd Lodge Fishery, Penmaenmawr Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1208	4	272620 375720
	Water Abstractions Operator: Huw Roland Jones Licence Number: Wa/065/0019/0018 Permit Version: Not Supplied Location: Cwm Graiglwyd, Graiglwyd Fly Fishing & Fisheries, Graiglwyd Road, Penmaenmawr, Conwy, LI34 6er Authority: Natural Resources Wales Abstraction: Aquaculture: Transfer between sources Abstraction Type: Water may be abstracted from any point within an area Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1208	2	272620 375720

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0023 Permit Version: 100 Location: Stream Near Plas Uchaf Farm,Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Aquaculture: Fish Farm/Cress Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Stream Near Plas Uchaf Farm;Penmaenmawr Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th September 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1283	4	272650 375650
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream Near Craiglwyd Authority: Environment Agency, Welsh Region Abstraction: Aquaculture: Fish Farm/Cress Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craiglwyd Fishery Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1409	4	272250 375500
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream 2 At Cwm Craig Lwyd Authority: Environment Agency, Welsh Region Abstraction: Private Non-Industrial Amenity: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craig Lwyd Lodge Fishery, Penmaenmawr Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1409	4	272250 375500
	Water Abstractions Operator: Huw Roland Jones Licence Number: Wa/065/0019/0018 Permit Version: Not Supplied Location: Cwm Graiglwyd, Graiglwyd Fly Fishing & Fisheries, Graiglwyd Road, Penmaenmawr, Conwy, Ll34 6er Authority: Natural Resources Wales Abstraction: Aquaculture: Transfer between sources Abstraction Type: Water may be abstracted from any point within an area Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1409	2	272250 375500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream Near Craiglwyd Authority: Environment Agency, Welsh Region Abstraction: Aquaculture: Fish Farm/Cress Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craiglwyd Fishery Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1585	4	272180 375330
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0027 Permit Version: 1 Location: Un-Named Stream 1 At Cwm Craig Lwyd Authority: Environment Agency, Welsh Region Abstraction: Private Non-Industrial Amenity: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Craig Lwyd Lodge Fishery, Penmaenmawr Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 15th December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1585	4	272180 375330
	Water Abstractions Operator: Huw Roland Jones Licence Number: Wa/065/0019/0018 Permit Version: Not Supplied Location: Cwm Graiglwyd, Graiglwyd Fly Fishing & Fisheries, Graiglwyd Road, Penmaenmawr, Conwy, Ll34 6er Authority: Natural Resources Wales Abstraction: Aquaculture: Transfer between sources Abstraction Type: Water may be abstracted from any point within an area Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1585	2	272180 375330
	Water Abstractions Operator: Mr H Jones Licence Number: 23/65/19/0006 Permit Version: 100 Location: Stream At Cwm Graig Lwyd, Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Aquaculture: Fish Farm/Cress Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Stream At Cwm Graig Lwyd; Penmaenmawr Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st October 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1636	4	272170 375280

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: 23/65/19/0017 Permit Version: 101 Location: Reservoir At Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Domestic For Caravan Park, Flats And Offices Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th January 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1718	4	272150 375200
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: Wa/065/0019/015 Permit Version: 1 Location: Reservoir At Penmaenmawr Authority: Natural Resources Wales Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1725	2	272140 375194
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: 23/65/19/0017 Permit Version: 102 Location: Reservoir At Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Domestic For Caravan Park, Flats And Offices Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th January 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1725	4	272140 375194
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: Wa/065/0019/015 Permit Version: Not Supplied Location: Thornley Leisure Parks Authority: Natural Resources Wales Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1725	2	272140 375194

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: 23/65/19/0017 Permit Version: 100 Location: Reservoir At Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Domestic For Two Permanent Flats Near Craiglwyd Hall Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st January 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(S)	1731	4	272130 375190
	Water Abstractions Operator: Thornley Leisure Parks Licence Number: 23/65/19/0017 Permit Version: 100 Location: Reservoir At Penmaenmawr Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Caravan Domestic Authorised Start: 01 March Authorised End: 30 October Permit Start Date: 1st January 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(S)	1736	4	272130 375185
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 102 Location: Felyn Stream Authority: Natural Resources Wales Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th July 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	2	270980 375650
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 102 Location: Felyn Stream Authority: Natural Resources Wales Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 30 June Permit Start Date: 27th July 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	2	270980 375650

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 102 Location: Felyn Stream Authority: Natural Resources Wales Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th July 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	2	270980 375650
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 101 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	4	270980 375650
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 101 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 30 June Permit Start Date: 1st April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	4	270980 375650
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0022 Permit Version: 101 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1876	4	270980 375650

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: A R C Northern Licence Number: 23/65/19/0022 Permit Version: 100 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Felyn Stream Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 5th May 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SW)	1876	4	270980 375650
	Water Abstractions Operator: A R C Northern Licence Number: 23/65/19/0022 Permit Version: 100 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Felyn Stream Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 5th May 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SW)	1876	4	270985 375645
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 23/65/19/0025 Permit Version: 1 Location: Un-Named Reservoir At Penmaenmawr Quarry Authority: Environment Agency, Welsh Region Abstraction: Household Water Supply: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th November 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SW)	1877	4	271375 375315
	Water Abstractions Operator: A R C Northern Licence Number: 23/65/19/0022 Permit Version: 100 Location: Felyn Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Felyn Stream Authorised Start: 01 November Authorised End: 30 June Permit Start Date: 5th May 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SW)	1879	4	270980 375645
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	A7NE (NE)	0	4	272583 377154
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	A7NE (SE)	0	4	272604 377126

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	A7NE (NE)	0	1	272583 377154
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A7NE (SE)	0	1	272589 377150
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	A7NE (SE)	0	1	272612 377115
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	2	272583 377154
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273490 377795
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273525 377790
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273535 377785
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273540 377780
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273560 377730
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	1	2	273515 377850
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NW (SW)	120	2	272235 376930
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	2	272583 377154
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273515 377845
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273555 377740
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273525 377790
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273535 377785
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273540 377780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	2	272583 377154
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	0	2	273490 377795
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 425.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	0	5	272568 377087
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	0	5	272580 377076
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 72.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A12SW (E)	0	5	273068 377348
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 677.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	A12NE (NE)	0	5	273505 377813
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A12SW (E)	0	5	273088 377305
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A12SW (E)	0	5	273088 377305
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 21.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	A12NE (NE)	7	5	273495 377840

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 3.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	19	5	272566 377090
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	22	5	272566 377091
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	A12NE (NE)	22	5	273495 377856
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 117.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	82	5	272662 376930
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 112.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	109	5	272674 376906
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 42.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	114	5	272569 376857
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NE (S)	114	5	272569 376857
40	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NW (SW)	122	5	272268 376847
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (S)	128	5	272579 376845

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 71.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SW (SW)	149	5	272245 376831
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SW (SW)	149	5	272243 376834
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SW (SW)	150	5	272232 376847
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7NW (SW)	155	5	272212 376872
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 251.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SW (SW)	164	5	272281 376769
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (SE)	236	5	272813 376816
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 51.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (SE)	271	5	272794 376773
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 292.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (SE)	320	5	272772 376715
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 19.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (SE)	322	5	272809 376724

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 121.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SW (S)	359	5	272333 376547
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 58.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A7SE (SE)	364	5	272824 376685
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 183.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3NW (S)	458	5	272401 376446
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 240.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A6SW (SW)	594	5	271818 376683
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 208.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3NW (S)	597	5	272514 376323
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 102.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3NW (S)	597	5	272514 376323
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 126.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2NE (SW)	603	5	271974 376453
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 317.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2NE (SW)	647	5	272120 376309
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 163.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2NE (SW)	652	5	271990 376378

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 88.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2NE (SW)	652	5	271990 376378
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 121.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	747	5	272309 376159
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 134.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SE (S)	779	5	272634 376168
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 81.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2NE (SW)	785	5	271998 376215
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (SW)	837	5	272029 376141
65	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 6.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (SW)	837	5	272029 376141
66	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 5.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (SW)	857	5	272039 376115
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 189.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	859	5	272249 376054
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 145.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (SW)	861	5	272040 376110

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 121.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	909	5	272545 376010
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 147.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SE (S)	913	5	272681 376042
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 250.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (SW)	924	5	271885 376120
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (S)	926	5	272207 375993
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 61.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	929	5	272212 375989
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 231.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SE (S)	931	5	272572 375993
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 113.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	934	5	272452 375972
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (S)	956	5	272106 375985
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 124.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A3SW (S)	973	5	272381 375930

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
78	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 30.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (S)	980	5	272094 375964
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (S)	989	5	272122 375948
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 209.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	A2SE (S)	989	5	272122 375948

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
81	**BGS Recorded Landfill Sites** Site Name: Bion Wylfa Location: PENMAENMAWR, Caernarvon Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Derived	A7NE (SE)	0	-	272641 377066
82	**Historical Landfill Sites** Licence Holder: Penmaenmawr Urban District Council Location: Penmaenmawr, Conwy Name: Football Ground at Pen-y-Cae Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14186 First Input Date: 31st December 1949 Last Input Date: 31st December 1969 Specified Waste Type: Deposited Waste included Inert, Commercial and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6905/0010 BGS Ref: Not Supplied Other Ref: CL5E2	A7NE (S)	0	2	272594 376982
	Local Authority Landfill Coverage Name: Conwy County Borough Council - Has supplied landfill data		0	3	272583 377154
83	**Local Authority Recorded Landfill Sites** Location: Penmaenmawr, Conwy Road, Penmaenmawr, Conwy Reference: Not Supplied Authority: Conwy County Borough Council, Environmental Health Department **Last Reported Status: Closed** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A7NE (S)	0	3	272633 377020
84	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8SE (E)	617	-	273501 376795
85	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8SE (E)	655	-	273554 376783
86	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A4NW (SE)	729	-	272984 376352
87	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A4NW (SE)	869	-	272995 376210
88	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A12NE (NE)	0	-	273455 377626
89	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A12NE (NE)	0	-	273418 377631
90	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A6SE (SW)	377	-	272097 376649
91	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A2NE (SW)	662	-	271981 376371
92	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A3SW (S)	912	-	272298 375994

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Unnamed Extrusive Rocks, Ordovician	A7NE (SE)	0	1	272592 377143
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NW (W)	0	1	272366 377098
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SE)	0	1	272612 377115
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16SE (NE)	0	1	273561 378000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SW)	0	1	272399 376962
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SE)	0	1	272589 377150
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 60 - 120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SW)	14	1	272386 377072

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (NE)	18	1	272583 377154
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 60 - 120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16SE (NE)	23	1	273500 378000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 60 - 120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (NE)	40	1	272627 377209
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 60 - 120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (W)	61	1	272270 377098
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: 100 - 200 mg/kg Nickel Concentration: no data	A16SE (NE)	132	1	273500 378197
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SE)	221	1	272962 376933

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: <100 mg/kg Nickel Concentration: no data	A11SW (NW)	228	1	272497 377298
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SE (SW)	371	1	272036 376750
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SE (SW)	378	1	272023 376767
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (S)	405	1	272558 376537
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (SE)	415	1	272961 376680
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (SE)	449	1	273170 376813

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NE (S)	744	1	272703 376231
93	**BGS Recorded Mineral Sites** Site Name: Cae-Main Gravel Pit Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 177960 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Quaternary Geology: Head Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	519	1	273223 376761
94	**BGS Recorded Mineral Sites** Site Name: Tai-Bach Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 177947 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Ordovician Geology: Conwy Rhyolite Formation Commodity: Igneous and Metamorphic Rock Positional Accuracy: Located by supplier to within 10m	A8SE (E)	615	1	273507 376800
94	**BGS Recorded Mineral Sites** Site Name: Caerlyr Lodge Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 177956 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Ordovician Geology: Conwy Rhyolite Formation Commodity: Igneous and Metamorphic Rock Positional Accuracy: Located by supplier to within 10m	A8SE (E)	649	1	273554 376791
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272612 377115
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272668 377031
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272612 377115

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A12NE (NE)	0	1	273498 377623
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A12NE (NE)	0	1	273353 377670
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (SE)	221	1	272962 376933
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272589 377150
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272612 377115
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A12NE (NE)	0	1	273353 377670
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (SE)	0	1	272962 376933
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272612 377115
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (SE)	0	1	272589 377150
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	12	1	272583 377154
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A7NE (S)	0	1	272625 377051
	Radon Potential - Radon Affected Areas Affected Area: The property is an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A7NE (S)	0	1	272583 377151
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A7NW (SW)	0	1	272475 377076
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A7NE (S)	0	1	272625 377051

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A7NE (S)	0	1	272583 377151
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A7NE (NE)	0	1	272583 377154
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A7NW (SW)	0	1	272475 377076

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
95	**Contemporary Trade Directory Entries** Name: Shell Service Station Location: Conway Road, Penmaenmawr, Gwynedd, LL34 6UN Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (NE)	0	-	273459 377625
95	**Contemporary Trade Directory Entries** Name: Shell (Uk) Ltd Location: Orme View Cottage, Conway Road, Penmaenmawr, Gwynedd, LL34 6UN Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NE)	0	-	273459 377625
96	**Contemporary Trade Directory Entries** Name: Asb Engineering Limited Location: 36, Gogarth Avenue, Dwygyfylchi, Penmaenmawr, Gwynedd, LL34 6PY Classification: Marine Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (E)	201	-	273192 377102
97	**Contemporary Trade Directory Entries** Name: Gmec-Services Ltd Location: Flat Above, The Old Post Office, Treforris Road, Dwygyfylchi, Penmaenmawr, LL34 6UB Classification: Mechanical Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (E)	280	-	273450 377248
98	**Contemporary Trade Directory Entries** Name: Arwyn Evans Location: Conway Road, Penmaenmawr, Gwynedd, LL34 6BD Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6SE (SW)	437	-	272053 376610
99	**Contemporary Trade Directory Entries** Name: H Jones Location: Bryn Derwen, Pant yr Afon, Penmaenmawr, Gwynedd, LL34 6AD Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	632	-	272040 376368
99	**Contemporary Trade Directory Entries** Name: Nsd Autos Location: Pant yr Afon, Penmaenmawr, Gwynedd, LL34 6AD Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A2NE (SW)	654	-	272040 376342
99	**Contemporary Trade Directory Entries** Name: Slide Ways Motor Sport Location: 1, Central Buildings, Pant yr Afon, Penmaenmawr, Gwynedd, LL34 6AD Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	663	-	272019 376345
100	**Contemporary Trade Directory Entries** Name: Garreg Lwyd Garage Location: Garreg Lwyd, Paradise Road, Penmaenmawr, Gwynedd, LL34 6AS Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	676	-	271900 376423
101	**Contemporary Trade Directory Entries** Name: Surrounds Location: Oxford Arc,Pant yr Afon, Penmaenmawr, Gwynedd, LL34 6AD Classification: Fireplaces & Mantelpieces **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A2NE (SW)	725	-	271948 376318
102	**Contemporary Trade Directory Entries** Name: Fedrick Plant Services Location: Rocklands, Brynmor Terrace, Penmaenmawr, Gwynedd, LL34 6AP Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (SW)	744	-	271862 376364

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
103	**Contemporary Trade Directory Entries** Name: Gwyn'S Location: 46, Merton Park, Penmaenmawr, Gwynedd, LL34 6DH Classification: Crane Hire, Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (S)	750	-	272208 376172
104	**Contemporary Trade Directory Entries** Name: Time Factor Chemicals Ltd Location: Brynmor Terrace, Penmaenmawr, Gwynedd, LL34 6AN Classification: Chemicals & Allied Products **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (SW)	816	-	271730 376404
105	**Contemporary Trade Directory Entries** Name: Roland Young Ltd Location: Station Rd West, Penmaenmawr, Gwynedd, LL34 6AT Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A2NW (SW)	832	-	271684 376442
106	**Contemporary Trade Directory Entries** Name: G Greathead Location: Tudor Lodge, Station Road West, Penmaenmawr, Gwynedd, LL34 6AG Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (SW)	837	-	271763 376333
107	**Contemporary Trade Directory Entries** Name: R & M Thomas Location: Celyn St, Penmaenmawr, Gwynedd, LL34 6LP Classification: Clothing Accessory Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A2NW (SW)	914	-	271664 376330
108	**Fuel Station Entries** Name: Shell Orme View Location: Conway Road , , Penmaenmawr, Conwy, LL34 6UN Brand: SHELL Premises Type: Service Area **Status: Open** Positional Accuracy: Automatically positioned to the address	A12NE (NE)	0	-	273459 377625
109	**Points of Interest - Commercial Services** Name: Arwyn Evans Location: Conway Road, Penmaenmawr, LL34 6BD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A6SE (SW)	437	6	272053 376610
109	**Points of Interest - Commercial Services** Name: Owen's M O T & Garage Services Location: The Garage, Conway Road, Penmaenmawr, LL34 6BD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A6SE (SW)	438	6	272052 376609
110	**Points of Interest - Commercial Services** Name: H Jones Location: Bryn Derwen, Pant yr Afon, Penmaenmawr, LL34 6AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	632	6	272040 376368
110	**Points of Interest - Commercial Services** Name: Steve Streetly Autobody Repaires Location: Bryn Derwen, Pant yr Afon, Penmaenmawr, LL34 6AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	632	6	272040 376368
110	**Points of Interest - Commercial Services** Name: Nsd Autos Location: Bryn Derwen, Pant yr Afon, Penmaenmawr, LL34 6AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	632	6	272040 376368
111	**Points of Interest - Commercial Services** Name: Roland Young Location: Station Road West, Penmaenmawr, LL34 6AT Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A6SW (SW)	663	6	271816 376550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
112	**Points of Interest - Commercial Services** Name: Garreg Lwyd Garage Location: Garreg Lwyd, Paradise Road, Penmaenmawr, LL34 6AS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	677	6	271900 376422
113	**Points of Interest - Manufacturing and Production** Name: Sheep Wash Location: LL34 Category: Farming Class Code: Sheep Dips and Washes Positional Accuracy: Positioned to address or location	A7NE (SE)	196	6	272853 376871
114	**Points of Interest - Manufacturing and Production** Name: Trwyn-Yr-Wylfa Location: Trwyn yr Wylfa, Conway Old Road, Penmaenmawr, LL34 6SF Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A7SE (SE)	300	6	272828 376753
115	**Points of Interest - Manufacturing and Production** Name: Tank Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SE (SE)	664	6	273357 376666
116	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A2NW (SW)	974	6	271687 376215
116	**Points of Interest - Manufacturing and Production** Name: Works Location: LL34 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A2NW (SW)	974	6	271688 376213
117	**Points of Interest - Public Infrastructure** Name: Shell Service Station Location: Conway Road, Penmaenmawr, Gwynedd, LL34 6UN Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12NE (NE)	0	6	273459 377625
117	**Points of Interest - Public Infrastructure** Name: Shell Orme View Location: Conway Road, Penmaenmawr, Gwynedd, LL34 6UN Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12NE (NE)	0	6	273459 377625
117	**Points of Interest - Public Infrastructure** Name: Shell Orme View Location: Orme View Cottage, Conway Road, Penmaenmawr, LL34 6UN Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12NE (NE)	5	6	273464 377607
118	**Points of Interest - Public Infrastructure** Name: Tan Y Foel Cemetery Location: LL34 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A7SW (S)	258	6	272537 376688
118	**Points of Interest - Public Infrastructure** Name: Tan Y Foel Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A7SE (S)	267	6	272549 376683
119	**Points of Interest - Public Infrastructure** Name: Outfall Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A16SW (NE)	396	6	273222 378112

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
120	**Points of Interest - Public Infrastructure** Name: Penmaenmawr Rail Station Location: Station Road West, LL34 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A6SW (SW)	674	6	271804 376546
120	**Points of Interest - Public Infrastructure** Name: Penmaenmawr Station Location: Station Road West, LL34 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A6SW (SW)	674	6	271804 376546
121	**Points of Interest - Public Infrastructure** Name: Outfall Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A6SW (SW)	694	6	271739 376629
122	**Points of Interest - Public Infrastructure** Name: Penmaenmawr Police Station Location: Police Station, Bangor Road, Penmaenmawr, LL34 6LF Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location	A2NW (SW)	950	6	271632 376312
123	**Points of Interest - Public Infrastructure** Name: Outfalls Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A5SE (SW)	950	6	271508 376517
124	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12SE (E)	95	6	273294 377393
125	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A2NE (SW)	635	6	271957 376426

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
126	**Ancient Woodland** Name: Not Supplied Reference: 37449 Area(m²): 83872.31 Type: Restored Ancient Woodland Site	(E)	220	2	274057 377491
127	**Ancient Woodland** Name: Not Supplied Reference: 37444 Area(m²): 7350.94 Type: Restored Ancient Woodland Site	A3SW (S)	981	2	272388 375922
128	**National Parks** Name: Snowdonia Multiple Area: N Area (m2): 2139330937.98 Source: Natural Resources Wales **Status: Fully Designated - designated as a National Park** Designation Date: 31st December 1951	A8NW (SE)	0	2	272900 376854
129	**Sites of Special Scientific Interest** Name: Sychnant Pass Multiple Areas: Y Total Area (m2): 1081930.79 Source: Natural Resources Wales Reference: 91931way Designation Details: Biological Designation Date: 1st January 1957 Date Type: Notified	(E)	235	2	274151 377276
130	**Special Areas of Conservation** Name: Y Fenai A Bae Conwy / Menai Strait And Conwy Bay Multiple Areas: N Total Area (m2): 265017352.03 Source: Natural Resources Wales Reference: Uk0030202 **Status: Designated**	A11SW (NW)	184	2	272453 377280
131	**Special Protection Areas** Name: Liverpool Bay / Bae Lerpwl (Wales) Multiple Areas: N Total Area (m2): 786840845.92 Source: Natural Resources Wales Reference: UK9020294 Designation Date: 31st October 2017	A11SW (NW)	184	2	272453 377280
132	**Special Protection Areas** Name: Liverpool Bay Multiple Areas: N Total Area (m2): 1696797358.7 Source: Natural England Reference: UK9020294 Designation Date: Not Supplied	A11SW (NW)	186	7	272452 377282

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Conwy County Borough Council - Environmental Health Department	August 2013	Annual Rolling Update
Gwynedd Council - Housing and Public Protection Department	January 2015	Annual Rolling Update
Discharge Consents		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	August 2014	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Welsh Region	October 2008	Variable
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Gwynedd Council - Environmental Health Department	July 2014	Variable
Local Authority Pollution Prevention and Controls		
Conwy County Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
Gwynedd Council - Environmental Health Department	July 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Gwynedd Council - Environmental Health Department	July 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	September 2017	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Registered Radioactive Substances		
Natural Resources Wales	January 2015	As notified
Environment Agency - Welsh Region	January 2015	
Substantiated Pollution Incident Register		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Industry Act Referrals		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	October 2017	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified
Superficial Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified

Agency & Hydrological	Version	Update Cycle
Source Protection Zones Natural Resources Wales	November 2016	As notified
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Natural Resources Wales	April 2018	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	January 2018	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Landfill Coverage		
Conwy County Borough Council - Environmental Health Department	May 2000	Not Applicable
Gwynedd Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Conwy County Borough Council - Environmental Health Department	July 2003	Not Applicable
Gwynedd Council	May 2000	Not Applicable
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Conwy County Borough Council - Planning Department	February 2016	Variable
Gwynedd Council - Planning Department	February 2016	Variable
Snowdonia National Park	February 2016	Variable
Planning Hazardous Substance Consents		
Conwy County Borough Council - Planning Department	February 2016	Variable
Gwynedd Council - Planning Department	February 2016	Variable
Snowdonia National Park	February 2016	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2018	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	May 2018	Quarterly
Fuel Station Entries Catalist Ltd - Experian	April 2018	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Points of Interest - Commercial Services PointX	June 2018	Quarterly
Points of Interest - Education and Health PointX	June 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	June 2018	Quarterly
Points of Interest - Public Infrastructure PointX	June 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	June 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural Resources Wales	October 2017	Bi-Annually
Areas of Outstanding Natural Beauty		
Natural Resources Wales	February 2018	Bi-Annually
Environmentally Sensitive Areas		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Conwy County Borough Council	February 2018	Bi-Annually
Gwynedd Council	February 2018	Bi-Annually
Marine Nature Reserves		
Natural Resources Wales	October 2017	Bi-Annually
National Nature Reserves		
Natural Resources Wales	February 2018	Bi-Annually
National Parks		
Natural Resources Wales	February 2018	Annually
Nitrate Vulnerable Zones		
Natural Resources Wales	July 2017	Bi-Annually
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	October 2005	
Ramsar Sites		
Natural Resources Wales	February 2018	Bi-Annually
Sites of Special Scientific Interest		
Natural Resources Wales	February 2018	Bi-Annually
Special Areas of Conservation		
Natural Resources Wales	February 2018	Bi-Annually
Special Protection Areas		
Natural England	February 2018	Bi-Annually
Natural Resources Wales	February 2018	Bi-Annually

Data Suppliers

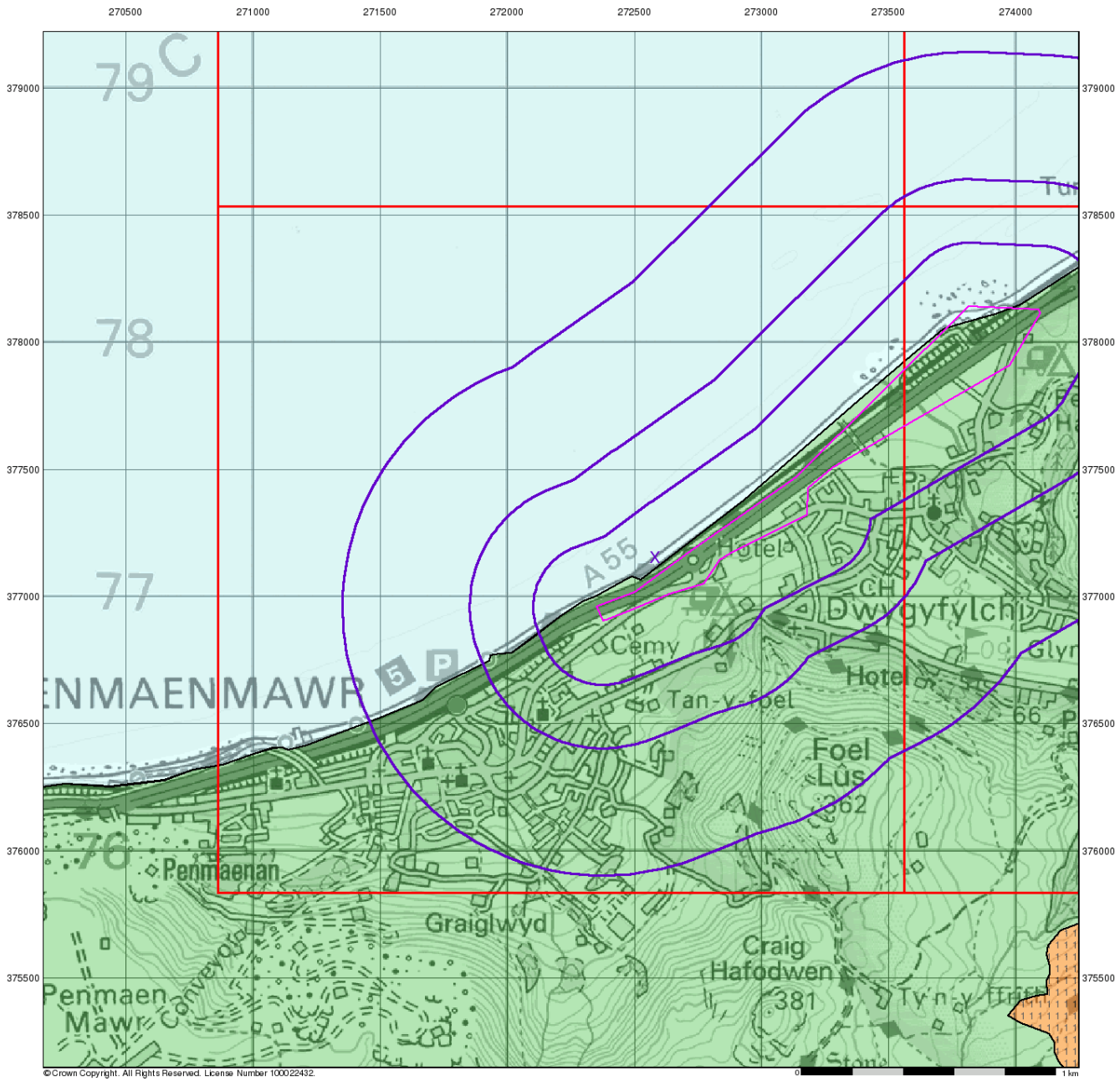
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
3	**Conwy County Borough Council - Environmental Health Department** Civic Offices, Colwyn Bay, Gwynedd, LL29 8AR	Telephone: 01492 575187 Fax: 01492 575204 Website: www.conwy.gov.uk
4	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
7	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



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Groundwater Vulnerability

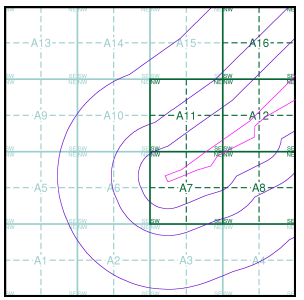
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



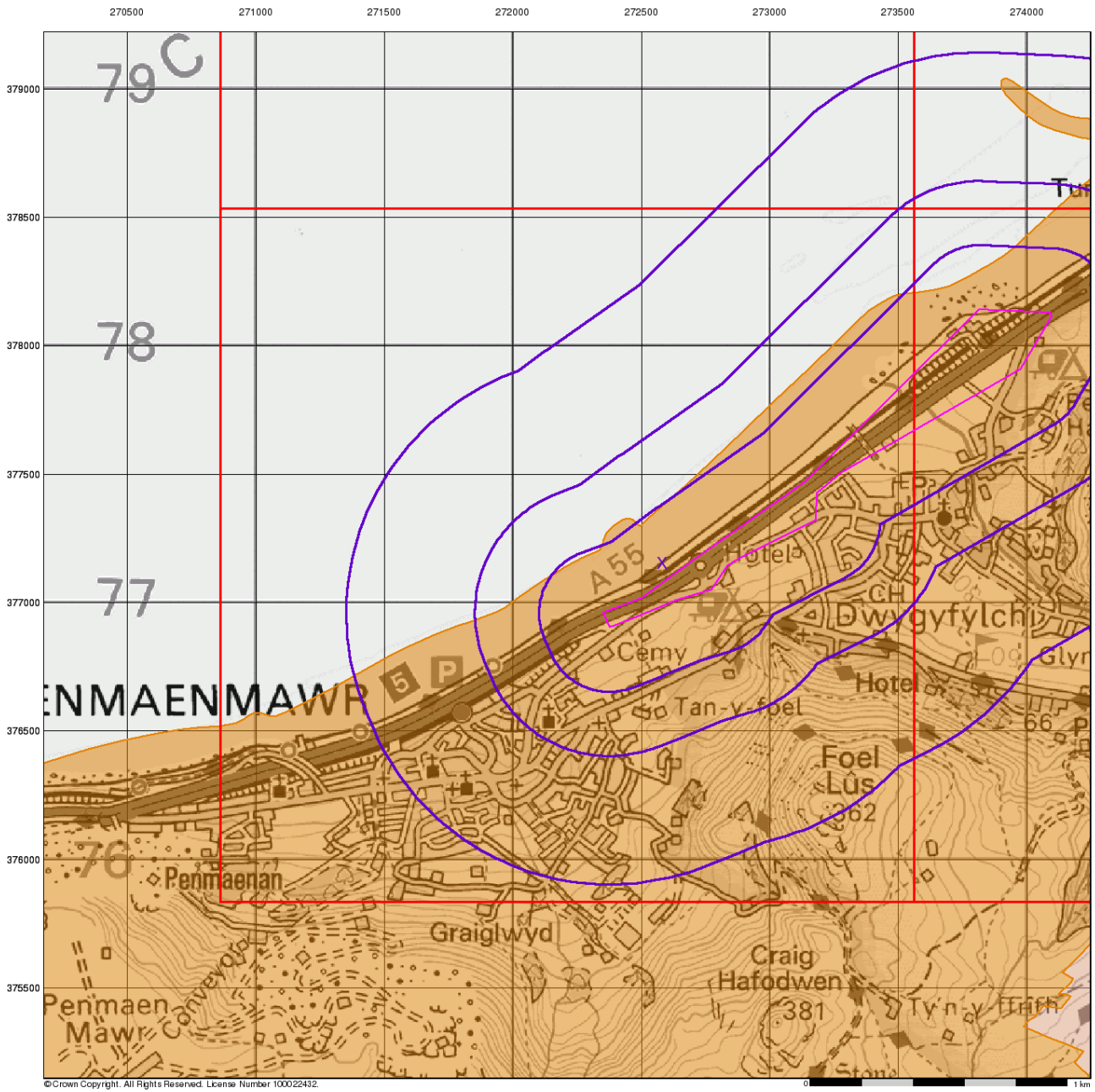
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Bedrock Aquifer Designation

General

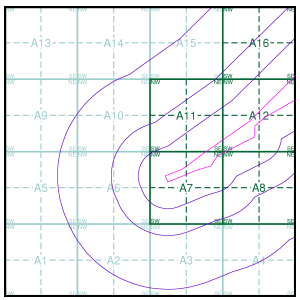
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



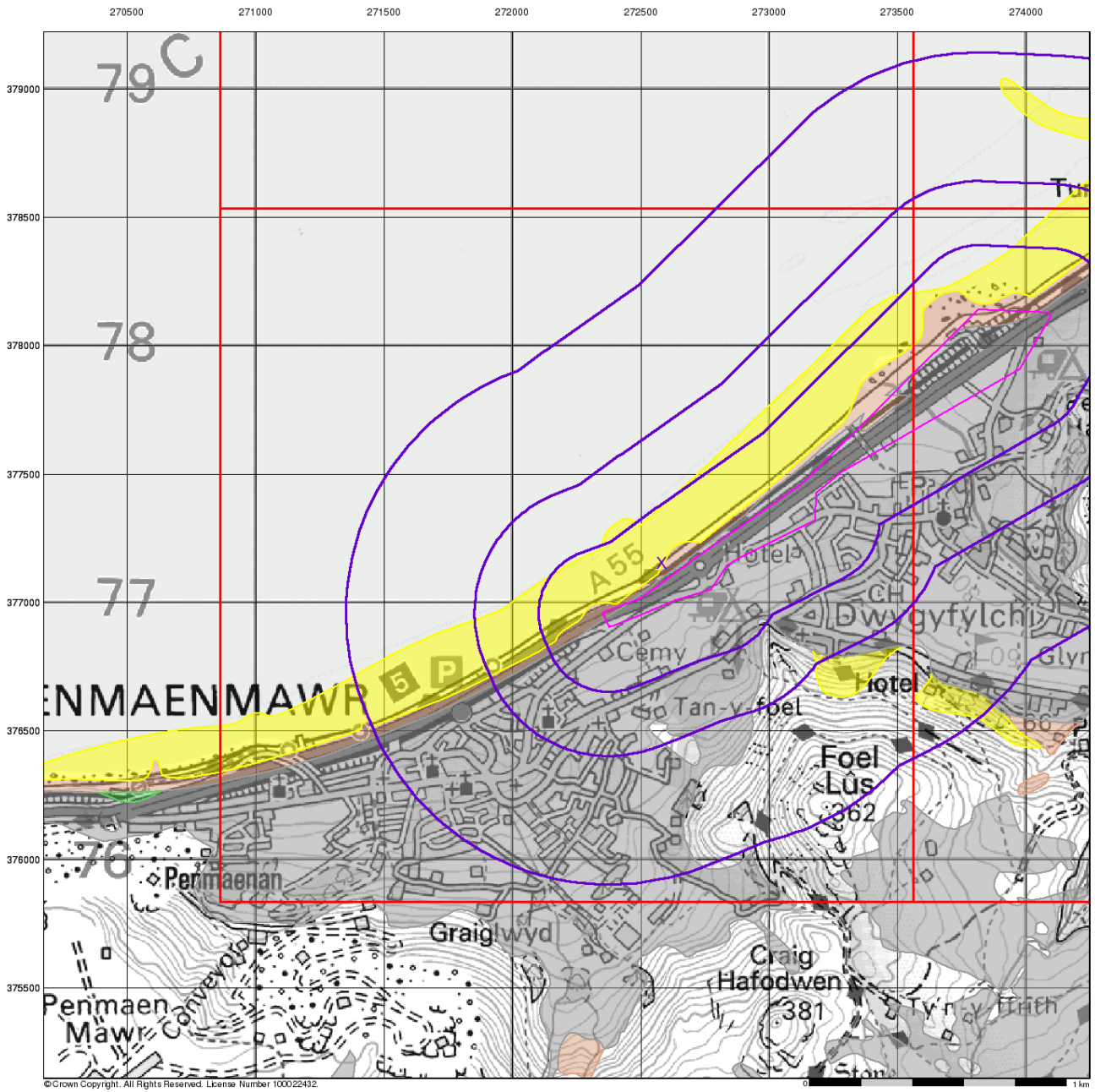
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Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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Superficial Aquifer Designation

General

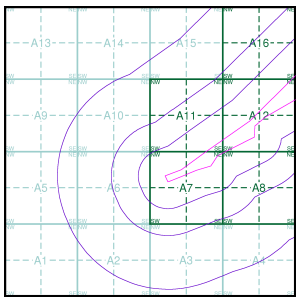
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



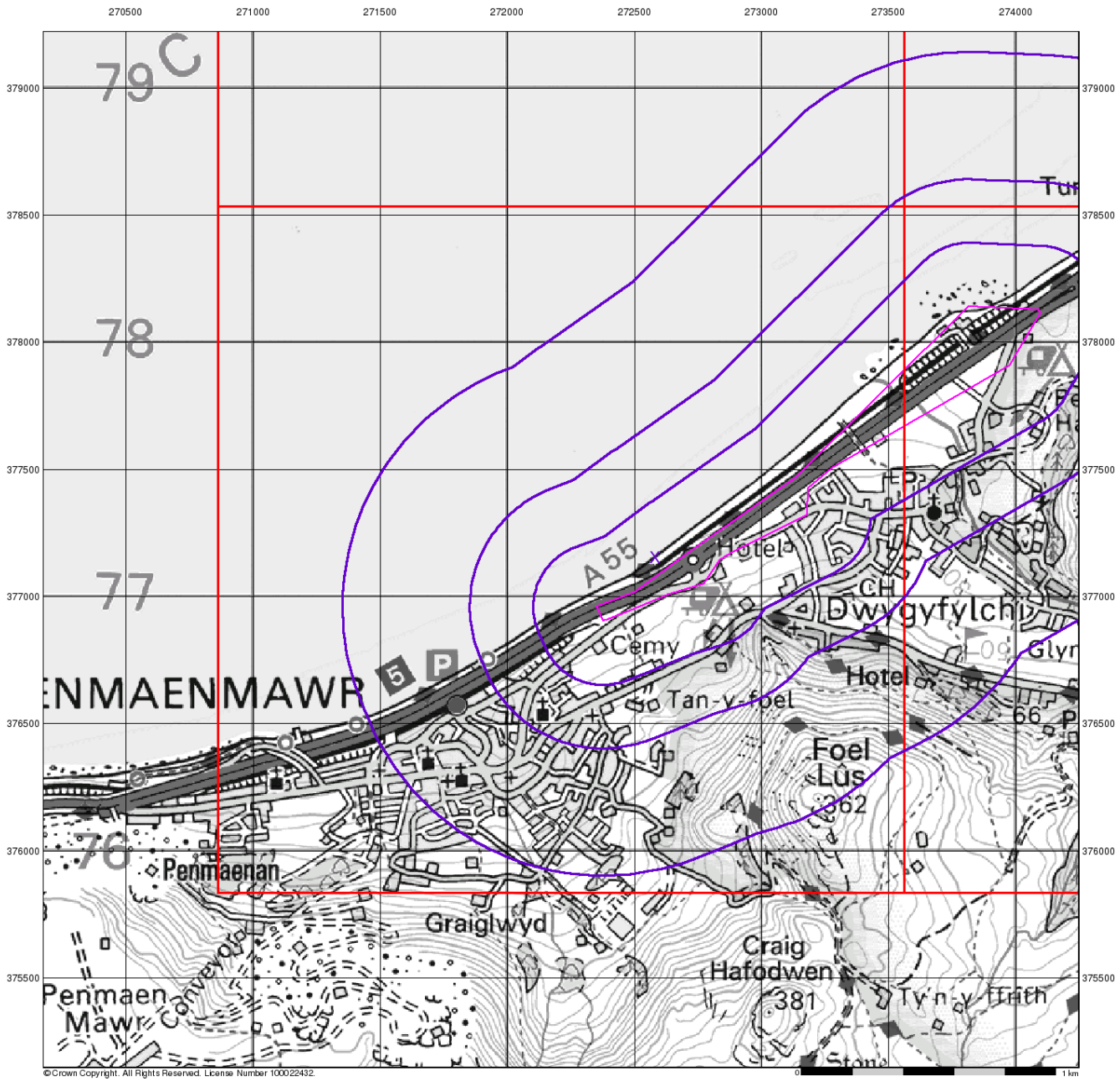
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Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Source Protection Zones

General

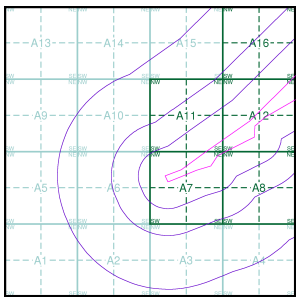
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



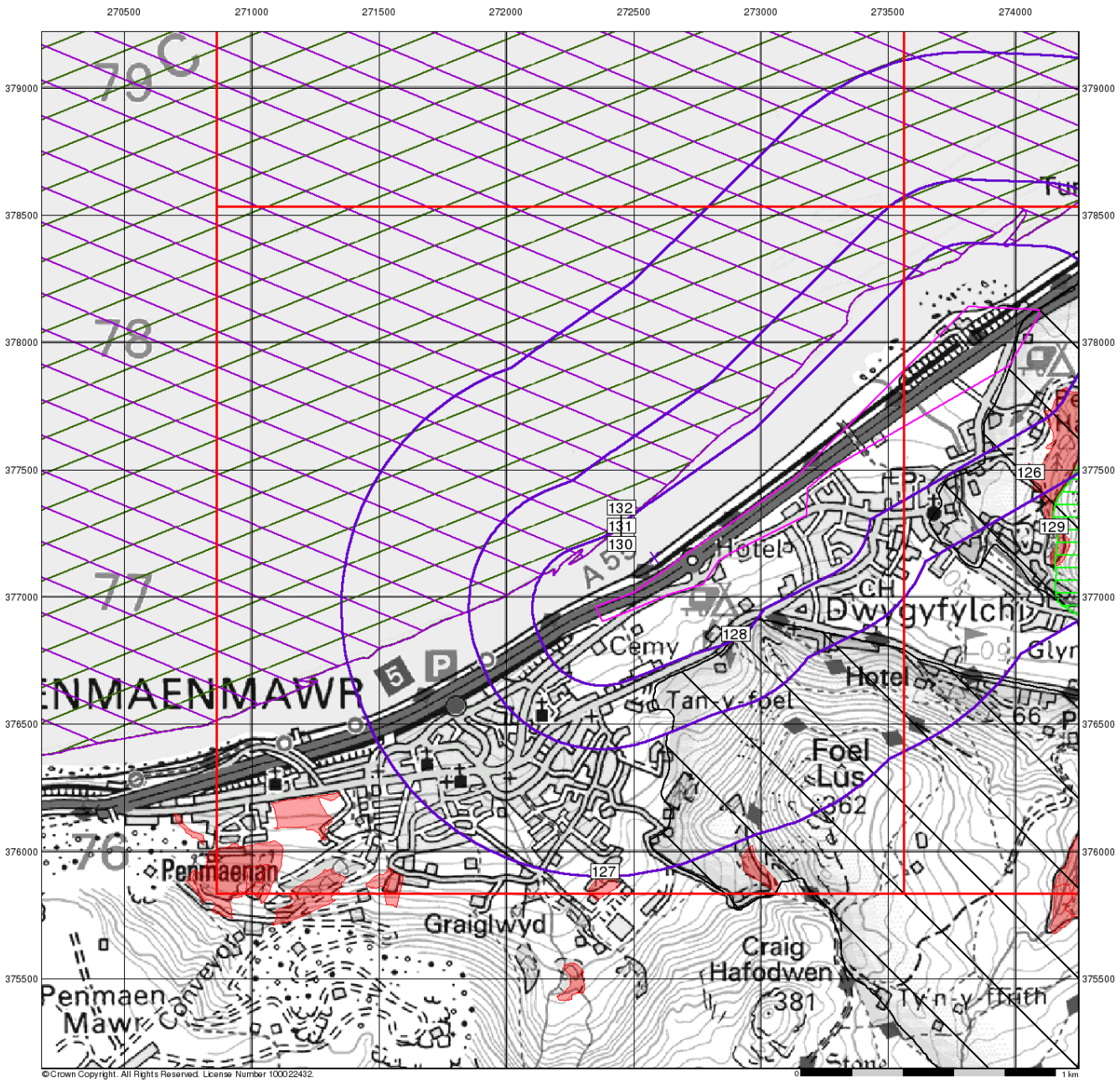
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Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Sensitive Land Uses

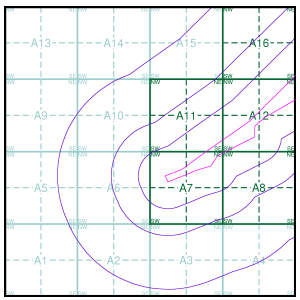
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A



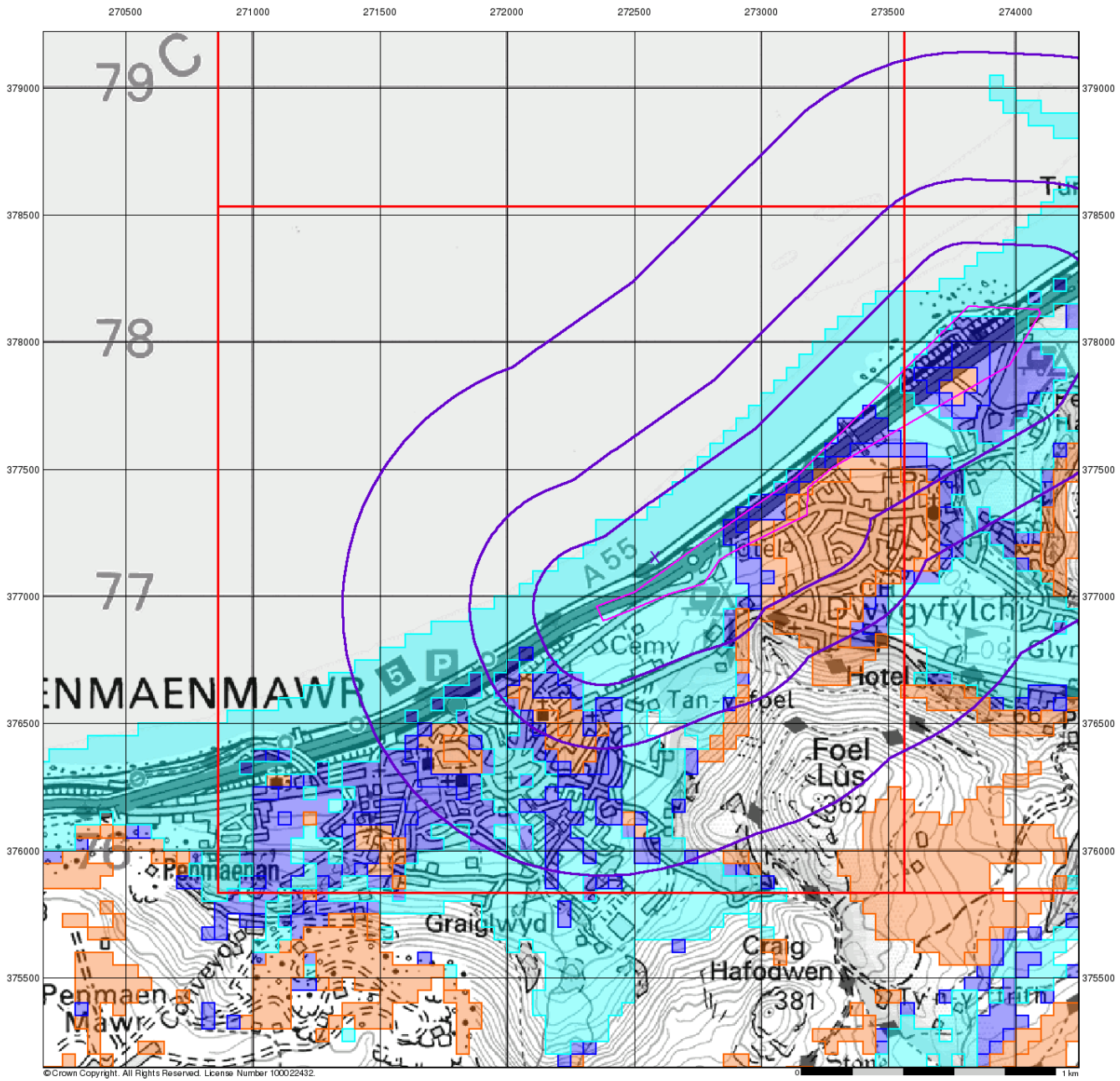
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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BGS Flood GFS Data

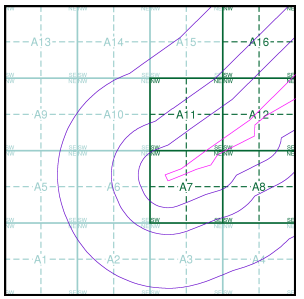
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice

Agency and Hydrological (Flood)

Limited Potential for Groundwater Flooding to Occur
Potential for Groundwater Flooding of Property Situated Below Ground Level
Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
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Envirocheck® Report:

Flood Screening Report Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
272580, 377150

Slice:
A

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer(s) selected. For ease of reference, the report is broken down into seven sections of data.	
EA / NRW / CEH Flood Data	1
This section details data from the Environment Agency/Natural Resources Wales and the Centre for Ecology and Hydrology. The EA/NRW data is reported to a distance of 250m from the edge of the site polygon and details both Zone 2 (extreme) and Zone 3 flood extents, as well as flood defences, flood water storage areas and areas benefiting from flood defences. The CEH data is reported to a distance of 250m from the edge of the site polygon and covers flood data for Scotland, divided into levels based on the frequency and magnitude of a predicted 100 year term. All data sets within this section are plotted and feature on the EA / NRW / CEH Flood Data (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
JBA Flood Data	3
This section contains the Comprehensive Flood Map ("CFM") data from JBA Risk Management Limited. The data is based upon the likelihood of a flood occurrence for up to 4 flood return periods depending on the type of flooding; these being 75 years, 100 years, 200 years and 1000 years. Each layer being modelled at a 5m cell resolution. Each return period is depicted on a separate 1:10,000 scale map and reports features to a distance of 250m in the datasheet from the edge of the site polygon. For each return period the following three sources of flooding are identified, surface water or pluvial flooding, undefended river flooding or fluvial flooding and undefended coastal flooding. In each case the extent of the flooding source is displayed with the associated depth range. In addition, a 1:10,000 scale map depicting flooding from a Canal Failure and a coverage check for this dataset is included. Where coverage exists, information is reported in the datasheet where the site could be affected by flooding that results from a dam breach. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
BGS Flood Data	75
This section contains two BGS data sets; namely Geological Indicators of Flooding and Groundwater Flooding Susceptibility, both of which report features out to a possible 1000m, with coverage in England, Wales and Scotland. Each data set is plotted on a seperate BGS Flood Data (1:50,000) map.	
GeoSmart Information Groundwater Flood Data	83
This section contains data provided by GeoSmart Information who, building on their expertise, have developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in Great Britain. The resulting map, classifies groundwater flood risk for each 5m x 5m into four categories, negligible, low, moderate and high. These classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 200 years.	
OS Water Network Data	88
This section details the MasterMap Water Network data sourced from the Ordnance Survey. The OS MasterMap Water Network data details a network representing the watercourse within Great Britain. The OS Water Network Lines data set details the approximate central alignment of a watercourse, including rivers, lakes and canals. The OS Water Network Nodes data set details features that represent a river's source, end, a junction where three of more links meet, and places where the real world related attribution changes; for example a watercourse becoming tidal. The data sets within this section are plotted and feature on the OS Water Network Map (1:10,000) . For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	

Contents

EA/NRW Historic Flood Events Data	**-**

This section details Historic Flood data sourced from the Environment Agency/Natural Resources Wales and from data held by Landmark. The EA/NRW Historic Flood Events data is reported to a distance of 1000m from the edge of the site polygon and details recorded historic flood events from 1703 to October 2008. The data also contains information on the source and cause of the flood, and how the flood outline was established.

Also included in this section is Landmark's Historical Flood Liabilities data set, which identifies areas that are liable to flood based on systematic analysis of historical mapping dating back to the mid 19th century.

Both data sets within this section are plotted and feature on the EA/NRW Historical Flood (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.

EA/NRW RoFRS Data	**98**

This section details the Risk of Flooding from Rivers and Sea (RoFRS) data sourced from the Environment Agency/Natural Resources Wales and is reported to a distance of 1000m from the edge of the site polygon. The RoFRS data provides an indication of areas of land at risk of flooding from rivers and the sea. These areas of land, called impacted cells, are represented as 50 metre squares, or smaller areas where a square is intersected by a river or coastline.

The average height information of the impacted cell, modelled river and sea levels and information about over 200,000 flood defences are used as inputs to a computer flood model run by the Environment Agency/Natural Resources Wales. The model compares the probability that the flood defences will overtop or breach and the distance of the impact cell from the river or the sea for 40 scenarios for probabilities of between 100% to 0.1%.

The results are then consolidated to calculate a single probability category for each impacted cell. These results have been validated by local staff using their local knowledge and expertise. RoFRS is a national flood risk assessment and does not contain information about property thresholds. Due to variations in the input data and the performance of the computer flood model at particular locations, the resulting category of an impacted cell should only be used at a specific study scale. In certain areas it would only be appropriate to compare risks between towns and counties whereas in other areas they would be more suitable for understanding risk at a street level. The level of suitability for a particular cell is indicated by the cell's suitability scale.

The data within this section is plotted and feature on the EA/NRW RoFRS Data (1:50,000) map. This dataset is not available in Scotland.

Flood Insurance Risk Data	**105**

This section contains flood risk data from Crawford and Company. This dataset is not plotted on any of the associated Flood maps.

Crawford & Co have generated an Insurance Claims rating for Flood Risk. The risk is determined by comparing the number of flood insurance claims made to the number of properties in the postcode sector. The data will also include flood claims from domestic accidents or blocked drains, as well as flooding from river or tidal events. Flood insurance claim ratings are reported for the site only.

Data Currency	**106**
Data Suppliers	**109**
Useful Contacts	**110**

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
EA / NRW / CEH Flood Data					
Extreme Flooding from Rivers or Sea without Defences	pg 1	6	2	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 1	8		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
JBA Flood Data					
JBA 75 Year Return (undefended) - Pluvial	pg 3	141	56	n/a	n/a
JBA 75 Year Return (undefended) - Fluvial				n/a	n/a
JBA 75 Year Return (undefended) - Coastal	pg 12	24	173	n/a	n/a
JBA 100 Year Return (undefended) - Fluvial				n/a	n/a
JBA 100 Year Return (undefended) - Coastal	pg 21	28	165	n/a	n/a
JBA 200 Year Return (undefended) - Pluvial	pg 29	150	87	n/a	n/a
JBA 200 Year Return (undefended) - Fluvial				n/a	n/a
JBA 200 Year Return (undefended) - Coastal	pg 40	33	168	n/a	n/a
JBA 1000 Year Return (undefended) - Pluvial	pg 49	231	104	n/a	n/a
JBA 1000 Year Return (undefended) - Fluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Coastal	pg 65	44	167	n/a	n/a
JBA Canal Failure					
JBA Dam Break					
BGS Flood Data					
BGS Geological Indicators of Flooding	pg 75	5	7	5	6
BGS Groundwater Flooding Susceptibility	pg 76	26	17	42	43
GeoSmart Information Groundwater Flood					
GeoSmart Information Groundwater Flood Risk	pg 83	15	46	2	16
OS Water Network Data					
OS Water Network Lines	pg 88	6	16	6	27
OS Water Network Nodes	pg 94	5	20	7	28
EA/NRW Historic Flood Events Data					
Historic Flood Events					
Historical Flood Liabilities					
EA/NRW RoFRS Data					
RoFRS - Risk of Flooding from Rivers and Sea	pg 98	15	46	5	21
Flood Insurance Risk Data					
Postcode Sector Flood Insurance Claim Ratings	pg 105	1	n/a	n/a	n/a

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	1	272583 377154
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273490 377795
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273525 377790
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273535 377785
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273540 377780
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273560 377730
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	1	1	273515 377850
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NW (SW)	120	1	272235 376930
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	1	272583 377154
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273515 377845
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273555 377740
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273525 377790
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273535 377785
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273540 377780
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A7NE (NE)	0	1	272583 377154
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A12NE (NE)	0	1	273490 377795
	Areas Benefiting from Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377840
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273510 377815
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273500 377805
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273515 377810
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273490 377805
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273515 377805
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273525 377805
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273515 377800
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273530 377800
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273500 377780
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273520 377795
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273530 377795
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273535 377795
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273485 377790
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273540 377780
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273560 377790
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272540 376980
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272530 376975
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272910 377305
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272905 377300
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272900 377295
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273365 377645

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272410 376940
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272415 376940
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272410 376935
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272405 376930
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272495 376955
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272800 377230
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272455 376960
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272460 376960
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272520 376970
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272435 376955
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272450 376955
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272435 376950
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272445 376950
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272420 376945
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272405 376935
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272880 377285
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	0	2	272885 377285
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	0	2	272880 377280
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272865 377270
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272860 377265

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272835 377260
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272855 377260
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A11SE (E)	0	2	272835 377255
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272845 377255
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272890 377255
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272830 377245
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A11SE (E)	0	2	272825 377245
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272885 377250
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273410 377680
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273420 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273410 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377630
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377625
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272785 377215
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272790 377220
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273550 377775
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273560 377775
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273525 377770
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273530 377770
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273555 377770
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273560 377770

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273520 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273525 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273535 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377760
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273510 377760
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377755
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273505 377755
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273545 377755
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273465 377750
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273500 377750
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273490 377745
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273510 377745
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273485 377740
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273480 377735
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273225 377545
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273210 377530
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	0	2	273205 377530
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273550 377780
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273555 377785
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273530 377775
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273230 377550
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273465 377725
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272790 377225
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273460 377720
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377715
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273445 377710
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273440 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273430 377700
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273425 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273410 377685
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273180 377515
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273185 377515
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273405 377680
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273400 377675
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273405 377675
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377670
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273395 377670
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273405 377670
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273410 377670
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273165 377500
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273145 377480
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273120 377465
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273125 377465

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273085 377440
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273050 377375
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273045 377370
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273035 377365
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273030 377360
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273025 377355
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273015 377350
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273010 377345
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272945 377340
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273005 377340
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	272940 377335
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272950 377335
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272995 377335
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272940 377330
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272990 377330
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272935 377325
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272985 377325
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272925 377315
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377660
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273510 377660
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273375 377655
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273495 377655

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273525 377655
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273540 377655
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273560 377655
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273415 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273370 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273375 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273485 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272390 376920
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272370 376930
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	1	2	272805 377240
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	1	2	272855 377275
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	1	2	273070 377430
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272860 377280
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272840 377265
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	2	2	272825 377255
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273160 377500
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273080 377435
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273065 377425
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	272895 377305
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272880 377295
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272865 377285
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	3	2	272845 377270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	272915 377320
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	4	2	272885 377300
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	4	2	272360 376930
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	273105 377455
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272935 377335
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272920 377325
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272900 377310
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	273075 377435
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272955 377350
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272940 377340
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272905 377315
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273550 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	273115 377465
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272945 377345
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272925 377330
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272910 377320
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273545 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	11	2	272355 376925
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	12	2	273545 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	15	2	273520 377875
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	15	2	273515 377870
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	16	2	273545 377635

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	22	2	272345 376920
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	26	2	272340 376920
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	28	2	272340 376915
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	40	2	272330 376910
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	46	2	272325 376905
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	57	2	272320 376890
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	90	2	272290 376875
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	93	2	272285 376880
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	95	2	272285 376875
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	99	2	272285 376865
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	99	2	272280 376875
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	106	2	272275 376870
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	108	2	272275 376865
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	111	2	272270 376870
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	113	2	272270 376865
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	134	2	272255 376845
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	135	2	272250 376855
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7SW (SW)	148	2	272240 376845
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	159	2	272235 376830
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	159	2	272230 376840
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A6SE (SW)	184	2	272210 376825
	JBA 75 Year Return (undefended) - Fluvial None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273400 377735
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273395 377730
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377725
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273385 377720
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273380 377715
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273375 377710
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273360 377695
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273355 377690
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273350 377685
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273340 377675
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273320 377670
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273485 377820
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273480 377815
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273445 377780
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273440 377775
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273435 377770
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273430 377765
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273425 377760
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273285 377620
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273280 377615
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273275 377610
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273270 377605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273265 377600
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	A7NE (NE)	0	2	272583 377154
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	3	2	273405 377745
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273400 377740
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273370 377710
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273365 377705
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273330 377670
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273300 377640
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273295 377635
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273280 377620
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273275 377615
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273270 377610
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273265 377605
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273255 377600
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	4	2	273510 377850
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273505 377845
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273490 377830
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273485 377825
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273480 377820
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273475 377815
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273470 377810
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273465 377805

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273460 377800
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273415 377760
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273415 377755
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	4	2	273560 377900
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	6	2	273320 377665
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	6	2	273315 377660
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	6	2	273310 377655
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273295 377640
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273245 377595
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	7	2	273460 377805
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273510 377855
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	8	2	273500 377850
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273500 377845
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273495 377840
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273490 377835
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273550 377895
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273545 377890
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273540 377885
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273220 377570
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273215 377565
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NW (NE)	9	2	273210 377560
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273225 377580

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	9	2	273225 377575
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273315 377665
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273310 377660
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273240 377590
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A16SE (NE)	11	2	273520 377870
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273530 377880
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	11	2	273525 377875
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	12	2	272765 377225
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273215 377570
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273210 377565
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273175 377535
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273220 377575
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	13	2	273175 377530
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	13	2	272915 377335
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (NE)	13	2	272785 377240
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	13	2	272770 377230
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	13	2	272750 377215
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	14	2	272960 377365
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272925 377340
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272905 377330
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272875 377305
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272790 377245

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272755 377220
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	14	2	272740 377210
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (E)	14	2	272630 377135
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	15	2	273510 377865
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	272980 377380
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272960 377370
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272930 377345
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272725 377200
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272710 377190
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272880 377310
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272860 377295
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A11SE (NE)	15	2	272845 377285
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272810 377260
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272795 377250
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272775 377235
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	15	2	272760 377225
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	15	2	272670 377160
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	15	2	272655 377154
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272635 377140
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	15	2	272615 377125
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	16	2	273165 377530
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	16	2	273070 377445

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273055 377435
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	272950 377360
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272935 377350
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272895 377325
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272880 377315
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272730 377205
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	16	2	272675 377165
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272860 377300
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	16	2	272850 377290
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	16	2	272830 377275
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272810 377265
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272795 377255
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272780 377240
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272745 377215
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272660 377155
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272640 377145
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	16	2	272620 377130
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	16	2	272600 377115
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (S)	16	2	272585 377105
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	17	2	273040 377425
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	17	2	273090 377460
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273070 377450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	272955 377365
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	17	2	272940 377355
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272715 377195
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	17	2	272700 377185
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	17	2	272680 377170
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272870 377305
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272850 377295
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272830 377280
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272820 377270
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272785 377245
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272735 377210
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272665 377160
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272645 377150
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272625 377135
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272605 377120
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	17	2	272590 377110
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273045 377430
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273095 377465
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273080 377455
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273060 377440
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272890 377320
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272875 377310

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	18	2	272720 377200
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	18	2	272705 377190
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	18	2	272685 377175
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272840 377285
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272825 377275
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272805 377260
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272790 377250
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	18	2	272610 377125
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	18	2	272580 377100
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273025 377420
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	19	2	273015 377410
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	19	2	273100 377470
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273085 377460
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273065 377445
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273050 377435
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272980 377385
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272945 377360
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	19	2	272690 377180
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	19	2	272845 377290
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	19	2	272595 377115
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A7NE (S)	19	2	272565 377090
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	273035 377425

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	273015 377415
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	20	2	273160 377525
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	20	2	273000 377400
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	272985 377390
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	273000 377405
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	21	2	272990 377395
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	22	2	272990 377400
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	23	2	273150 377525
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	23	2	273150 377520
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	23	2	273145 377515
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	23	2	273100 377475
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	24	2	273105 377480
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	25	2	273110 377485
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273145 377520
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273140 377515
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273125 377505
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	27	2	273125 377500
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	27	2	273120 377495
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273120 377500
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273115 377495
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273110 377490
	JBA 100 Year Return (undefended) - Fluvial None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	A7NE (NE)	0	2	272583 377154
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273350 377685
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273340 377675
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273300 377645
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273290 377625
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273285 377620
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273280 377615
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273270 377610
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273270 377605
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273265 377600
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273490 377825
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377820
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273480 377815
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273455 377790
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273450 377785
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273445 377780
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273440 377775
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273435 377770
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273430 377765
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273425 377760
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273400 377735
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273395 377730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377725
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273385 377720
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377715
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273375 377710
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273360 377695
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273355 377690
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273330 377670
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273300 377640
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273295 377635
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273285 377625
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273280 377620
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273265 377605
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273255 377600
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273405 377745
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273400 377740
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273365 377705
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273510 377850
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273505 377845
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273490 377830
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273475 377815
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273470 377810
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273465 377805

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273460 377800
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273430 377770
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273425 377765
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273415 377760
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273415 377755
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	4	2	273560 377900
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273295 377640
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273245 377595
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	7	2	273460 377805
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273540 377885
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273510 377855
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273495 377840
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273490 377835
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273550 377895
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273545 377890
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273235 377585
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	9	2	273220 377575
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273220 377570
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273215 377565
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NW (NE)	9	2	273210 377560
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273240 377590
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273530 377880

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273525 377875
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	11	2	273520 377870
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	12	2	272765 377225
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273215 377570
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273210 377565
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	13	2	272785 377240
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	13	2	272770 377230
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	13	2	272750 377215
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273175 377535
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	13	2	273175 377530
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	13	2	272915 377335
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	14	2	272630 377135
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272875 377305
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A11SE (NE)	14	2	272825 377270
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272790 377245
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272755 377220
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	14	2	272975 377375
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	14	2	272960 377365
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272925 377340
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272905 377330
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	14	2	272740 377210
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	15	2	272670 377160

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	15	2	272655 377154
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272635 377140
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	15	2	272615 377125
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272880 377310
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272860 377295
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (NE)	15	2	272845 377285
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272810 377260
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272795 377250
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272775 377235
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	15	2	272760 377225
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272710 377190
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	272980 377380
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272960 377370
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272930 377345
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272725 377200
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	15	2	273510 377865
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	16	2	272675 377165
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272660 377155
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272640 377145
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	16	2	272620 377130
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	16	2	272600 377115
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (S)	16	2	272585 377105

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	16	2	273070 377445
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273055 377435
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272860 377300
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	16	2	272850 377290
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	16	2	272830 377275
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272810 377265
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272795 377255
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272780 377240
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272745 377215
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	16	2	273165 377530
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	272950 377360
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272935 377350
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272895 377325
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272880 377315
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272730 377205
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272665 377160
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272645 377150
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272625 377135
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272605 377120
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	17	2	272590 377110
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A7NE (S)	17	2	272575 377095
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273085 377460

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273070 377450
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273035 377425
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272870 377305
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272850 377295
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272830 377280
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272820 377270
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272785 377245
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272735 377210
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	17	2	272700 377185
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272680 377170
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	272955 377365
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	17	2	272940 377355
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272715 377195
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	18	2	272610 377125
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	18	2	272580 377100
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273095 377465
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273080 377455
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273060 377440
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273045 377430
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272875 377310
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272840 377285
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272825 377275

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272805 377260
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272790 377250
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	18	2	272705 377190
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	18	2	272685 377175
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272975 377380
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272890 377320
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	18	2	272720 377200
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	19	2	272595 377115
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (S)	19	2	272565 377090
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	19	2	273100 377470
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273065 377445
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273050 377435
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273025 377420
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	19	2	273015 377410
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	19	2	272845 377290
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	19	2	272690 377180
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272980 377385
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272945 377360
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	273015 377415
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	20	2	273000 377400
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	272985 377390
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	20	2	273150 377525

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	273000 377405
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	21	2	272990 377395
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	22	2	272990 377400
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	23	2	273100 377475
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	23	2	273150 377520
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	23	2	273145 377515
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	24	2	273105 377480
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	25	2	273110 377485
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	27	2	273120 377495
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	27	2	273115 377490
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273145 377520
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273140 377515
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273125 377505
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	27	2	273125 377500
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273110 377490
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273120 377500
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273115 377495
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272545 376985
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272880 377280
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272930 377285
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272865 377270
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272860 377265

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272835 377260
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272855 377260
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272890 377255
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A11SE (E)	0	2	272830 377255
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272845 377255
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A11SE (E)	0	2	272825 377245
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272830 377245
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272840 377250
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272825 377240
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272870 377240
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272865 377235
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272795 377230
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272790 377225
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272785 377215
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272790 377220
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273445 377710
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273500 377825
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377835
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273495 377815
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273510 377820
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273515 377815

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273510 377810
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273495 377810
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273520 377810
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273430 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273125 377465
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273105 377450
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273085 377440
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273085 377435
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273070 377425
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273055 377415
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273555 377760
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377760
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273510 377760
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377755
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273505 377755
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273525 377740
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273465 377750
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273490 377745
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273485 377740
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273480 377735
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273465 377725
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273460 377720
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377715
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273530 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273465 377785
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273050 377375
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273505 377780
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273535 377785
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273550 377780
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377780
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273455 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273500 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273530 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273480 377765
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273550 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273525 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273545 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273555 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377765

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273045 377370
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273035 377365
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273010 377345
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272945 377340
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	272940 377335
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272950 377335
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272940 377330
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272935 377325
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272925 377315
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272910 377305
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272905 377300
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272900 377295
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273485 377805
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273520 377805
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273545 377805
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377800
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273530 377800
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273540 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272425 376945
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272410 376940
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272410 376935
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272365 376930

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272370 376930
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272405 376930
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272530 376975
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272405 376935
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272400 376925
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272390 376920
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273375 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273380 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273425 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273415 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273410 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273405 377680
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273390 377670
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273390 377665
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273395 377665
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272455 376960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272460 376960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272465 376960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272435 376955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272450 376955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272435 376950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272445 376950
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273395 377670
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273425 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273430 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273415 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273530 377655
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273545 377655
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273370 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273375 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273490 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273360 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273365 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273410 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273485 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377615
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273375 377655
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377665

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273140 377485
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273230 377550
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273220 377545
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273200 377530
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	0	2	273205 377530
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273190 377515
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273180 377515
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273185 377515
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273180 377510
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273185 377510
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273170 377500
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273165 377500
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273165 377495
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	1	2	272855 377275
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	1	2	272805 377240
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	1	2	273110 377455
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	1	2	273075 377430
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	1	2	273060 377420
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272860 377280
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272840 377265
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	2	2	272825 377255
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273115 377460

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273040 377410
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	2	2	273140 377480
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273130 377470
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273165 377505
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273160 377500
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272865 377285
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	3	2	272845 377270
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	273050 377415
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	272915 377320
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	272895 377305
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272880 377295
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273545 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	273115 377465
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273505 377845
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	273105 377455
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	4	2	273070 377430
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	4	2	273055 377420
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272935 377335
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272920 377325
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272900 377310
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	4	2	272885 377300
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	5	2	272870 377290

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272955 377350
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272940 377340
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272905 377315
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272890 377305
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	5	2	273125 377470
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	273080 377440
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	273045 377415
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272945 377345
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272925 377330
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272910 377320
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	6	2	272360 376925
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273550 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	7	2	273100 377455
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	7	2	273065 377430
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	8	2	272360 376920
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	8	2	273545 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	9	2	272355 376930
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	9	2	273125 377475
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	11	2	272355 376925
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	13	2	272355 376920
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	15	2	273520 377875
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	15	2	273505 377870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	16	2	273545 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	18	2	273505 377865
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	22	2	273500 377865
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	25	2	273495 377865
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	26	2	272340 376920
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	28	2	273560 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	29	2	273495 377875
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	30	2	272340 376910
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	32	2	273480 377865
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	36	2	273490 377875
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	42	2	272420 377040
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	42	2	272370 377015
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	43	2	272380 377020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	44	2	272325 376910
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	44	2	272365 377015
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	45	2	272375 377020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	50	2	272325 376895
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	51	2	272425 377045
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	55	2	272320 376895
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	57	2	272320 376890
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	61	2	272315 376890
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	111	2	272270 376870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	113	2	272270 376865
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	128	2	272255 376860
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	130	2	272255 376855
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	146	2	272240 376850
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7SW (SW)	148	2	272240 376845
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	164	2	272225 376840
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7SW (SW)	166	2	272225 376835
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	170	2	272220 376835
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7SW (SW)	172	2	272220 376830
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A6SE (SW)	184	2	272210 376825
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	193	2	272200 376825
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A6SE (SW)	197	2	272200 376815
	JBA 200 Year Return (undefended) - Fluvial None				
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273485 377820
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273490 377820
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377815
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273485 377815
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273490 377815
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273475 377810
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273465 377800
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273460 377795
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273455 377790

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377785
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377780
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377775
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377770
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273430 377765
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273425 377760
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377735
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273395 377730
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377725
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273385 377720
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377715
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273375 377710
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273370 377705
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273365 377700
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273360 377695
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273355 377690
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273350 377680
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273330 377675
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273345 377675
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273290 377625
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273285 377620
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273265 377605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273265 377600
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	A7NE (NE)	0	2	272583 377154
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	3	2	273410 377750
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273405 377745
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	3	2	273255 377595
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273330 377670
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273300 377640
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273285 377625
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273255 377600
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273500 377840
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	4	2	273495 377835
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273490 377830
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273470 377810
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273465 377805
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273440 377780
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273510 377850
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273505 377845
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273435 377775
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273430 377770
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273425 377765
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273415 377760
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273415 377755

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	4	2	273560 377900
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273245 377595
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	6	2	273245 377590
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273300 377645
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273550 377895
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273545 377890
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273540 377885
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273235 377585
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	9	2	273215 377570
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273215 377565
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273210 377560
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NW (NE)	9	2	273205 377555
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NW (NE)	9	2	273200 377550
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NW (NE)	9	2	273195 377545
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NW (NE)	9	2	273190 377540
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NW (NE)	9	2	273185 377535
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273240 377590
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273510 377860
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A16SE (NE)	11	2	273515 377865
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	11	2	272915 377330
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A11SE (E)	11	2	272760 377220
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273530 377880

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273525 377875
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	11	2	273520 377870
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (E)	12	2	272780 377235
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	12	2	272765 377225
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273210 377565
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273175 377535
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	13	2	273175 377530
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	13	2	272915 377335
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (NE)	13	2	272870 377300
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	13	2	272785 377240
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	13	2	272770 377230
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	13	2	272750 377215
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	14	2	272975 377375
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272955 377365
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272925 377340
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272905 377330
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272875 377305
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272825 377270
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272790 377245
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272755 377220
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272740 377210
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (E)	14	2	272650 377150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	14	2	272630 377135
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	15	2	273085 377455
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	272980 377380
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272930 377345
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272790 377250
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	15	2	272895 377320
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272875 377310
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272860 377295
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272845 377285
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	15	2	272810 377260
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272710 377190
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272775 377235
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	15	2	272760 377225
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	15	2	272725 377200
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	15	2	272670 377160
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272655 377154
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272635 377140
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	15	2	272615 377125
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273070 377445
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273055 377435
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	16	2	272985 377385
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	272950 377360

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272935 377350
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272800 377255
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	16	2	273165 377530
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NW (NE)	16	2	273165 377525
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272895 377325
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272885 377315
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272860 377300
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272845 377290
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	16	2	272830 377275
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272815 377265
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272780 377240
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272745 377215
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272730 377205
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	16	2	272675 377165
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272660 377155
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272640 377145
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	16	2	272620 377130
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SE)	16	2	272600 377115
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (S)	16	2	272585 377105
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273090 377460
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273075 377450
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273035 377425

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	17	2	273025 377415
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	272940 377355
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272785 377245
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272870 377305
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272855 377295
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272830 377280
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272820 377270
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272715 377195
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272700 377185
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272680 377170
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272645 377150
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272625 377135
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272605 377120
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	17	2	272590 377110
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (S)	17	2	272575 377095
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273095 377465
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273080 377455
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273060 377440
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273045 377430
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	18	2	273010 377405
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272975 377380
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272890 377320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272840 377285
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272825 377275
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	18	2	272805 377260
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	18	2	272720 377200
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	18	2	272685 377175
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	18	2	272580 377100
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273100 377470
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273065 377445
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273050 377435
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273025 377420
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	19	2	273015 377410
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272980 377385
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	272945 377360
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	19	2	272690 377180
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (S)	19	2	272565 377090
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	20	2	273105 377475
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	273015 377415
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	20	2	273000 377400
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	272985 377390
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	20	2	273155 377525
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	273000 377405
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	272990 377395

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	22	2	273010 377410
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	22	2	272995 377400
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	23	2	273145 377520
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	23	2	273145 377515
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	23	2	273140 377510
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	24	2	273105 377480
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	25	2	273110 377485
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	27	2	273125 377500
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	27	2	273120 377495
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	27	2	273115 377490
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273140 377515
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273135 377510
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273125 377505
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273120 377500
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273115 377495
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	30	2	273110 377490
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273185 377510
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SE (NE)	0	2	273230 377510
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273170 377505
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SE (NE)	0	2	273225 377505
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273165 377500
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273170 377500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273160 377495
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273165 377495
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273210 377495
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273155 377490
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273205 377490
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273145 377485
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273145 377480
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273190 377480
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273185 377475
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	272940 377335
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272910 377265
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272835 377260
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272855 377260
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272845 377255
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A11SE (E)	0	2	272825 377245
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272835 377250
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272840 377250
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272830 377245
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272825 377240
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273395 377720
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273455 377720
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377715

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377715
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273450 377715
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273385 377710
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273415 377710
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377710
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273445 377710
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273435 377705
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273430 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273420 377695
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273485 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273230 377545
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273280 377545
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273210 377540
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273205 377535
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	0	2	273200 377530
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273190 377525
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	0	2	273195 377525
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NW (NE)	0	2	273200 377525
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	0	2	273205 377525
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273250 377525
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273185 377520
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273190 377520

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273180 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273185 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273190 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SE (NE)	0	2	273235 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273175 377510
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	0	2	273180 377510
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273405 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273370 377610
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273050 377410
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273070 377390
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273065 377385
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273055 377380
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273050 377375
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273055 377370
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272945 377340
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272470 376965
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272450 376960
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272460 376960
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272465 376960
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (S)	0	2	272515 376970
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272435 376955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272450 376955

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272455 376955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272495 376955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272435 376950
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273370 377655
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273390 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273500 377650
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273520 377650
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273360 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273370 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273490 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273530 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273355 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273430 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (S)	0	2	272520 376970
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272370 376930
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272445 376950
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272415 376945
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272420 376945
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272425 376945
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272405 376940
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	0	2	272880 377280

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272930 377285
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272925 377280
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272930 377280
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272875 377275
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272915 377275
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272865 377270
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272910 377270
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272915 377270
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272860 377265
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272905 377265
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273090 377440
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273085 377435
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273060 377420
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273065 377420
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273055 377415
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273060 377415
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272895 377290
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272910 377290
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272870 377240
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272795 377230
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272810 377230
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272790 377225

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	0	2	272785 377220
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272785 377215
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272830 377210
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	0	2	272825 377205
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272415 376935
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272410 376930
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	0	2	272415 376940
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272400 376925
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (S)	0	2	272555 376990
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272490 376955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	0	2	272390 376920
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273370 377690
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273415 377690
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273370 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273405 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273410 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377615
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273345 377595
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273335 377585
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273315 377570

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273245 377565
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273305 377565
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273300 377560
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273230 377555
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273290 377555
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273225 377550
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273230 377550
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273285 377550
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273425 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273410 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273480 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273430 377620
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273510 377825
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273515 377820
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273520 377815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273560 377815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377830
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273550 377785
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273560 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273535 377780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377775
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273530 377775
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273525 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377765
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377760
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273510 377760
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273425 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273505 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273420 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272950 377335
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272940 377330
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272935 377325
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272925 377315
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272910 377305
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272905 377300
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272950 377300
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	272900 377295
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	272905 377295
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (E)	0	2	272945 377295

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (E)	0	2	272950 377295
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273175 377470
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273125 377465
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273170 377465
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273165 377460
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	0	2	273160 377455
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273555 377810
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377745
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273495 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	0	2	273100 377455
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273395 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273390 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273510 377810
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273545 377805
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273550 377805
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377800
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273530 377800
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273540 377800
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273465 377795
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273540 377795
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377790
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273490 377790

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273545 377790
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273550 377790
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273455 377785
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273535 377785
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273455 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273535 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377745
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377745
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273490 377745
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273415 377740
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273425 377735
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273455 377740
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273485 377740
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273410 377735
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273435 377735
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273475 377735
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273405 377730
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273435 377730
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273470 377730
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377725
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377725
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273465 377725

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273380 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273385 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273375 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12NE (NE)	0	2	273385 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273390 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	1	2	272805 377240
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	1	2	273030 377405
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	1	2	272855 377275
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	1	2	273090 377445
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	1	2	273070 377430
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273165 377505
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273160 377500
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273155 377495
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273150 377490
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	2	2	273130 377475
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	2	2	272825 377255
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	2	2	273170 377510
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273040 377410
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272860 377280
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	2	2	272840 377265
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273130 377470
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	2	2	273115 377460

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272865 377285
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	3	2	272845 377270
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	3	2	273085 377440
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	3	2	273050 377415
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	3	2	272915 377320
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	3	2	272880 377295
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	3	2	273120 377465
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	3	2	273100 377450
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272935 377335
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	4	2	272850 377275
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	4	2	273055 377420
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272920 377325
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	4	2	272900 377310
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	4	2	272885 377300
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	273150 377495
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	273145 377490
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	5	2	273140 377485
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A12SW (NE)	5	2	273125 377470
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	273025 377400
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272955 377350
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272940 377340
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	5	2	272870 377290

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272905 377315
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	272890 377305
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	5	2	273105 377460
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272945 377345
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	6	2	273080 377440
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272925 377330
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	6	2	272910 377320
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	6	2	273095 377450
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	7	2	273120 377470
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	7	2	273050 377420
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	7	2	273085 377445
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	8	2	273070 377435
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	8	2	273510 377855
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	8	2	273090 377450
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	9	2	273130 377480
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	9	2	273125 377475
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	11	2	273515 377865
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	14	2	273540 377635
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	15	2	273520 377880
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	15	2	273520 377875
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	15	2	273515 377870
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	18	2	273500 377875

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	18	2	273515 377875
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	20	2	272345 376925
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	21	2	273545 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	40	2	272375 377015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	41	2	272360 377010
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	41	2	272400 377025
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	42	2	272520 377085
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	42	2	272370 377015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	42	2	272430 377045
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	42	2	272540 377100
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	43	2	272510 377080
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	43	2	272525 377090
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	43	2	272545 377105
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	44	2	272530 377095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (SW)	44	2	272550 377110
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	45	2	272520 377090
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	46	2	272330 376895
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	46	2	272540 377105
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	47	2	272435 377045
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	47	2	272525 377095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	48	2	272495 377075
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	48	2	272530 377100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	50	2	272440 377050
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	51	2	272490 377075
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	51	2	272450 377055
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NW (SW)	54	2	272455 377060
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A7NW (SW)	57	2	272315 376900
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	A7NW (SW)	68	2	272305 376895
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	70	2	272310 376880
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	81	2	272300 376875
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	104	2	272275 376875
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	105	2	272280 376860
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	123	2	272265 376850
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	133	2	272250 376860
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NW (SW)	151	2	272235 376850
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7SW (SW)	175	2	272215 376835
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	193	2	272200 376825
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	199	2	272195 376820
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	210	2	272185 376815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	217	2	272180 376810
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A6NE (SW)	236	2	272135 376865
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A6SE (SW)	237	2	272165 376795
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A6NE (SW)	243	2	272130 376860
	JBA 1000 Year Return (undefended) - Fluvial None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273405 377740
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273295 377630
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273290 377625
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273280 377615
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273275 377610
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273270 377605
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273260 377600
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273500 377825
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273500 377820
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273505 377815
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273500 377810
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273505 377810
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273470 377805
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273490 377805
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273495 377805
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273455 377795
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273465 377800
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273470 377800
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273480 377800
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273460 377795
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273465 377795
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273455 377790

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273460 377790
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273450 377785
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273455 377785
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273445 377780
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273450 377780
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273440 377775
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	0	2	273445 377775
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273420 377760
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273420 377755
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273400 377730
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273395 377725
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273390 377720
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273385 377715
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	0	2	273380 377710
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273370 377705
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273365 377700
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273355 377685
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273350 377680
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273345 377675
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	0	2	273325 377670
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	0	2	273335 377670
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	A7NE (NE)	0	2	272583 377154

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	1	2	273510 377845
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273410 377750
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273315 377655
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273310 377650
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273305 377645
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273295 377635
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	3	2	273290 377630
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273255 377595
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	3	2	273325 377665
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	3	2	273320 377660
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	4	2	273560 377900
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	4	2	273555 377895
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	4	2	273500 377840
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273450 377790
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273445 377785
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273440 377780
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	4	2	273410 377755
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273305 377650
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273250 377595
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NE (NE)	6	2	273245 377590
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NE (NE)	6	2	273240 377585
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12NE (NE)	6	2	273235 377580

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273320 377665
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273315 377660
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	6	2	273310 377655
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273545 377890
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	8	2	273540 377885
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A16SE (NE)	8	2	273535 377880
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A16SE (NE)	8	2	273515 377860
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273235 377585
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273230 377580
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	9	2	273225 377575
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	9	2	273205 377560
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273205 377555
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273200 377550
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273195 377545
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273190 377540
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	9	2	273185 377535
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12NW (NE)	9	2	273180 377530
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NE (NE)	10	2	273240 377590
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A12SW (NE)	10	2	272925 377335
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (E)	10	2	272775 377230
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273530 377880
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273525 377875

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A16SE (NE)	11	2	273520 377870
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A16SE (NE)	11	2	273515 377865
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	11	2	272915 377330
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	11	2	272760 377220
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	12	2	272970 377370
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	12	2	272780 377235
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	12	2	272765 377225
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273200 377555
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273195 377550
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273190 377545
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273185 377540
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273180 377535
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	13	2	273170 377530
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	13	2	272920 377335
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	13	2	272905 377325
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	13	2	272870 377300
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	13	2	272855 377290
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	13	2	272955 377360
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	13	2	272820 377265
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A7NE (E)	13	2	272665 377155
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A7NE (E)	13	2	272645 377145
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	A7NE (SE)	13	2	272625 377130

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	13	2	272785 377240
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	13	2	272770 377230
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	13	2	272745 377215
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (E)	13	2	272735 377205
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272925 377340
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272910 377330
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	14	2	272870 377305
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272840 377280
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	14	2	272975 377375
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	14	2	272955 377365
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272825 377270
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A11SE (NE)	14	2	272805 377255
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (E)	14	2	272650 377150
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	14	2	272630 377135
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	14	2	272790 377245
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272755 377220
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	14	2	272740 377210
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A11SE (E)	14	2	272720 377195
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	273085 377455
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	273050 377430
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272930 377345
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	15	2	272895 377320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272880 377310
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272855 377295
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272840 377285
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272975 377380
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	15	2	272965 377370
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272810 377260
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272655 377154
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272635 377140
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	15	2	272615 377125
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272795 377250
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	15	2	272775 377235
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	15	2	272725 377200
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	15	2	272710 377190
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	15	2	272670 377160
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12NW (NE)	16	2	273165 377525
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273070 377445
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	273055 377435
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	273035 377420
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272900 377325
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272885 377315
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272865 377300
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	16	2	272985 377385

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272970 377375
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272945 377360
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	16	2	272935 377350
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272825 377275
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272815 377265
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	16	2	272800 377255
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272660 377155
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272640 377145
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	16	2	272620 377130
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	16	2	272600 377115
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	16	2	272585 377105
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	16	2	272730 377205
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	16	2	272675 377165
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273090 377460
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273075 377450
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	273040 377425
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	17	2	273025 377415
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272835 377280
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	17	2	272940 377355
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (NE)	17	2	272820 377270
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (SE)	17	2	272605 377120
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	17	2	272590 377110

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A7NE (S)	17	2	272575 377095
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272715 377195
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A11SE (E)	17	2	272700 377185
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	17	2	272680 377170
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273095 377465
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273080 377455
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273060 377440
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	273045 377430
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	18	2	272890 377320
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	18	2	273010 377405
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	18	2	272580 377100
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	18	2	272685 377175
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273100 377470
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273065 377445
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273030 377420
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	19	2	273010 377410
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (S)	19	2	272565 377090
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A7NE (E)	19	2	272690 377180
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12NW (NE)	20	2	273155 377525
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	20	2	273155 377520
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	20	2	273105 377475
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	273020 377415

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	272995 377400
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	20	2	272985 377390
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	273005 377405
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	21	2	272990 377395
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	23	2	273140 377515
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	23	2	273140 377510
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	A12SW (NE)	23	2	273135 377505
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	24	2	273105 377480
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	25	2	273110 377485
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273135 377510
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273130 377505
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	A12SW (NE)	27	2	273115 377495
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	A12SW (NE)	27	2	273115 377490
	JBA Canal Failure Coverage Coverage: This area has not been mapped for risk of flooding from canal or aqueduct failure or breach.	A7NE (NE)	0	2	272583 377154
	JBA Canal Failure None				
	JBA Dam Break Coverage Coverage: This area has been mapped for flooding from dam or reservoir embankment failure or breach.	A7NE (NE)	0	2	272583 377154
	JBA Dam Break Coverage Coverage: This area has not been mapped for flooding from dam or reservoir embankment failure or breach.	A11SW (NW)	188	2	272420 377316
	JBA Dam Break None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	A7NE (NE)	0	3	272583 377154
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(NE)	0	3	273703 378040
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(NE)	0	3	273724 378050
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(NE)	0	3	273860 378090
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	(NE)	0	3	274047 378061
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NE (SE)	1	3	272589 377150
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NW (SW)	27	3	272360 376996
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NW (SW)	62	3	272290 376968
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NW (SW)	72	3	272280 376955
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NW (SW)	84	3	272270 376942
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A7NW (SW)	96	3	272260 376930
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6NE (SW)	180	3	272190 376880
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	348	3	272050 376781
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	359	3	272040 376775
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	382	3	272020 376765
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	404	3	272000 376755

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	494	3	271920 376714
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	516	3	271900 376704
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SE (SW)	538	3	271880 376694
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SW (SW)	561	3	271860 376684
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SW (SW)	638	3	271790 376650
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SW (SW)	661	3	271770 376641
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	A6SW (SW)	672	3	271760 376636
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (E)	0	3	273100 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	3	273600 377850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	3	273250 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	3	273350 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	0	3	272850 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	272900 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (E)	0	3	272950 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NE (NE)	0	3	272583 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	3	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (E)	0	3	272900 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (E)	0	3	272950 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	3	273700 377700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	3	273750 377700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	273100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SE)	0	3	273000 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	273150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (NE)	0	3	273200 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	273050 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	273100 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SW (NE)	0	3	273150 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NE)	0	3	273550 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	0	3	273700 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(NE)	0	3	273700 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	272950 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SW (NE)	0	3	273200 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (NE)	0	3	273250 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (E)	4	3	272950 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	19	3	274050 378150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (E)	54	3	273550 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	93	3	274150 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (E)	97	3	273550 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(NE)	104	3	274200 378050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (E)	116	3	273000 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NE (SE)	126	3	272850 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	131	3	274050 377750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SE)	132	3	272900 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (E)	140	3	273550 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	147	3	273650 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SE)	161	3	272900 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SE)	174	3	272950 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	190	3	273650 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (SW)	217	3	272300 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	233	3	272200 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	258	3	273700 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	269	3	272200 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	294	3	272100 376800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	303	3	272450 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (SW)	312	3	272300 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	326	3	272900 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A7SW (SW)	328	3	272250 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	345	3	273700 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	349	3	273450 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	349	3	273400 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	353	3	272450 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	354	3	274150 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SW (S)	354	3	272350 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	360	3	272050 376750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	363	3	273300 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (SE)	372	3	272900 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	381	3	274100 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	383	3	273450 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	389	3	273400 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6SE (SW)	394	3	272200 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	397	3	274150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (S)	403	3	272400 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	404	3	272350 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	404	3	272450 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6SE (SW)	413	3	272050 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	415	3	274100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	420	3	272900 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	420	3	273850 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	420	3	273400 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (SW)	422	3	272250 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	431	3	273550 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	445	3	272050 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	448	3	272100 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	452	3	273350 376900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SE (SE)	453	3	272850 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	453	3	272400 376450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	458	3	274100 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	462	3	272150 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (SE)	467	3	272900 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	475	3	273600 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	475	3	273700 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	489	3	272100 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A7SE (SE)	501	3	272850 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	518	3	273700 377150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (SW)	518	3	271900 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	533	3	272200 376400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (E)	543	3	273450 376850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	545	3	274100 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	567	3	272250 376350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NE (S)	578	3	272800 376450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	580	3	272200 376350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	582	3	274000 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NE (S)	586	3	272700 376400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NE (S)	605	3	272750 376400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	607	3	274050 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	625	3	274000 377154
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (SW)	634	3	271850 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	657	3	271900 376450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	659	3	271950 376400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	663	3	272100 376300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A2NW (SW)	663	3	271850 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	668	3	274000 377150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	676	3	272200 376250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A2NW (SW)	694	3	271850 376450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (SW)	696	3	271750 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	(SE)	750	3	273600 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NE (S)	753	3	272650 376200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3SW (S)	757	3	272500 376150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(E)	762	3	274100 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3SE (S)	763	3	272550 376150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SE (SE)	766	3	273550 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NE (SW)	768	3	271900 376300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	779	3	273650 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NW (SW)	787	3	271700 376500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NW (SW)	800	3	271850 376300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3SW (S)	806	3	272500 376100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (SW)	807	3	271650 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3SE (S)	813	3	272550 376100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2SE (SW)	849	3	272100 376100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A2NW (SW)	856	3	271650 376450

BGS Flood Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3SE (S)	862	3	272583 376050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3SW (S)	903	3	272350 376000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SE)	914	3	273800 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3SE (S)	959	3	272700 376000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(E)	960	3	274150 376900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	0	2	273840 378075
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (NE)	0	2	272583 377154
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273475 377750
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	0	2	274025 378120
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273395 377725
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	A7NE (SE)	0	2	272615 377120
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273510 377775
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273500 377770
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273535 377800
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273355 377665
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273365 377700
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273520 377785
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273515 377780
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273495 377765
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	0	2	273490 377760
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	3	2	273385 377725

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A12NE (NE)	3	2	273395 377735
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	11	2	272495 377060
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	11	2	272565 377080
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	11	2	272545 377065
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	12	2	272695 377175
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	12	2	272660 377154
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	12	2	272640 377140
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (SE)	12	2	272620 377125
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	12	2	272585 377100
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	12	2	272570 377085
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	12	2	272530 377055
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	12	2	272515 377045
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	12	2	272550 377070
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	12	2	272675 377160
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	13	2	272700 377180
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	13	2	272665 377155

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	13	2	272645 377145
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (SE)	13	2	272625 377130
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (SE)	13	2	272605 377115
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	13	2	272575 377090
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	13	2	272520 377050
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NW (SW)	13	2	272535 377060
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	13	2	272680 377165
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (S)	13	2	272590 377105
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	14	2	272720 377195
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	14	2	272705 377185
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	14	2	272650 377150
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	14	2	272630 377135
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (SE)	14	2	272610 377120
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A7NE (E)	14	2	272685 377170
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	15	2	272725 377200
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	15	2	272710 377190

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	16	2	272765 377230
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	16	2	272745 377215
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (E)	16	2	272730 377205
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	17	2	272770 377235
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	18	2	272790 377250
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	19	2	272775 377240
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	19	2	272810 377265
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	19	2	272795 377255
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	20	2	272780 377245
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	23	2	272845 377295
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SE (NE)	24	2	272850 377300
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	118	2	274170 378215
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	125	2	274175 378220
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A11SW (NW)	269	2	272405 377280
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SE (SW)	456	2	271965 376705
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6NW (W)	531	2	271815 376915

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	A2NE (SW)	668	2	271891 376443
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	690	2	274125 378830
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SW (SW)	705	2	271745 376590
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	706	2	274000 378895
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	707	2	274115 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SW (SW)	720	2	271730 376585
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	725	2	274085 378855
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SW (SW)	731	2	271720 376580
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	734	2	274065 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	739	2	274155 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SW (SW)	743	2	271710 376575
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	747	2	274130 378875
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	755	2	274085 378885
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A6SW (SW)	830	2	271630 376540
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	A1NE (SW)	937	2	271530 376500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 26.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12SW (E)	0	4	273088 377305
2	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 18.9 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12SW (E)	0	4	273088 377305
3	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 72.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12SW (E)	0	4	273068 377348
4	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 677.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12NE (NE)	0	4	273505 377813
5	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 425.6 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	0	4	272568 377087
6	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	0	4	272580 377076
7	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 21.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12NE (NE)	7	4	273495 377840
8	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Lake Watercourse Length: 3.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	19	4	272566 377090
9	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 6.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A12NE (NE)	22	4	273495 377856

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 2.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	22	4	272566 377091
11	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 117.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	82	4	272662 376930
12	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 112.5 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	109	4	272674 376906
13	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 42.5 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	114	4	272569 376857
14	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 15.5 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NE (S)	114	4	272569 376857
15	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 31.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NW (SW)	122	4	272268 376847
16	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 63.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (S)	128	4	272579 376845
17	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 71.6 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SW (SW)	149	4	272245 376831
18	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 3.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SW (SW)	149	4	272243 376834

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 17.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SW (SW)	150	4	272232 376847
20	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 65.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7NW (SW)	155	4	272212 376872
21	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 251.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SW (SW)	164	4	272281 376769
22	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 48.7 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (SE)	236	4	272813 376816
23	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 51.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (SE)	271	4	272794 376773
24	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 292.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (SE)	320	4	272772 376715
25	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 19.7 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (SE)	322	4	272809 376724
26	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 121.8 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SW (S)	359	4	272333 376547
27	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 58.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A7SE (SE)	364	4	272824 376685

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 183.9 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3NW (S)	458	4	272401 376446
29	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 240.6 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A6SW (SW)	594	4	271818 376683
30	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 208.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3NW (S)	597	4	272514 376323
31	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 102.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3NW (S)	597	4	272514 376323
32	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 126.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2NE (SW)	603	4	271974 376453
33	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 317.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2NE (SW)	647	4	272120 376309
34	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 163.2 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2NE (SW)	652	4	271990 376378
35	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 88.3 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2NE (SW)	652	4	271990 376378
36	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 121.2 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	747	4	272309 376159

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 134.2 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SE (S)	779	4	272634 376168
38	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 81.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2NE (SW)	785	4	271998 376215
39	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 29.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (SW)	837	4	272029 376141
40	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Lake Watercourse Length: 6.5 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (SW)	837	4	272029 376141
41	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Lake Watercourse Length: 5.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (SW)	857	4	272039 376115
42	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 189.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	859	4	272249 376054
43	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 145.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (SW)	861	4	272040 376110
44	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 121.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	909	4	272545 376010
45	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 147.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SE (S)	913	4	272681 376042

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 250.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (SW)	924	4	271885 376120
47	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 5.7 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (S)	926	4	272207 375993
48	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 61.9 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	929	4	272212 375989
49	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 231.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SE (S)	931	4	272572 375993
50	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 113.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	934	4	272452 375972
51	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 41.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (S)	956	4	272106 375985
52	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 124.3 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A3SW (S)	973	4	272381 375930
53	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Lake Watercourse Length: 30.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (S)	980	4	272094 375964
54	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 209.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (S)	989	4	272122 375948

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
55	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 4.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	A2SE (S)	989	4	272122 375948
56	**OS Water Network Nodes** Hydronode Category: Source	A12SW (E)	0	4	273097 377281
57	**OS Water Network Nodes** Hydronode Category: Source	A12SW (E)	0	4	273106 377302
58	**OS Water Network Nodes** Hydronode Category: Junction	A12SW (E)	0	4	273088 377305
59	**OS Water Network Nodes** Hydronode Category: Outlet	A12SW (NE)	0	4	273060 377371
60	**OS Water Network Nodes** Hydronode Category: Source	A7NE (S)	0	4	272582 377073
61	**OS Water Network Nodes** Hydronode Category: Outlet	A7NE (S)	3	4	272580 377076
62	**OS Water Network Nodes** Hydronode Category: Pseudo	A12NE (NE)	7	4	273500 377839
63	**OS Water Network Nodes** Hydronode Category: Pseudo	A7NE (S)	19	4	272568 377087
64	**OS Water Network Nodes** Hydronode Category: Pseudo	A12NE (NE)	22	4	273495 377856
65	**OS Water Network Nodes** Hydronode Category: Pseudo	A7NE (S)	22	4	272566 377090
66	**OS Water Network Nodes** Hydronode Category: Outlet	A7NE (S)	24	4	272564 377091
67	**OS Water Network Nodes** Hydronode Category: Outlet	A16SE (NE)	28	4	273493 377862
68	**OS Water Network Nodes** Hydronode Category: Source	A7NE (S)	82	4	272662 376930
69	**OS Water Network Nodes** Hydronode Category: Source	A7NE (S)	109	4	272674 376906
70	**OS Water Network Nodes** Hydronode Category: Junction	A7NE (S)	114	4	272569 376857
71	**OS Water Network Nodes** Hydronode Category: Outlet	A7SW (S)	120	4	272537 376837
72	**OS Water Network Nodes** Hydronode Category: Source	A7NW (SW)	122	4	272268 376847
73	**OS Water Network Nodes** Hydronode Category: Junction	A7SE (S)	128	4	272579 376845

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
74	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SW (SW)	149	4	272245 376831
75	**OS Water Network Nodes** Hydronode Category: Junction	A7SW (SW)	150	4	272243 376834
76	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SW (SW)	155	4	272232 376847
77	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SW (SW)	164	4	272281 376769
78	**OS Water Network Nodes** Hydronode Category: Source	A7SW (S)	165	4	272546 376791
79	**OS Water Network Nodes** Hydronode Category: Outlet	A6NE (SW)	171	4	272192 376899
80	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SE (SE)	236	4	272813 376816
81	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SE (SE)	271	4	272794 376773
82	**OS Water Network Nodes** Hydronode Category: Junction	A7SE (SE)	322	4	272809 376724
83	**OS Water Network Nodes** Hydronode Category: Source	A7SE (SE)	340	4	272816 376707
84	**OS Water Network Nodes** Hydronode Category: Pseudo	A7SW (S)	359	4	272333 376547
85	**OS Water Network Nodes** Hydronode Category: Outlet	A7SE (SE)	364	4	272824 376685
86	**OS Water Network Nodes** Hydronode Category: Source	A7SE (SE)	421	4	272845 376632
87	**OS Water Network Nodes** Hydronode Category: Pseudo	A3NW (S)	458	4	272401 376446
88	**OS Water Network Nodes** Hydronode Category: Source	A3NE (S)	511	4	272731 376494
89	**OS Water Network Nodes** Hydronode Category: Junction	A3NW (S)	597	4	272514 376323
90	**OS Water Network Nodes** Hydronode Category: Outlet	A6SW (SW)	600	4	271818 376683
91	**OS Water Network Nodes** Hydronode Category: Pseudo	A2NE (SW)	613	4	271937 376475
92	**OS Water Network Nodes** Hydronode Category: Junction	A2NE (SW)	652	4	271990 376378
93	**OS Water Network Nodes** Hydronode Category: Source	A3NE (S)	659	4	272609 376286

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	**OS Water Network Nodes** Hydronode Category: Pseudo	A2NE (SW)	664	4	272057 376321
95	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SW (S)	747	4	272309 376159
96	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SE (S)	779	4	272634 376168
97	**OS Water Network Nodes** Hydronode Category: Pseudo	A2NE (SW)	785	4	271998 376215
98	**OS Water Network Nodes** Hydronode Category: Junction	A2SE (SW)	837	4	272029 376141
99	**OS Water Network Nodes** Hydronode Category: Source	A2SE (SW)	840	4	272033 376136
100	**OS Water Network Nodes** Hydronode Category: Pseudo	A2SE (SW)	857	4	272039 376115
101	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SW (S)	859	4	272249 376054
102	**OS Water Network Nodes** Hydronode Category: Pseudo	A2SE (SW)	861	4	272040 376110
103	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SE (S)	913	4	272681 376042
104	**OS Water Network Nodes** Hydronode Category: Outlet	A2SE (SW)	924	4	271885 376120
105	**OS Water Network Nodes** Hydronode Category: Outlet	A2SE (S)	926	4	272207 375993
106	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SW (S)	929	4	272212 375989
107	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SE (S)	931	4	272572 375993
108	**OS Water Network Nodes** Hydronode Category: Pseudo	A3SW (S)	943	4	272477 375966
109	**OS Water Network Nodes** Hydronode Category: Pseudo	A2SE (S)	956	4	272106 375985
110	**OS Water Network Nodes** Hydronode Category: Source	A3SW (S)	970	4	272251 375941
111	**OS Water Network Nodes** Hydronode Category: Junction	A3SW (S)	973	4	272381 375930
112	**OS Water Network Nodes** Hydronode Category: Source	A2SE (S)	980	4	272094 375964
113	**OS Water Network Nodes** Hydronode Category: Source	A2SE (SW)	980	4	272069 375973

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
114	**OS Water Network Nodes** Hydronode Category: Junction	A2SE (S)	989	4	272122 375948
115	**OS Water Network Nodes** Hydronode Category: Pseudo	A2SE (S)	991	4	272119 375946

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	0	1	273380 377690
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273851 378080
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	0	1	273550 377800
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273912 378090
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273924 378095
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	274000 378125
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (NE)	0	1	272583 377154
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273670 377995
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273654 377980
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273605 377695
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273650 377704
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	0	1	273400 377705
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	0	1	273600 377750
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	0	1	273500 377775

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	0	1	273541 377795
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A16SE (NE)	5	1	273550 377890
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	10	1	273394 377740
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273350 377700
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273375 377725
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273382 377730
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273388 377735
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273400 377745
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	11	1	273300 377655
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NE (NE)	14	1	273250 377610
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NW (SW)	18	1	272515 377050
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (S)	18	1	272555 377080
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (S)	18	1	272560 377083
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (S)	18	1	272575 377095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NW (NE)	18	1	273200 377565
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (S)	19	1	272580 377098
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (SE)	19	1	272608 377120
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (SE)	19	1	272615 377125
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (SE)	19	1	272622 377130
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (E)	19	1	272635 377140
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NE (E)	19	1	272642 377145
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	19	1	273654 377700
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (E)	20	1	272702 377190
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (NE)	21	1	272750 377225
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	21	1	273650 377660
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (NE)	22	1	272757 377230
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (NE)	22	1	272764 377235
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (NE)	23	1	272771 377240

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SE (NE)	23	1	272778 377245
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12NW (NE)	27	1	273150 377530
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A7NW (SW)	30	1	272405 377012
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12SW (NE)	36	1	273026 377440
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12SW (NE)	36	1	273100 377490
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12SW (NE)	37	1	273014 377430
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12SW (NE)	38	1	273002 377420
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A12SW (NE)	38	1	273008 377425
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	67	1	274100 378195
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	68	1	273665 377645
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	93	1	273750 377650
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	110	1	273750 377634
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	113	1	274150 378225
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	114	1	273775 377650

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	122	1	273800 377550
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	130	1	273750 377600
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	134	1	273780 377315
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	145	1	274176 378245
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	168	1	273799 377324
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	251	1	273850 377530
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	A11SW (NW)	340	1	272382 377351
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	436	1	273795 377295
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	489	1	273857 377275
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	499	1	273859 377250
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	616	1	273895 377150
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	635	1	273950 377154
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	643	1	273950 377150
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	664	1	273955 377129

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	670	1	273955 377122
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	678	1	273960 377116
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	685	1	273955 377105
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	694	1	274000 377120
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	705	1	273986 377100
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	744	1	274005 377065
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	763	1	274025 377055
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	769	1	274028 377050
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	853	1	274110 377000
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	878	1	274150 376995
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	907	1	274132 376950
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	914	1	274145 376950
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	917	1	274145 376946
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	921	1	274150 376945

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	938	1	274175 376939
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	950	1	274185 376932
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	980	1	274190 376900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Postcode Sector Flood Insurance Claim Ratings Insurance Rating: Low Flood Insurance Claim Rating Postcode Sector: LL34 6	A7NE (NE)	0	2	272583 377154

EA / NRW / CEH Flood Data	Version	Update Cycle
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
EA / NRW Surface Water Flood Data	**Version**	**Update Cycle**
Surface Water 1 in 30 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified

JBA Flood Data	Version	Update Cycle
JBA 75 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA Canal Failure JBA Risk Management Limited	October 2017	Annually
JBA Dam Break JBA Risk Management Limited	October 2017	Annually
BGS Flood Data	**Version**	**Update Cycle**
BGS Geological Indicators of Flooding British Geological Survey - National Geoscience Information Service	February 2011	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
GeoSmart Information Groundwater Flooding Data	**Version**	**Update Cycle**
GeoSmart Information Groundwater Flood Risk GeoSmart Information Ltd	November 2017	Bi-Annually
OS Water Network Data	**Version**	**Update Cycle**
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
OS Water Network Nodes Ordnance Survey	May 2018	Quarterly
EA/NRW Historic Flood Events Data	**Version**	**Update Cycle**
Historic Flood Events Environment Agency - Head Office	May 2018	Quarterly
Historical Flood Liabilities Landmark Information Group Limited	December 1999	Not Applicable

EA/NRW Risk of Flooding from Rivers and Sea (RoFRS)	Version	Update Cycle
RoFRS - Risk of Flooding from Rivers and Sea Natural Resources Wales	May 2015	Not Applicable
Flood Insurance Risk Data	**Version**	**Update Cycle**
Postcode Sector Flood Insurance Claim Ratings Crawford and Company	July 2018	Quarterly

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Natural Resources Wales	
Centre for Ecology and Hydrology	
British Geological Survey	
GeoSmart Information	
JBA Risk Management	

Useful Contacts

Contact	Name and Address	Contact Details
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2	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9966 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk
3	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk

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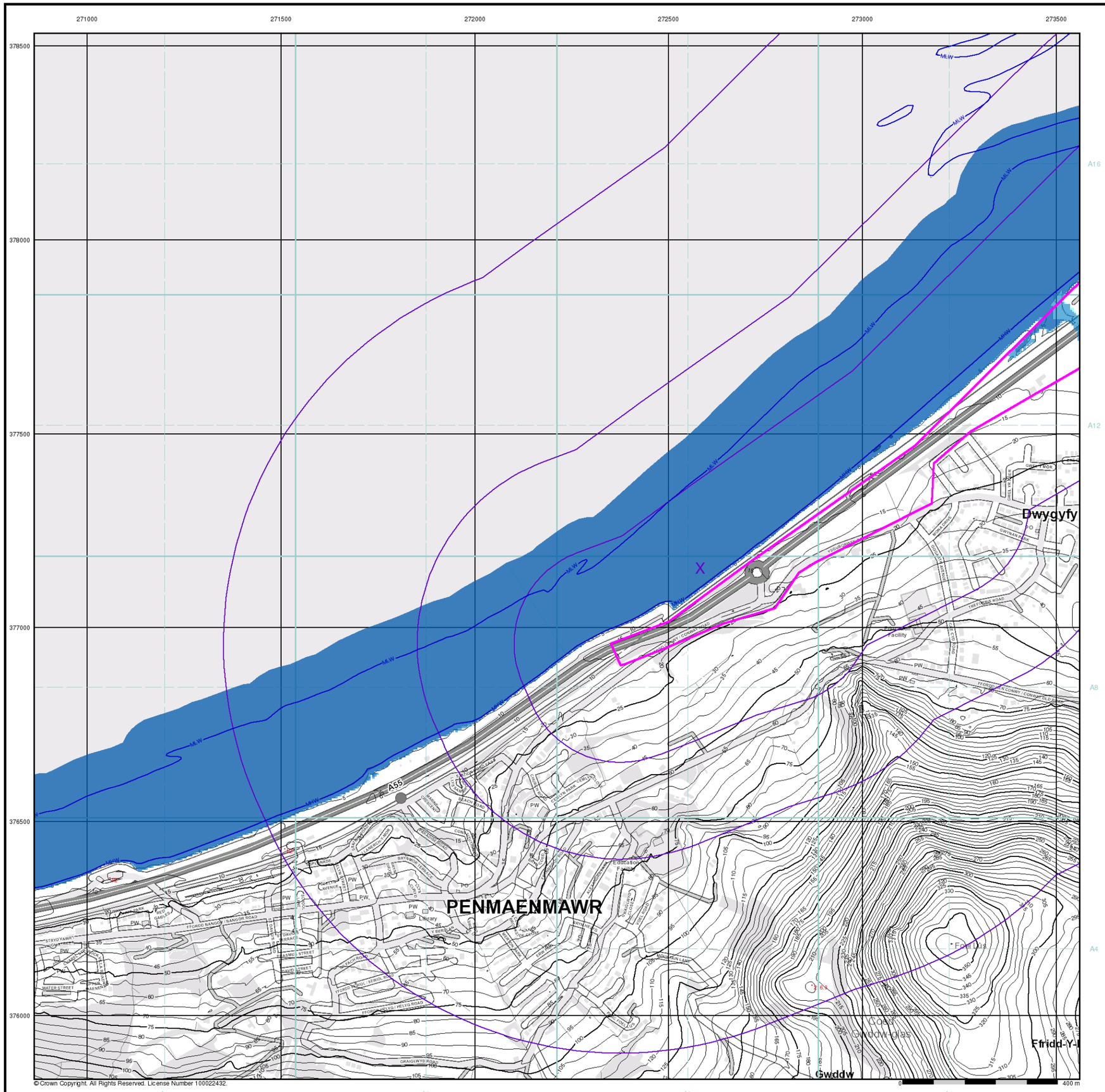
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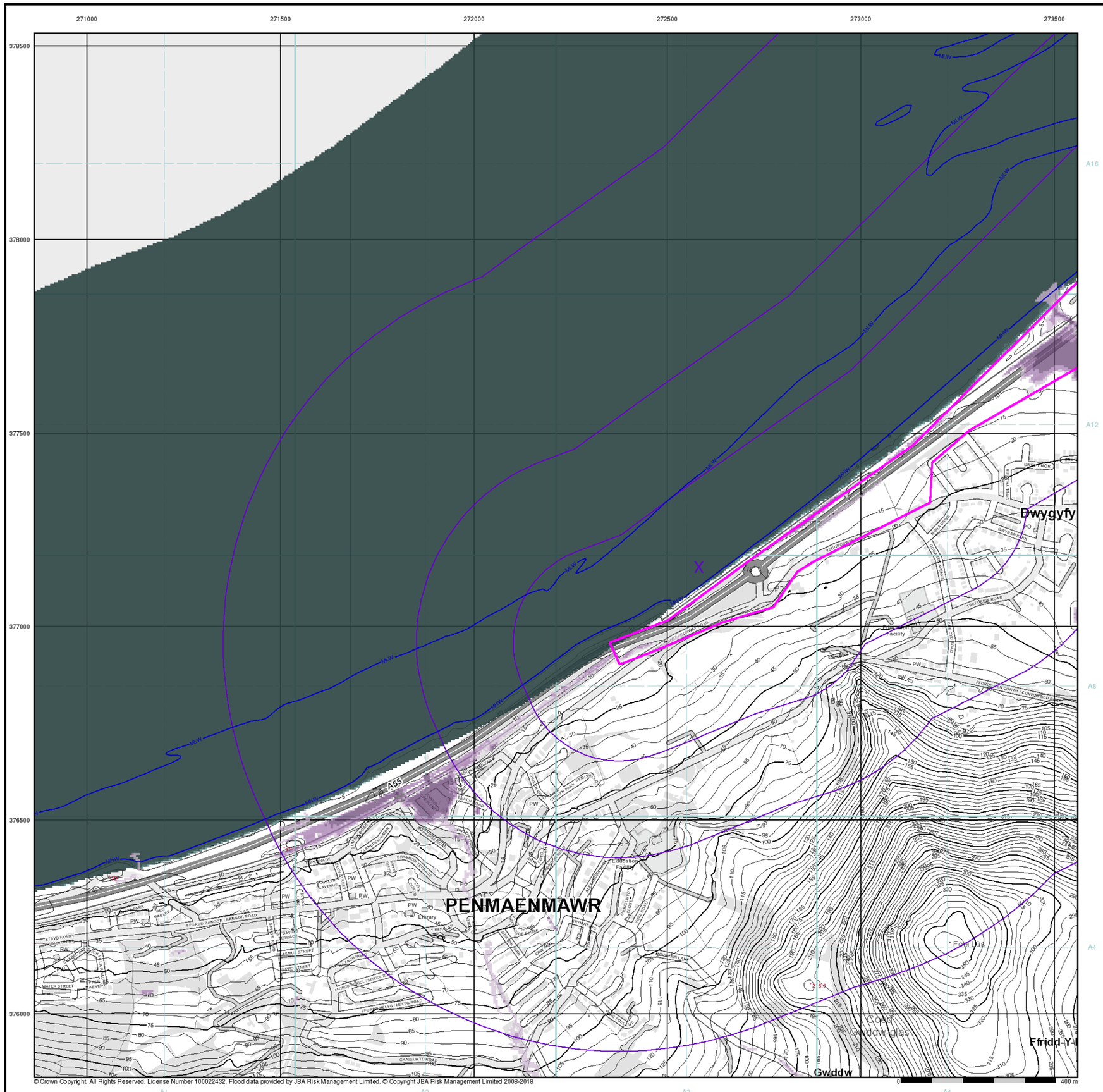
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Fedw Dis
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Library
Post Office
Bus Station
Sewage Works
Pumping Station
Tennis Courts
Bowling Green
Cricket Ground
Golf Course
Caravan Park
Graveyard
Church
Chapel
Public House
Hotel
Youth Hostel
Camping Site
Recreation Ground
Allotments
Nursing Home
Health Centre
Fire Station
Police Station
Law Court
Prison
Museum
Theatre
Cinema
Concert Hall
Art Gallery
Pier
Boat Yard
Slipway
Lighthouse
Coastguard
Radio Station
Telephone Exchange
Electricity Substation
Gas Governor
Water Tank
Water Treatment Works
Refuse Tip
Quarry
Mine
Shingle
Sand
Mud
Rocks
Cliff
Sea Wall
Groyne
Breakwater
Jetty
Boat Moorings
Boat Launching Site
Beach
Sand Dunes
Saltmarsh
Reedbed
Foreshore
Tidal Water
Inland Water
Woodland
Orchard
Scrub
Heath
Rough Grassland
Marsh
Bracken
Coniferous Trees
Non-Coniferous Trees
Mixed Trees
Park
Garden
Urban Open Space
Built-up Area
Glasshouse
Agricultural Building
Agricultural Land
Ploughed Land
Grassland
Horticultural Land
Pylon
Electricity Transmission Line
Pipeline
Cable
Tunnel
Bridge
Level Crossing
Railway
Railway Station
Road
Track
Path
Ferry Route
Ferry Terminal
Airport
Airport Runway
Helicopter Landing Site
Heliport
Glider Site
Parachute Site
Balloon Site
Aerodrome
Aerodrome Runway
Aerodrome Helicopter Landing Site
Aerodrome Heliport
Aerodrome Glider Site
Aerodrome Parachute Site
Aerodrome Balloon Site
Aerodrome Building
Aerodrome Control Tower
Aerodrome Hangar
Aerodrome Terminal
Aerodrome Fuel Depot
Aerodrome Apron
Aerodrome Taxiway



RAMBOLL

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

Standard Contour — 105 — 100 — 95

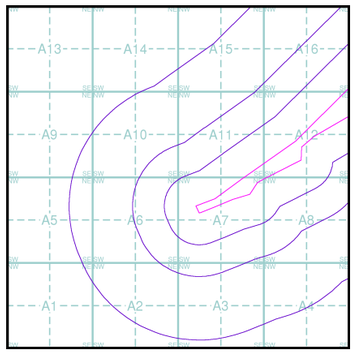
Master Contour

Spot Height 157.8

MLW Mean Low Water

MHW Mean High Water

JBA 75 Year Return Flood Map (Undefended) - Slice A



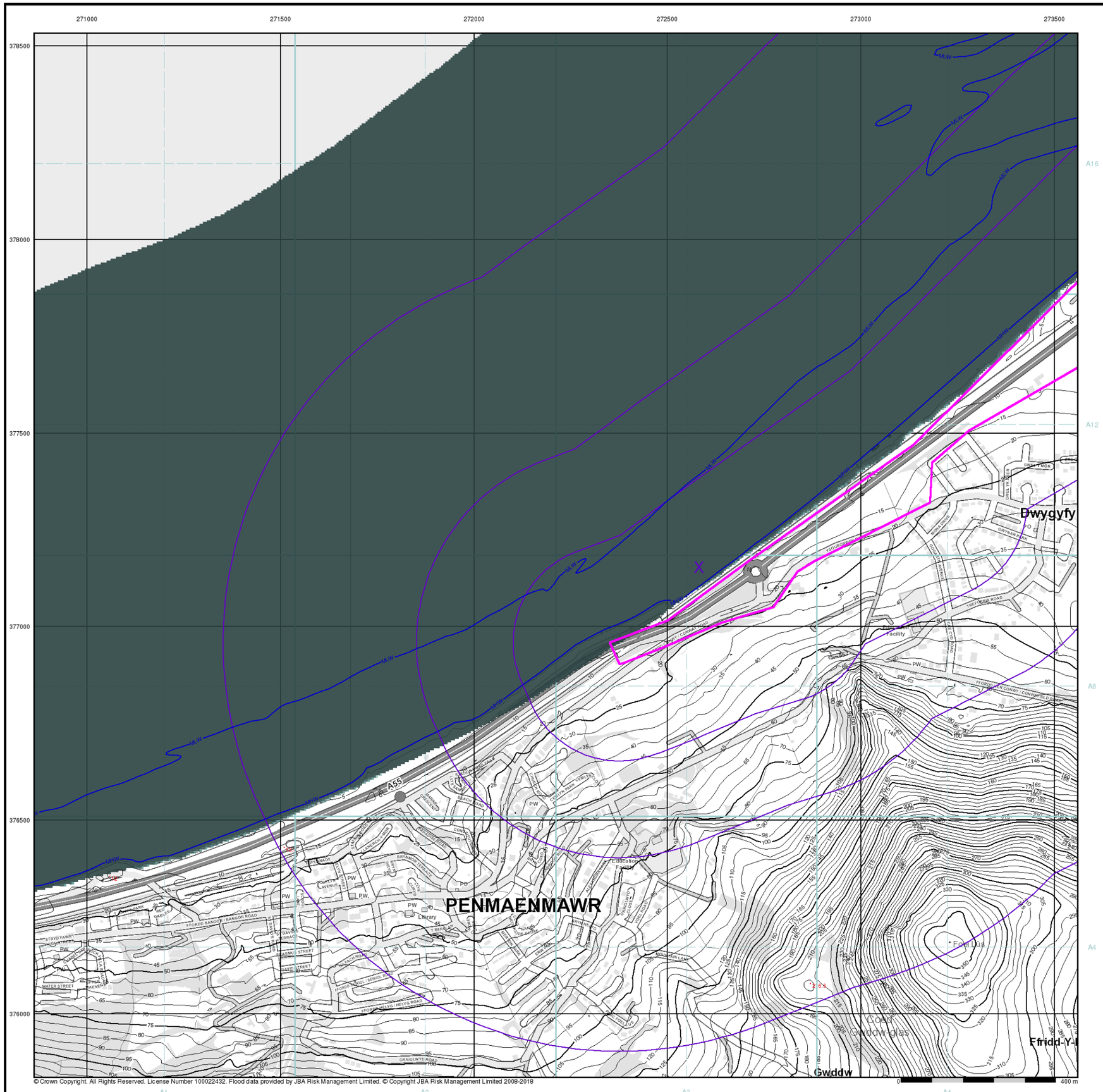
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National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Web: www.envirocheck.co.uk



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RAMBOLL

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

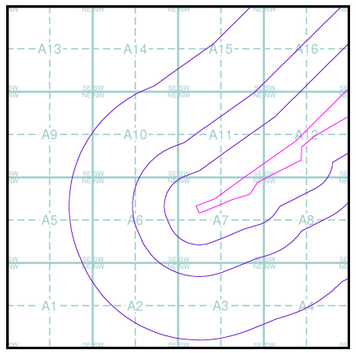
Fluvial Depth	Coastal Depth
0.01m - 0.05m	0.01m - 0.05m
0.05m - 0.1m	0.05m - 0.1m
0.1m - 0.3m	0.1m - 0.3m
0.3m - 1m	0.3m - 1m
>1m	>1m

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height 167.8

MLW Mean Low Water
MHW Mean High Water

JBA 100 Year Return Flood Map (Undefended) - Slice A



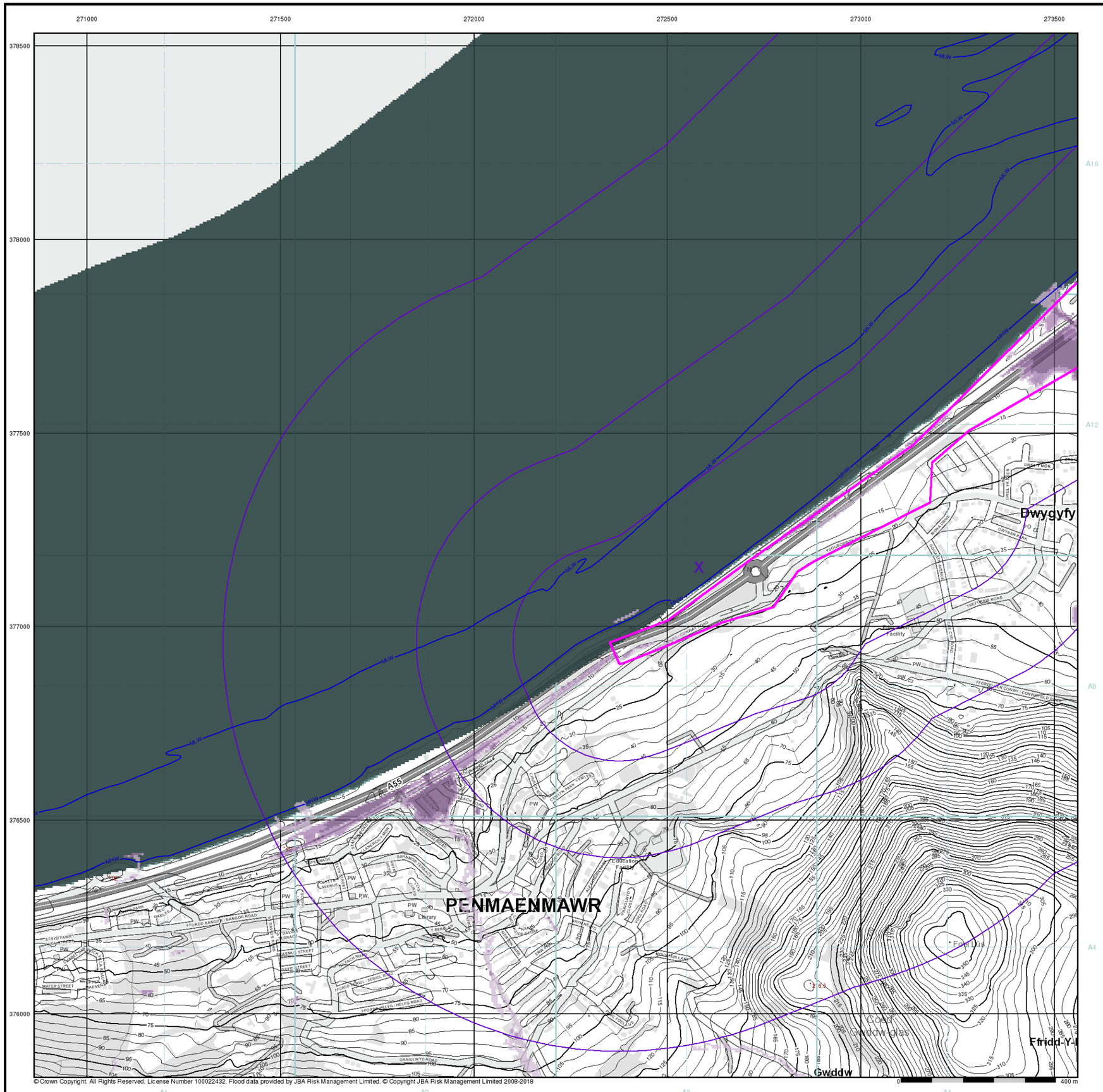
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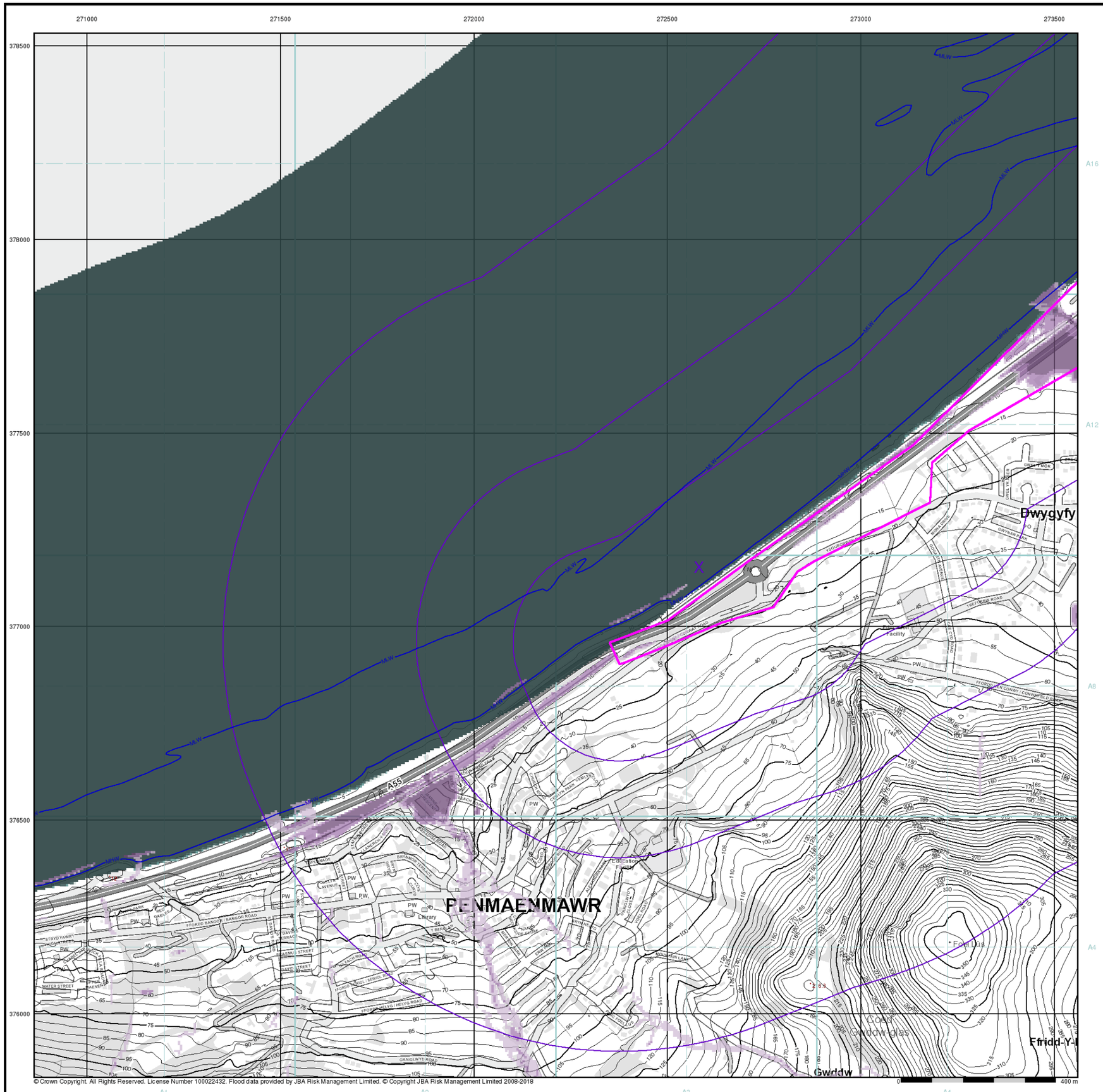
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Four Uns
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Fire Station
Electricity Substation
Recycling Facility
Bowling Green
Tennis Courts
Graig Wen
Graig Lwyd
Penmaenmawr Cemetery
Penmaenmawr Golf Course
Penmaenmawr Rugby Football Club
Penmaenmawr Sewage Treatment Works
Penmaenmawr Station
Penmaenmawr Town Hall
Penmaenmawr Town Football Club
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RAMBOLL

JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
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	>1m	>1m

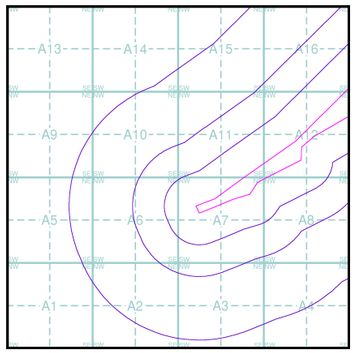
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 1000 Year Return Flood Map (Undefended) - Slice A



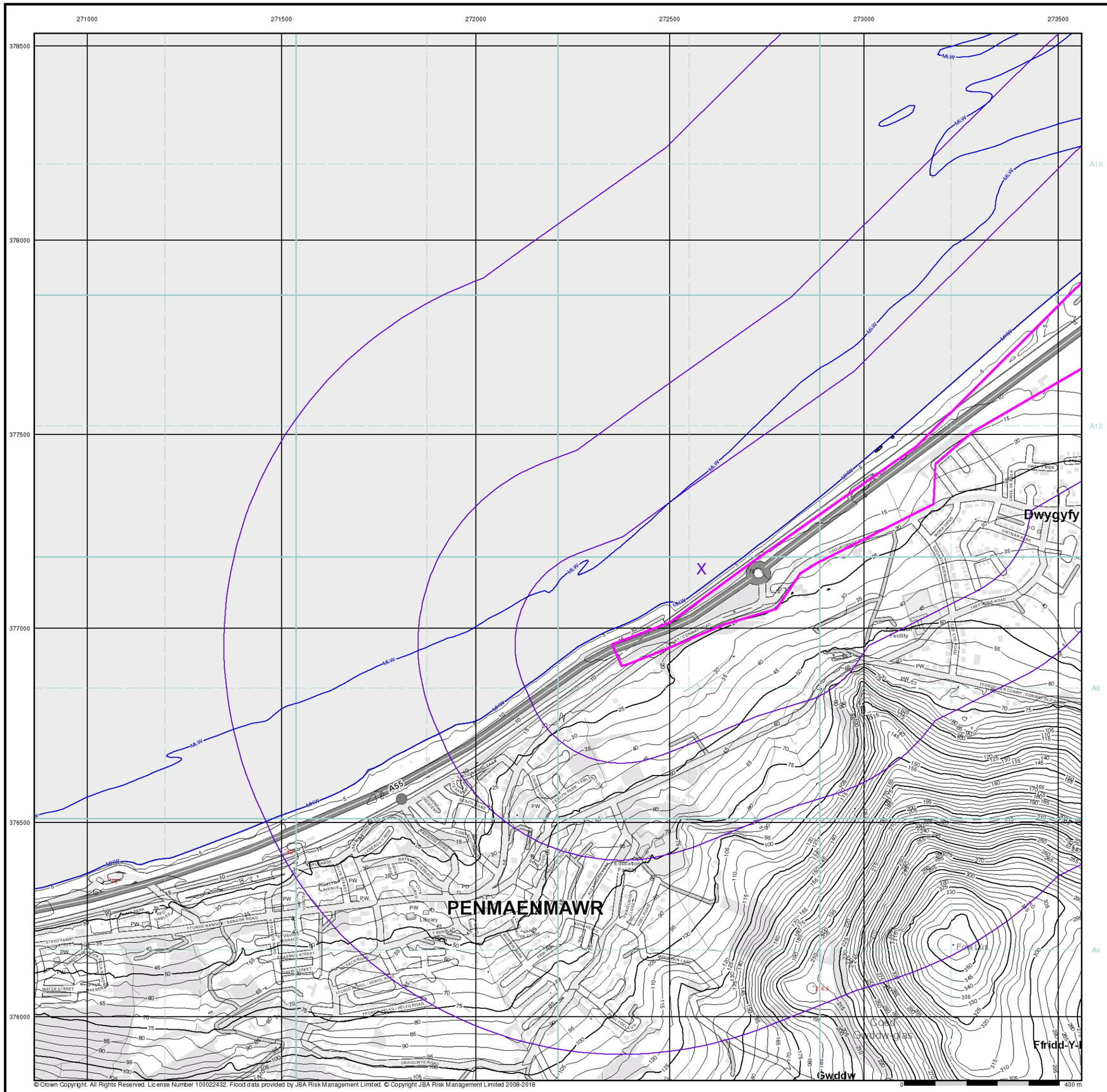
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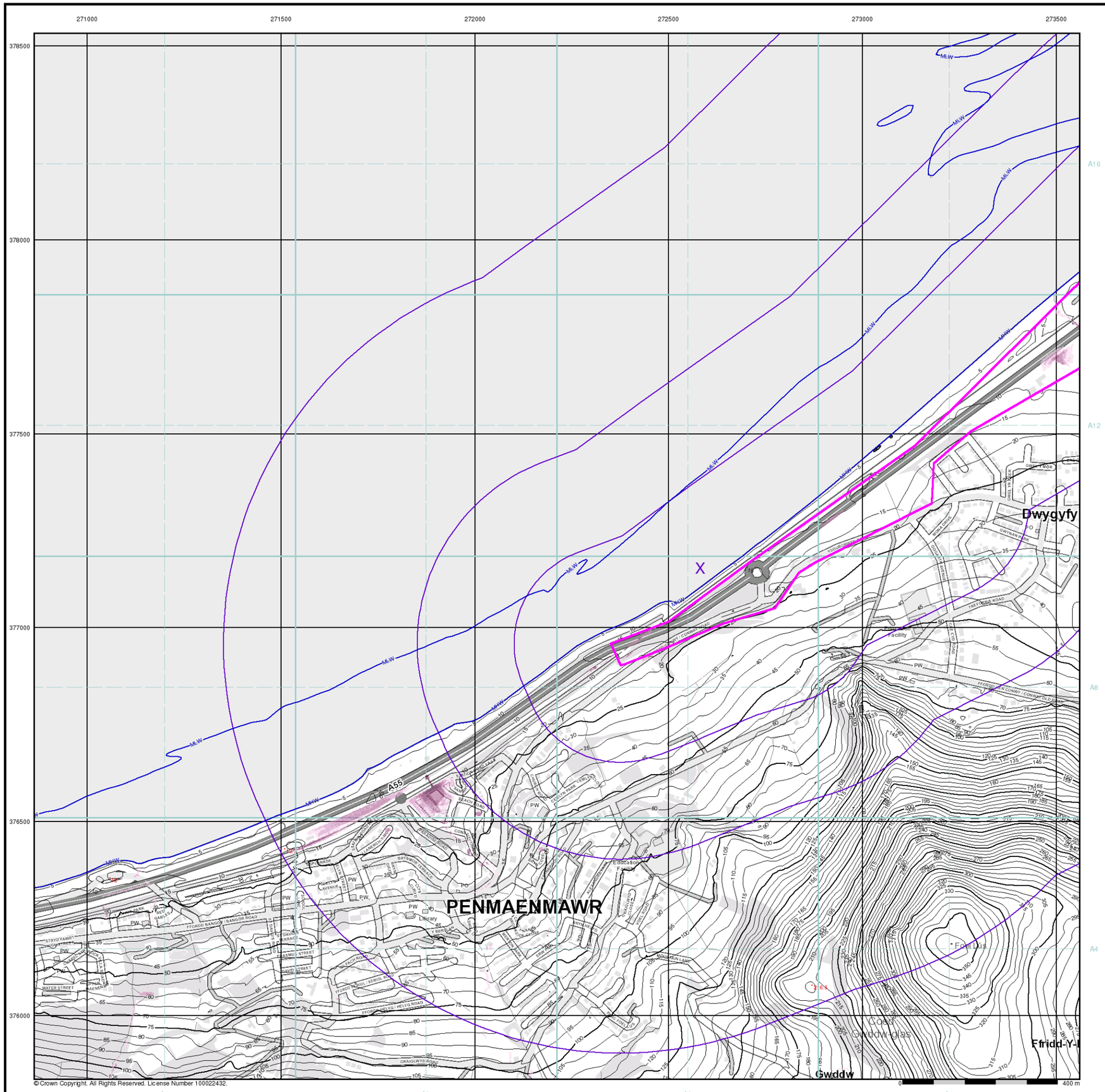
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Site Area (Ha):	28.4
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Gwddw
Ffridd-Y-
Fort Dus
Cadw
Gwddw-glas
Education Facility
Library
Leisure Centre
Fire Station
Public Toilets
Post Office
Bus Station
Car Park
Sewage Works
Pumping Station
Recreation Ground
Cemetery
Church
Chapel
Graig Wen
Graig Lwyd
Graiglwyd Road
Ffordd Bangor / Bangor Road
Ffordd Conwy / Conway Road
Ffordd Llandudno / Llandudno Road
Ffordd Penmaenmawr / Penmaenmawr Road
Ffordd Sychnant / Sychnant Road
Ffordd Talycafn / Talycafn Road
Ffordd Tal-y-Bont / Tal-y-Bont Road
Ffordd Trefor / Trefor Road
Ffordd Wylfa / Wylfa Road
Ffordd Y Felin / Felin Road
Ffordd Y Gogarth / Gogarth Road
Ffordd Y Graig / Graig Road
Ffordd Y Mynydd / Mountain Lane
Ffordd Y Parc / Parc Road
Ffordd Y Traeth / Beach Road
Ffordd Y Twnnel / Tunnel Road
Ffordd Y Wern / Wern Road
Ffordd Yr Orsaf / Station Road
Ffordd Yr Ysgol / School Road
Ffordd Yr Ysgol Gynradd / Primary School Road
Ffordd Yr Ysgol Uwchradd / Secondary School Road
Ffordd Yr Ysgol Uwchradd / Secondary School Road
Ffordd Yr Ysgol Uwchradd / Second



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RAMBOLL

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

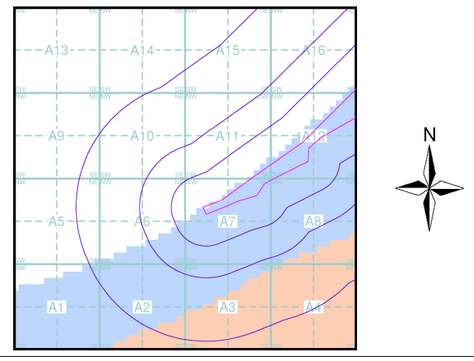
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

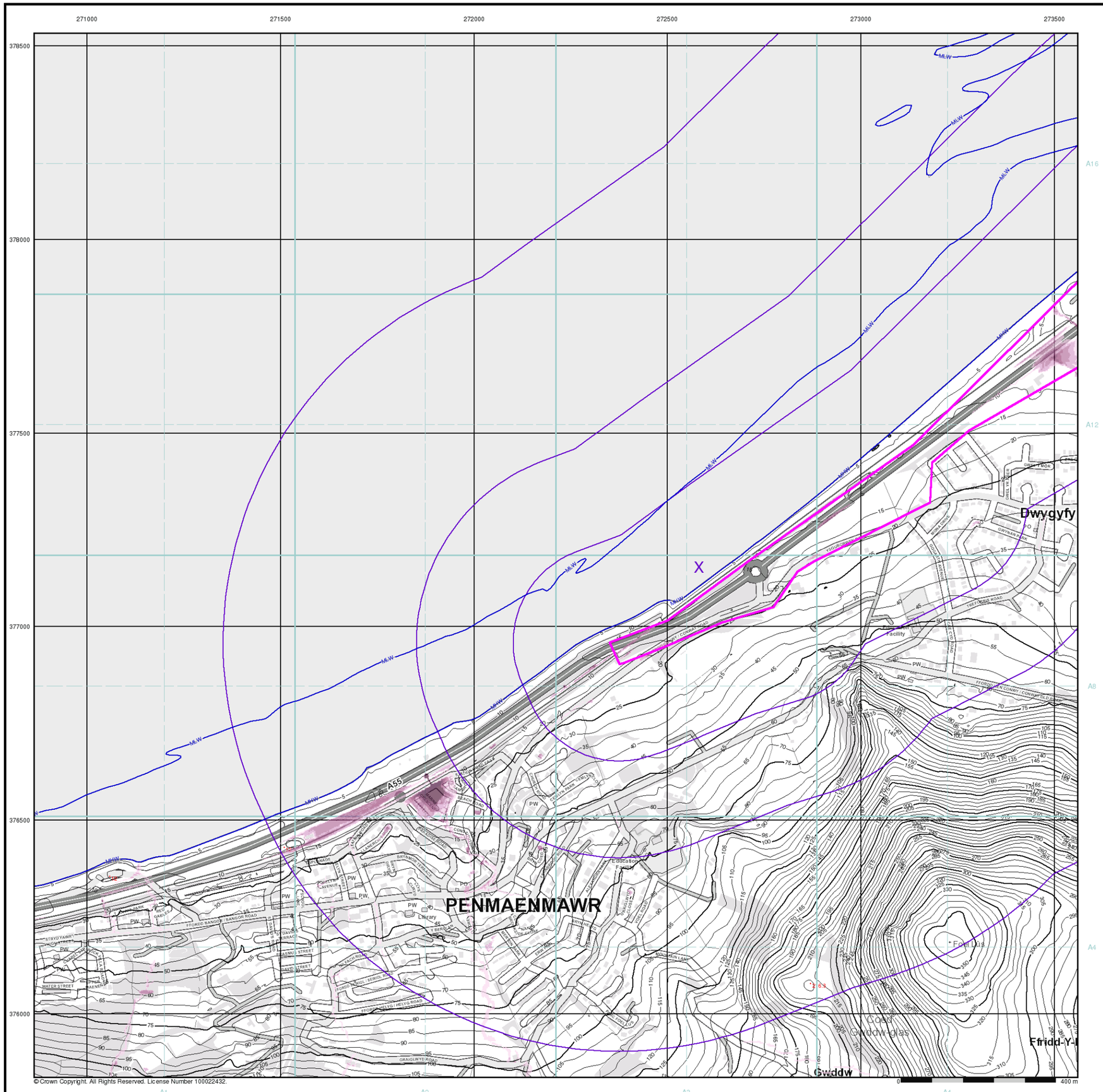
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Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

EA/NRW Surface Water 100 Year Return Depth Map

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour
Master Contour
Spot Height 167.8

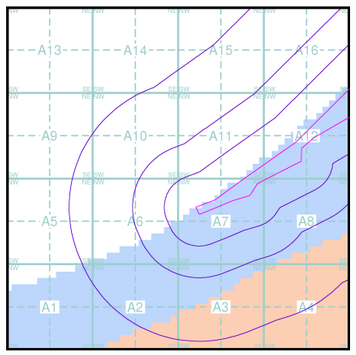
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



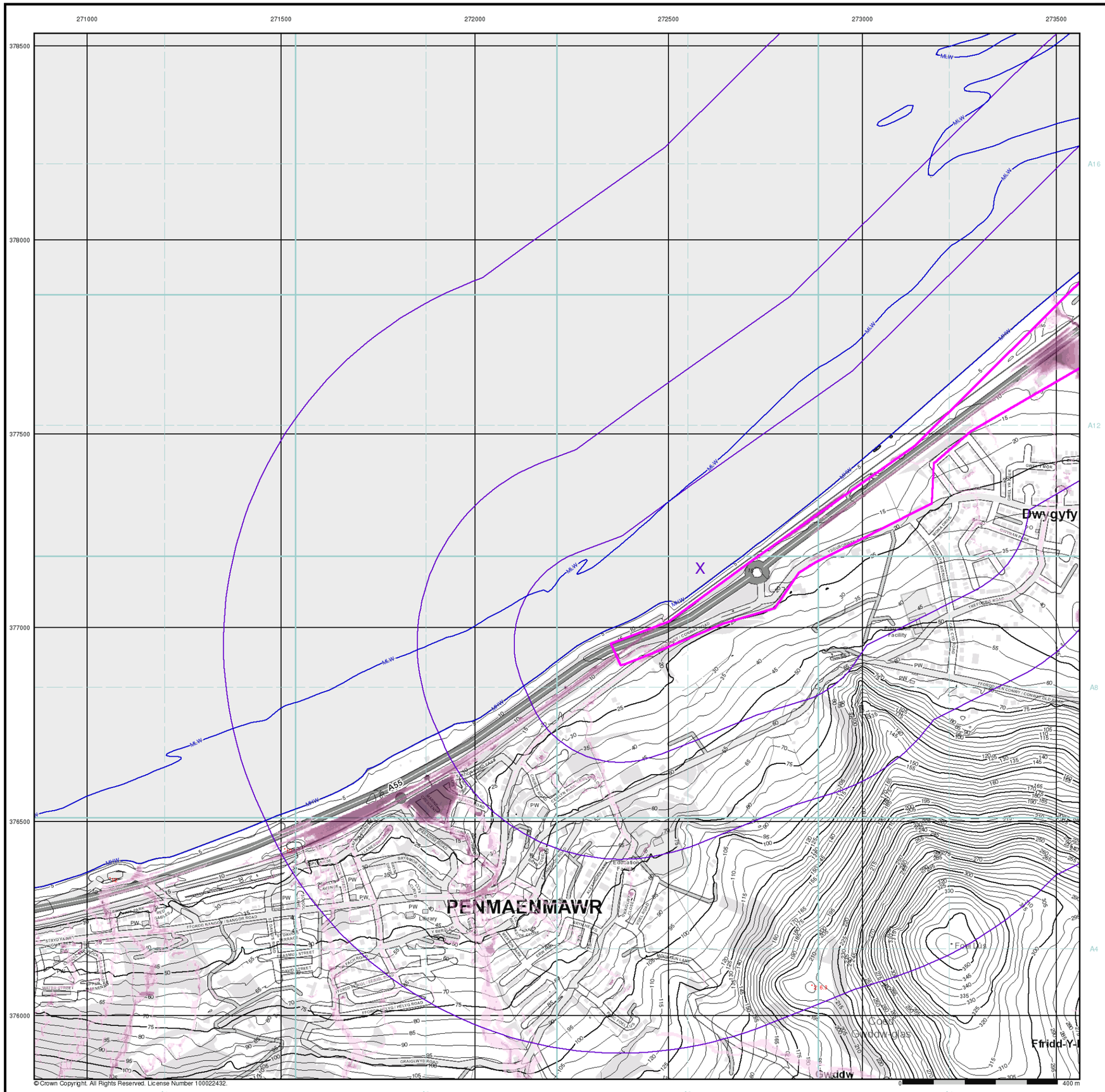
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RAMBOLL

EA/NRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

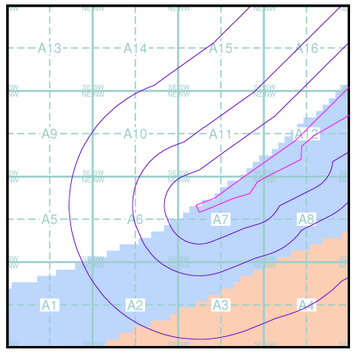
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
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- Property

EA/NRW Suitability Map - Slice A



Order Details

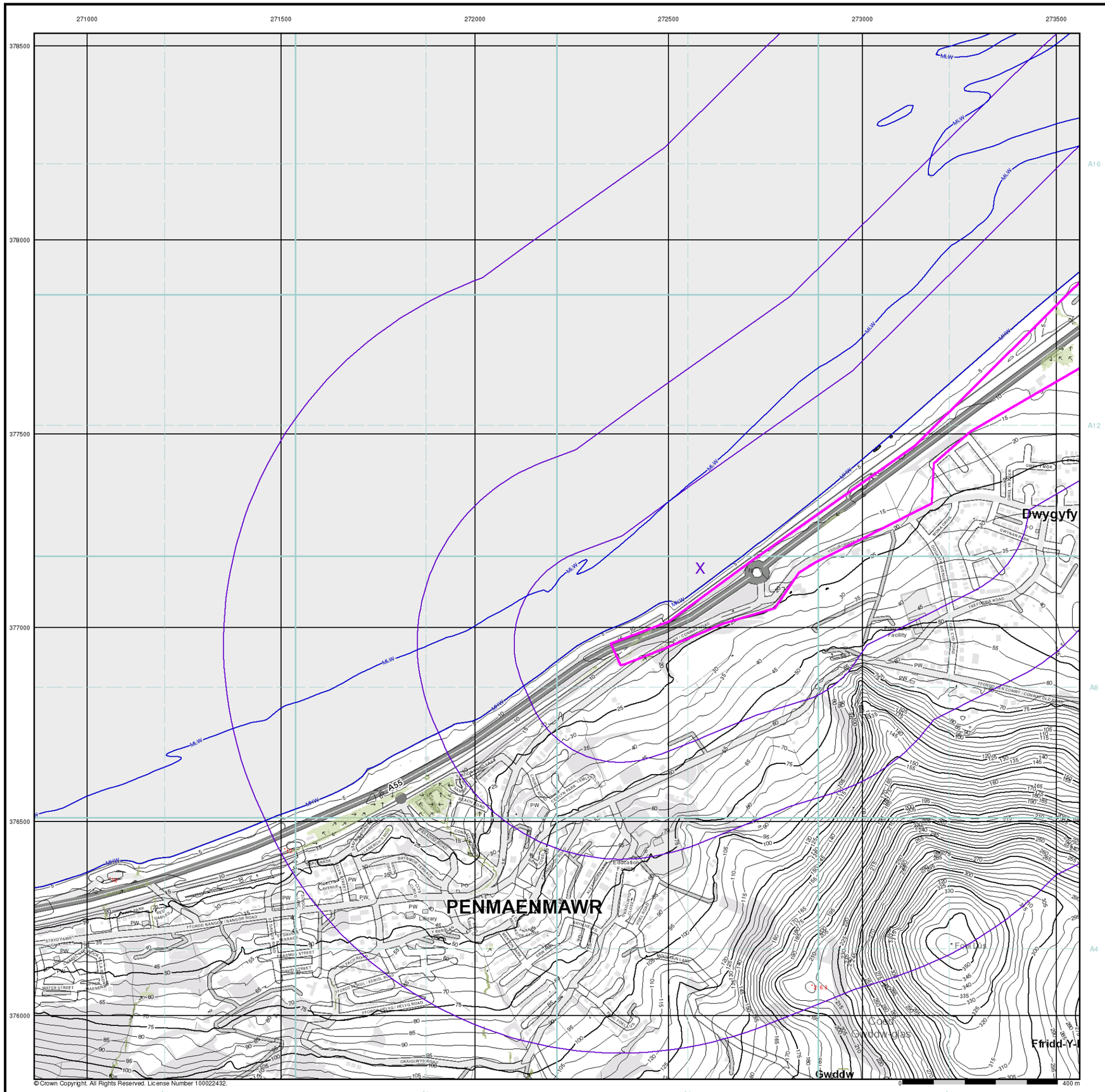
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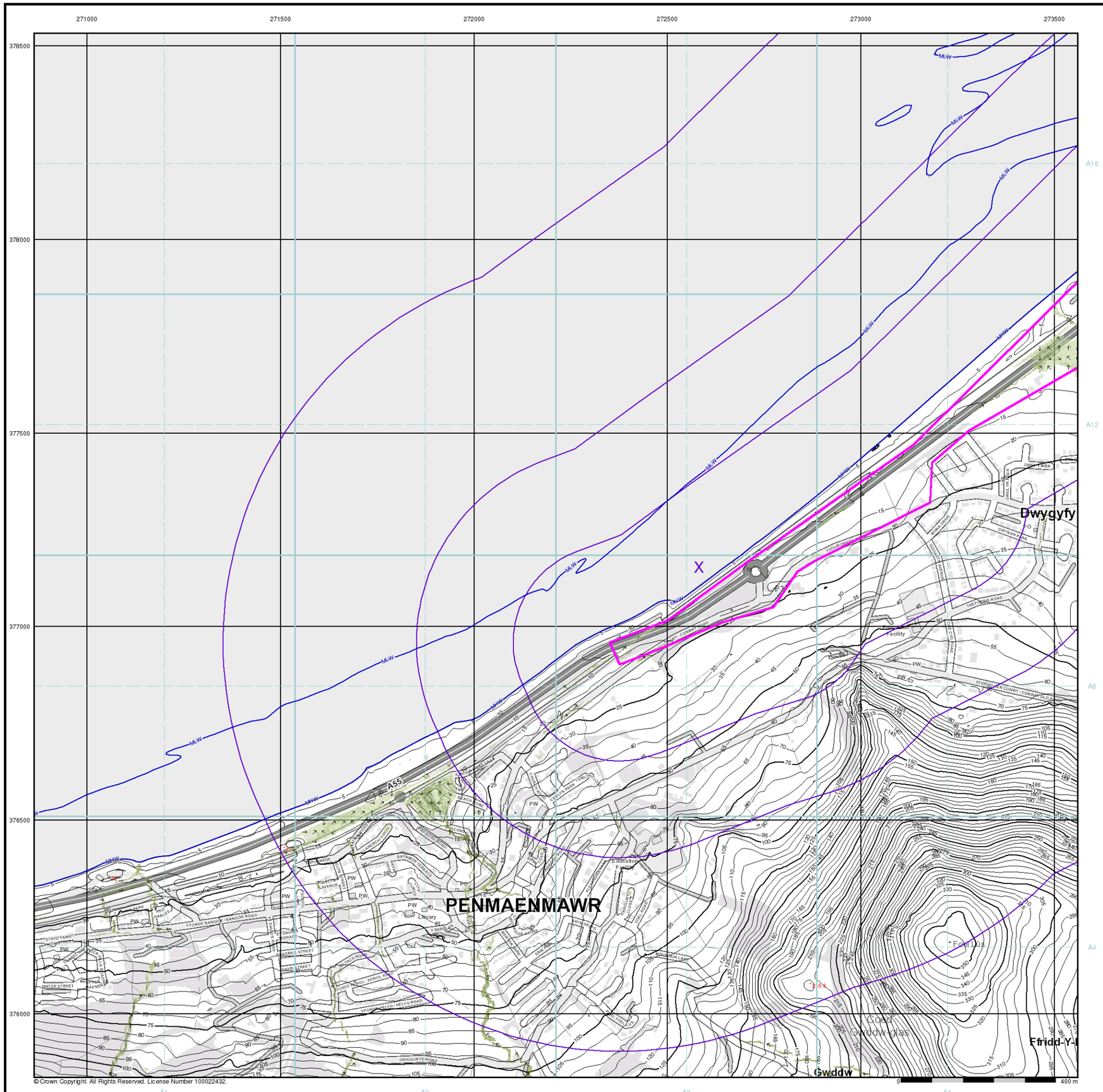
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Fedw Duon
Quarry
Education Facility
Library
Post Office
Sewage Treatment Works
Bowling Green
Tennis Courts
Recreation Ground
Cemetery
Chapel
Church
Public House
Youth Hostel
Caravan Site
Camping Site
Telephone Exchange
Electricity Sub Station
Pumping Station
Water Tank
Mast
Refuse Tip
Slipway
Coastguard Station
Lifeboat Station
Lighthouse
Radio Station
Radar Station
Golf Course
Golf Club House
Golf Practice Ground
Golf Tee
Golf Hole
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Golf Hole Yardage



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RAMBOLL

EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
0.25 - 0.50m/s
0.50 - 1.00m/s
1.00 - 2.00m/s
> 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour
Master Contour
Spot Height *167.8

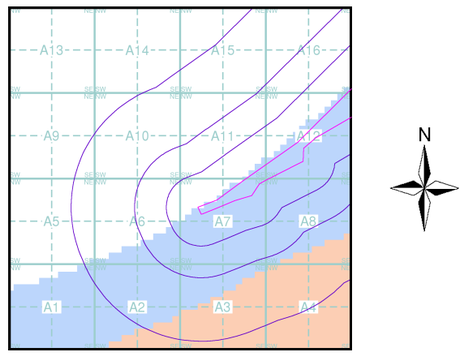
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice A



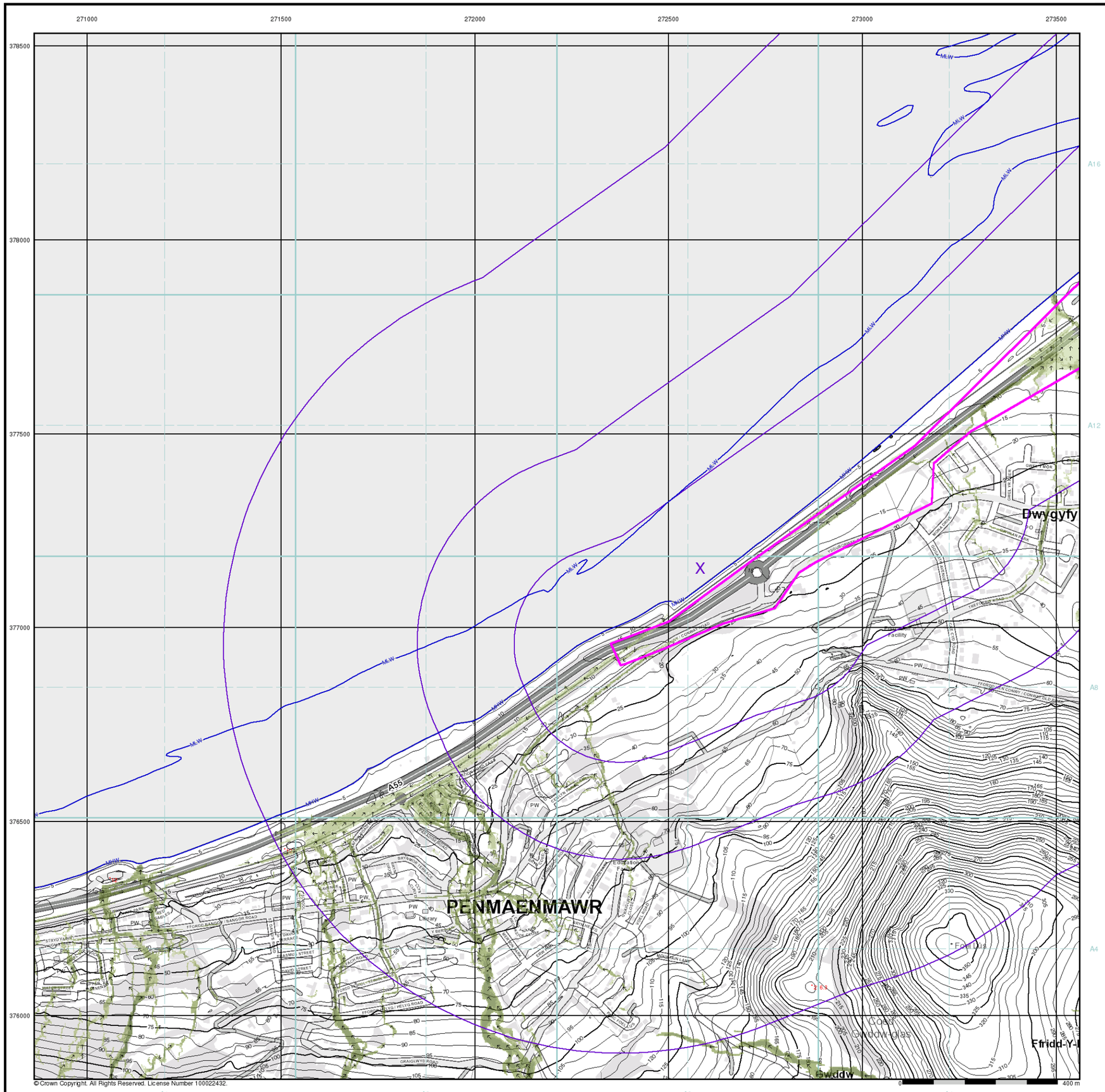
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
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Web: www.envirocheck.co.uk



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EA/NRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
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Flow Direction at maximum velocity

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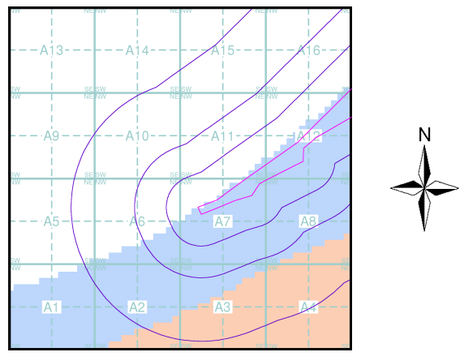
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EA/NRW Suitability Map - Slice A



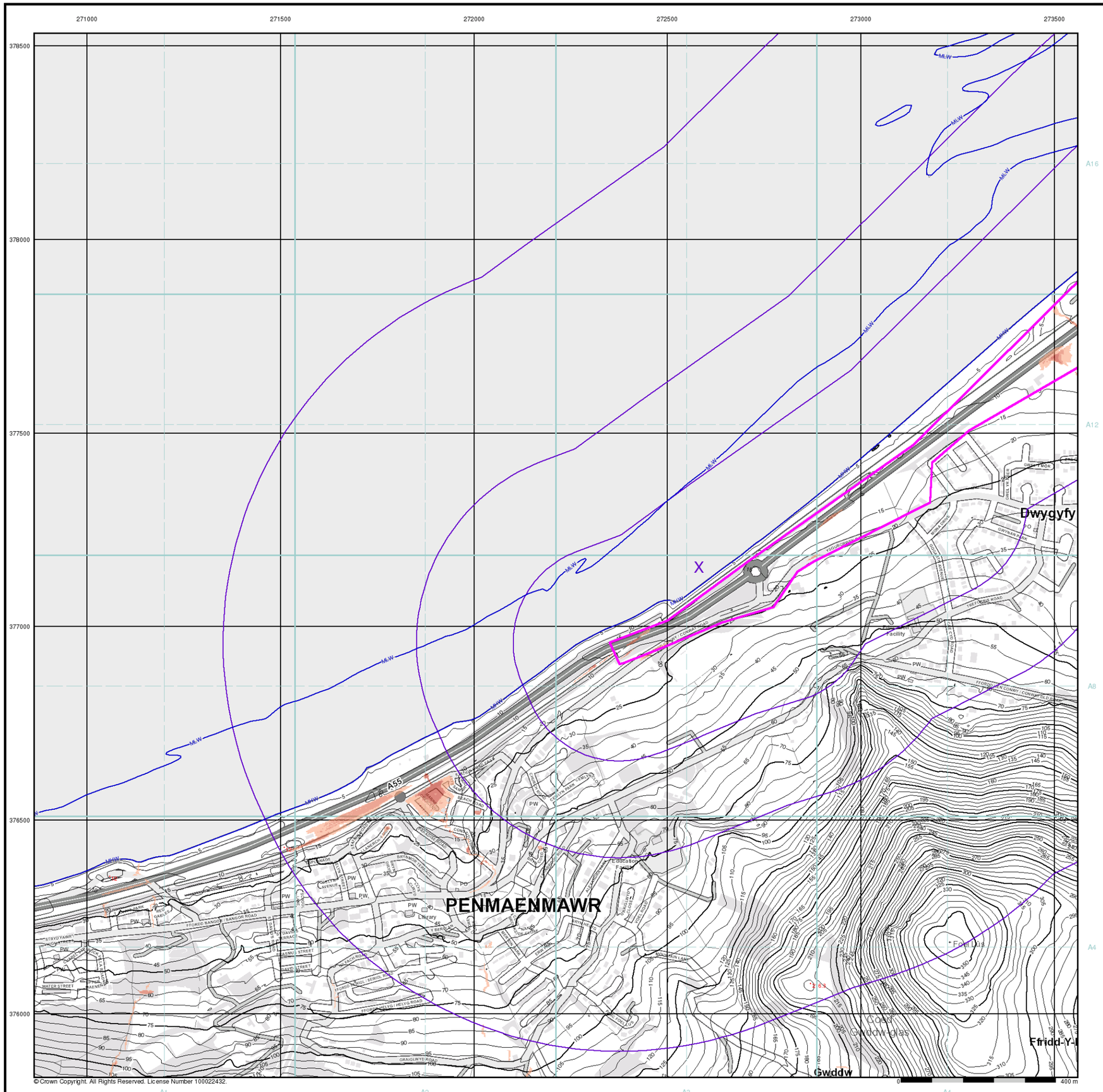
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EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour | Master Contour | Spot Height *167.8

MLW Mean Low Water

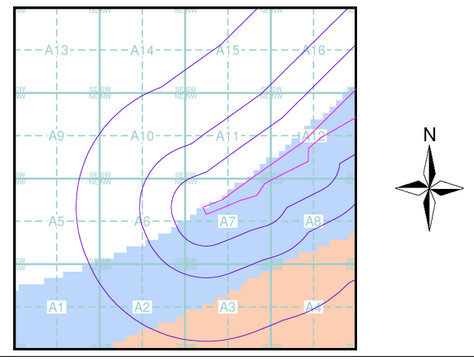
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



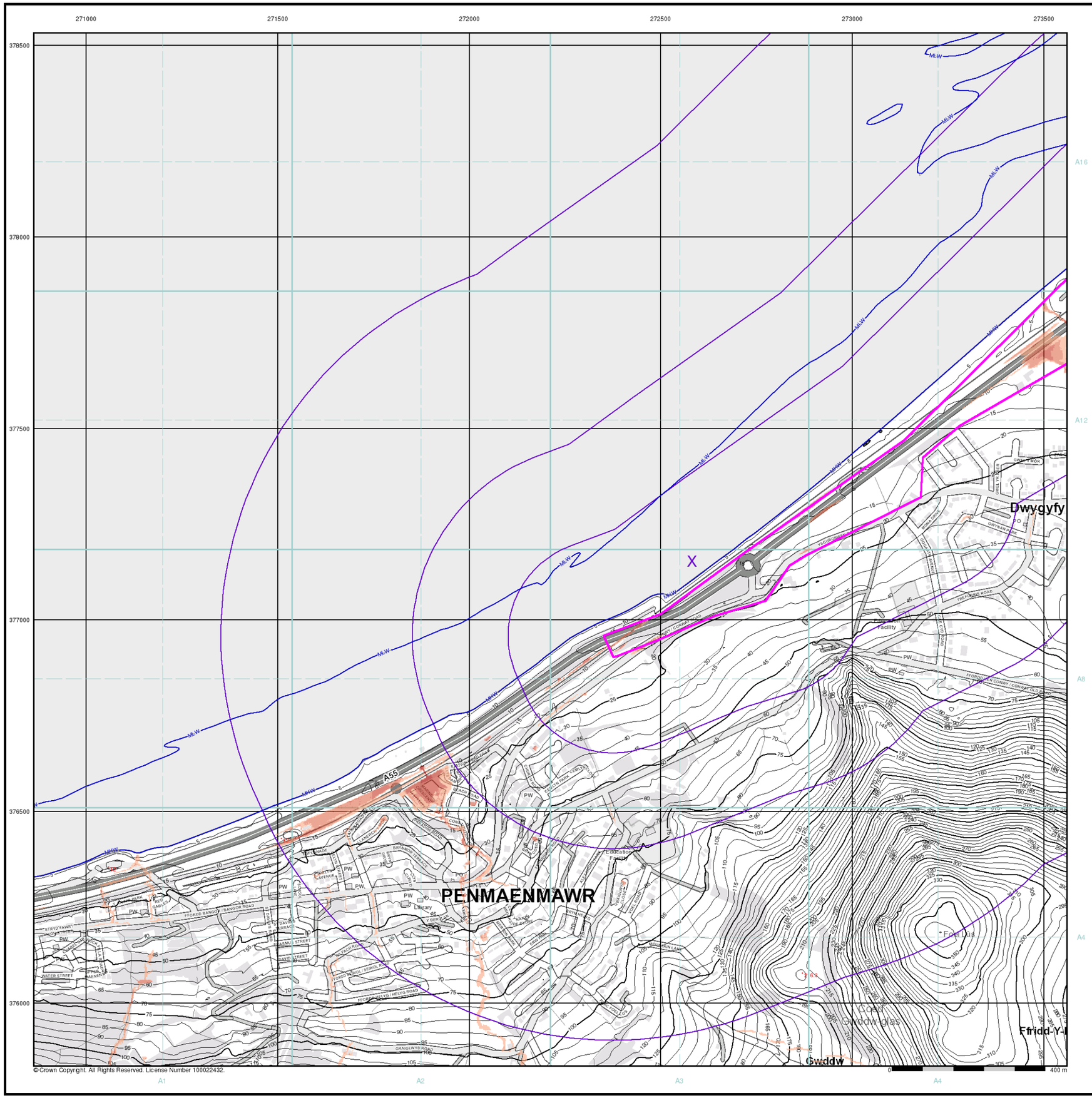
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
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Search Buffer (m):	1000

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EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour
Master Contour
Spot Height 167.8

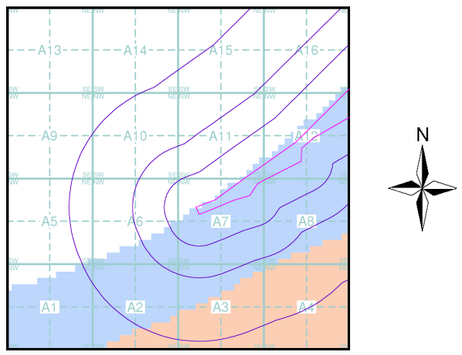
MLW Mean Low Water
MHW Mean High Water

Suitability

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EA/NRW Suitability Map - Slice A



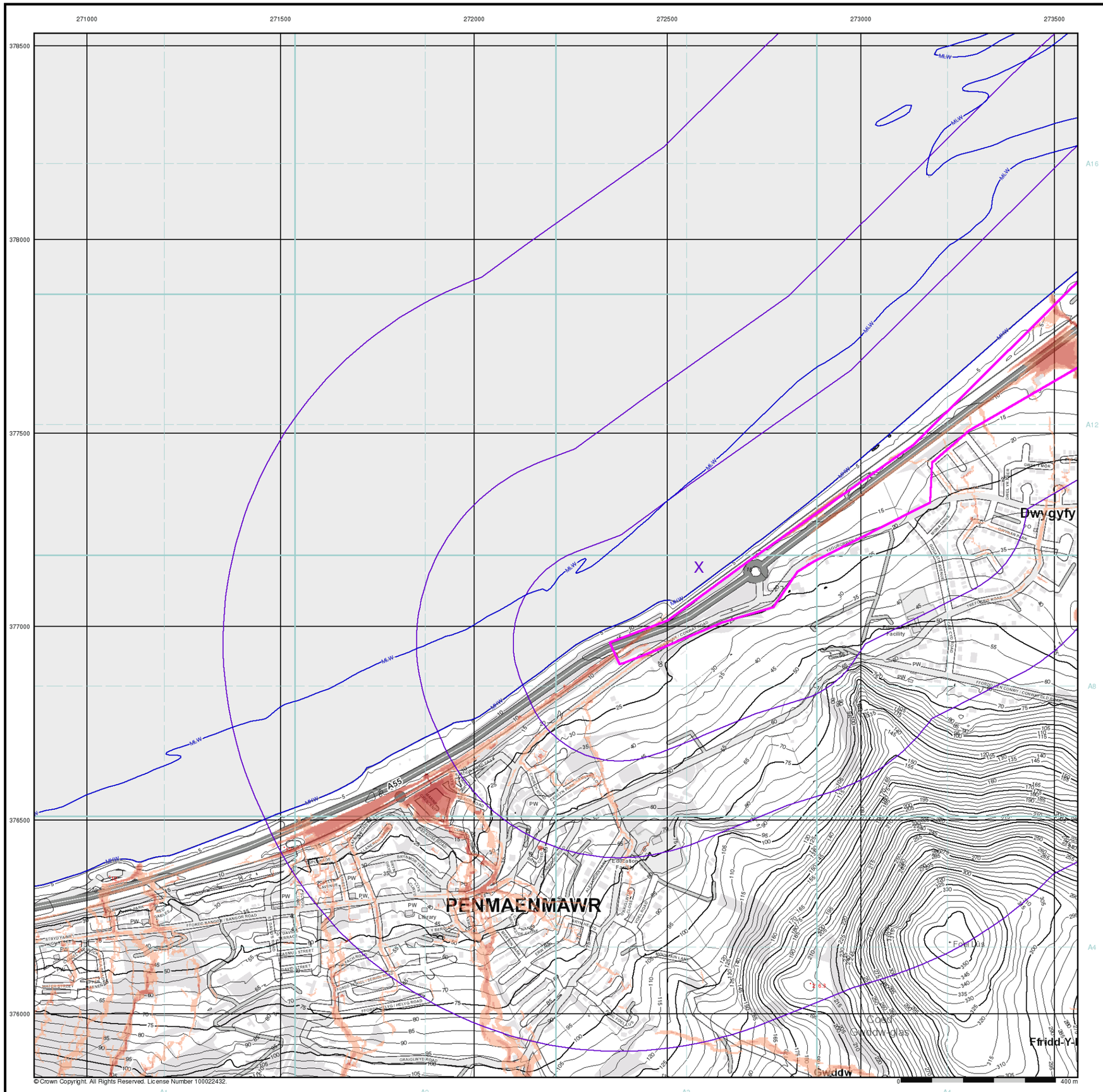
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EA/NRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height * 167.8

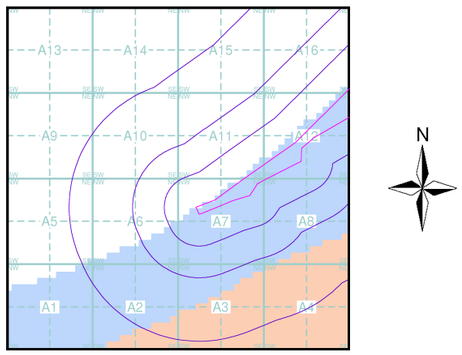
MLW Mean Low Water
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EA/NRW Suitability Map - Slice A



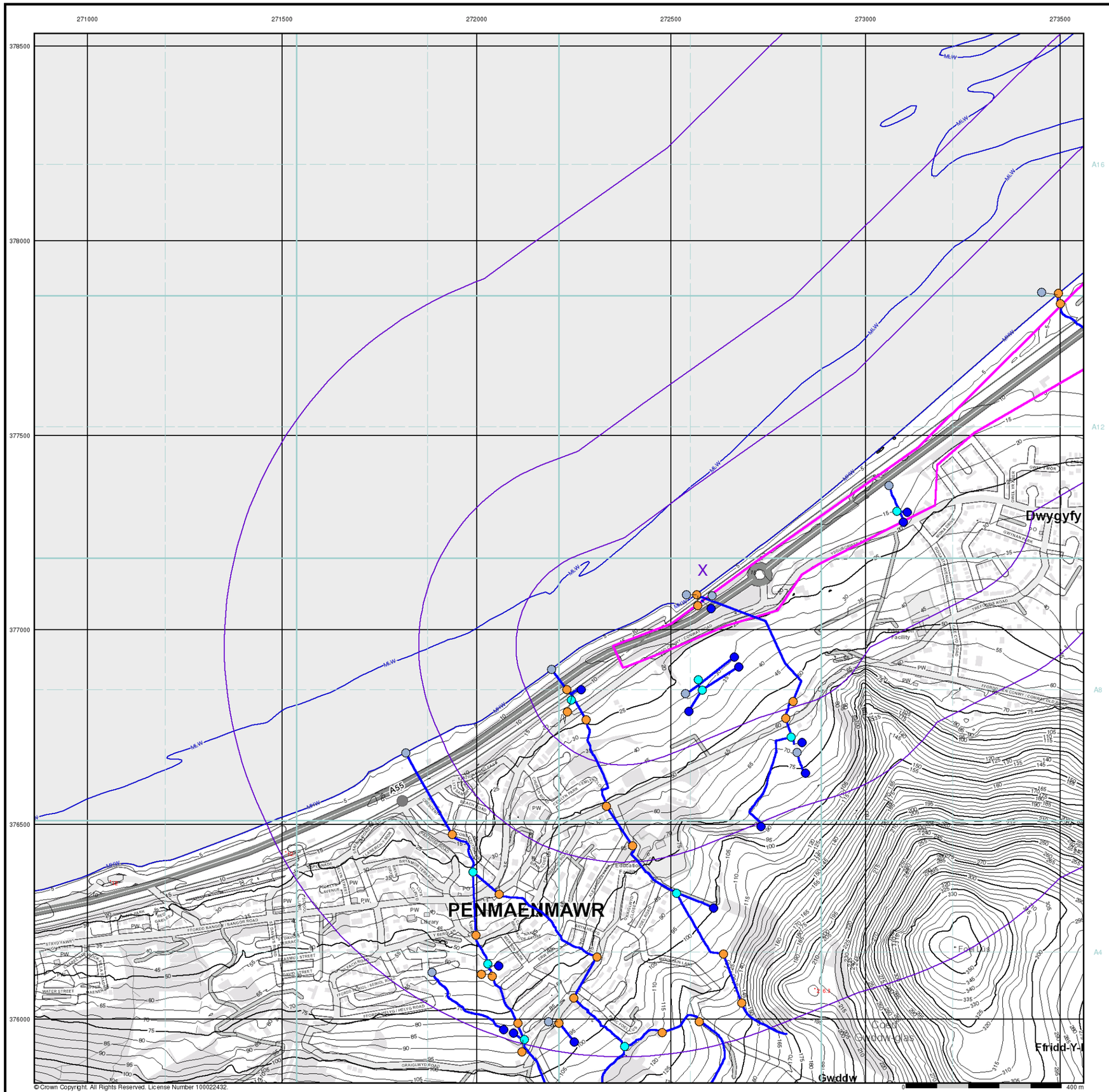
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OS Water Network Lines Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

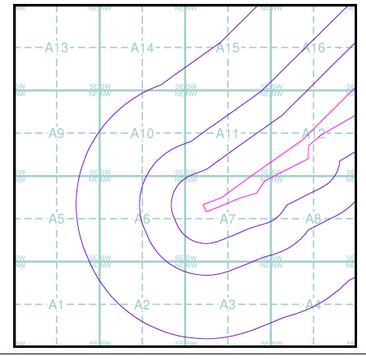
OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea
- Junction
- Outlet
- Pseudo
- Source
- Other

Contours (height in meters)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height *167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



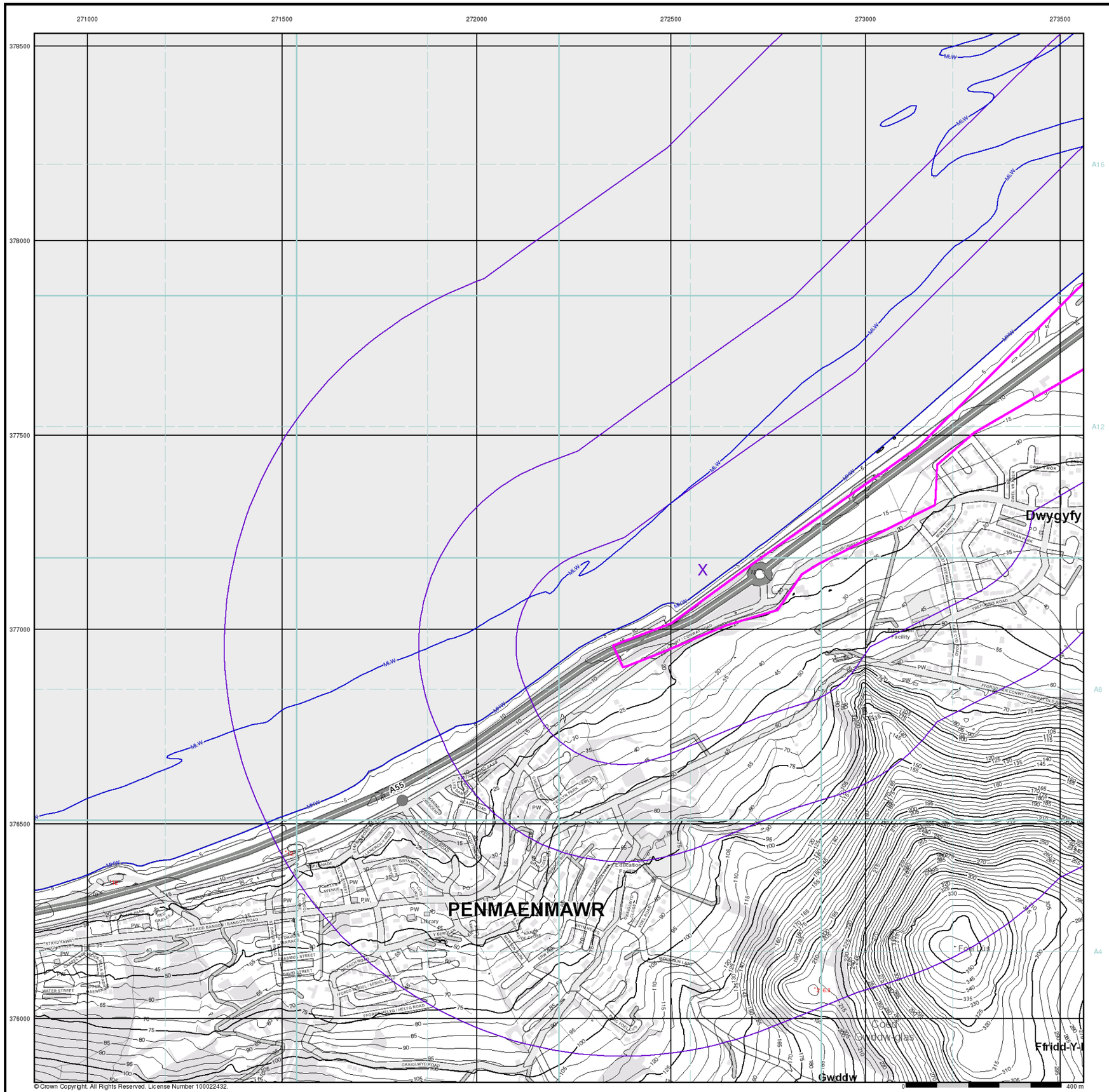
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Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
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EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

Historic Flood Events Data

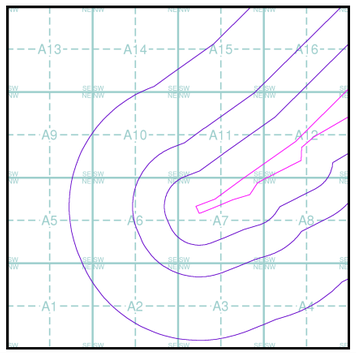
- Channel Capacity Exceeded (no raised defences)
- Channel Capacity Exceeded /Surface Water
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Historical Flood Liabilities
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Surface Water
- Unknown

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height *167.8

MLW Mean Low Water
MHW Mean High Water

EA/NRW Historic Flood Map - Slice A



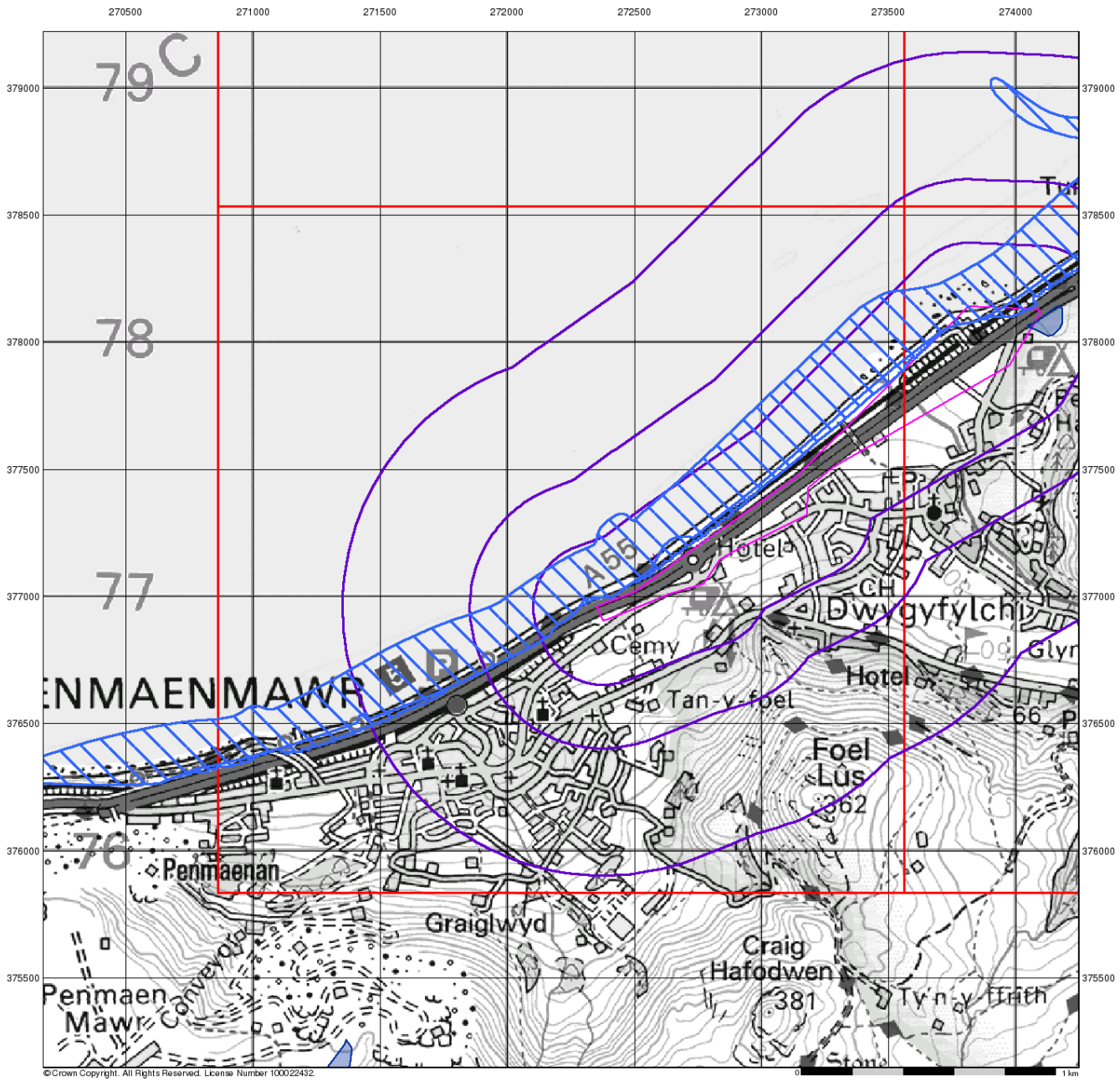
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BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

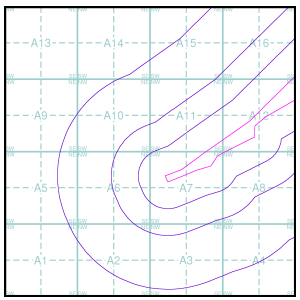
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice A



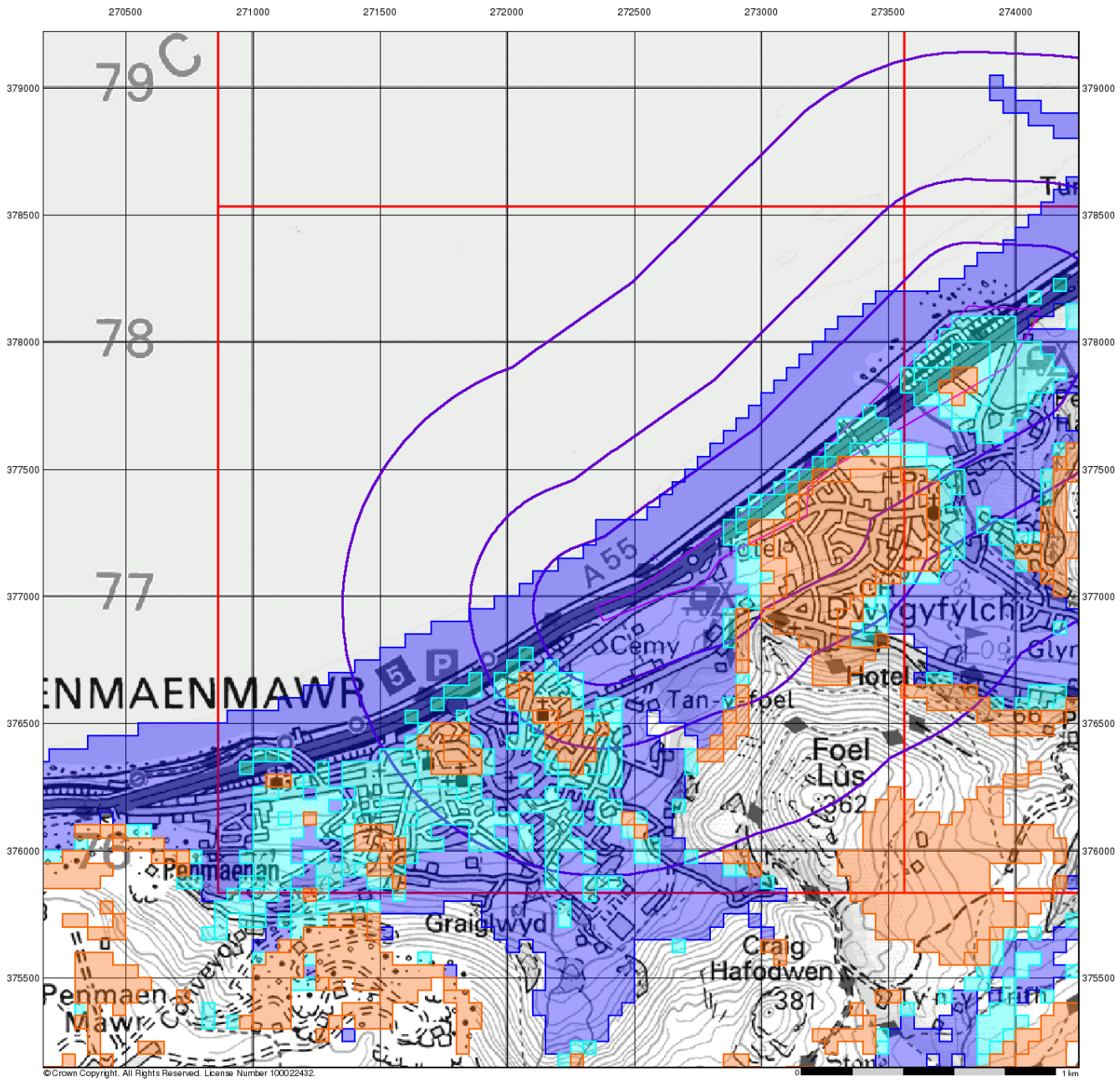
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BGS Flood Data (1:50,000)

General

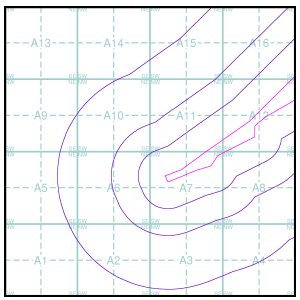
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

BGS Groundwater Flooding Susceptibility

- Potential for Groundwater Flooding to Occur at Surface
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice A

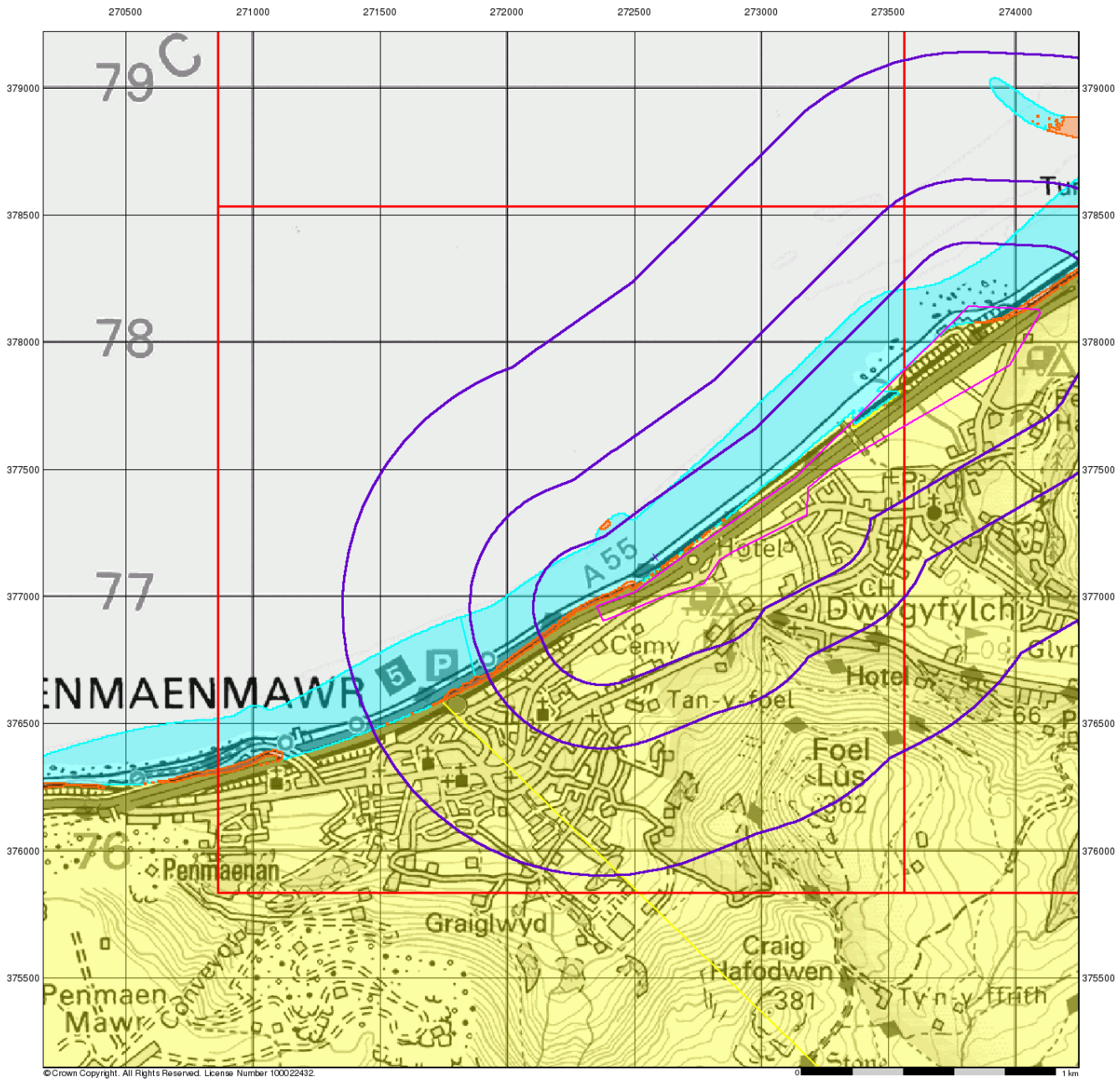


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Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy



RAMBOLL

GeoSmart Information Groundwater Flood Map (1:50,000)

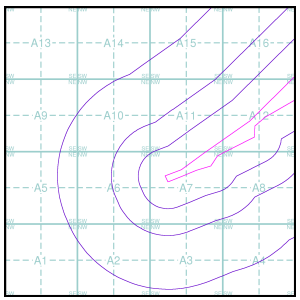
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice

GeoSmart Information Groundwater Flooding Risk

High Risk
Moderate Risk
Low Risk
Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice A



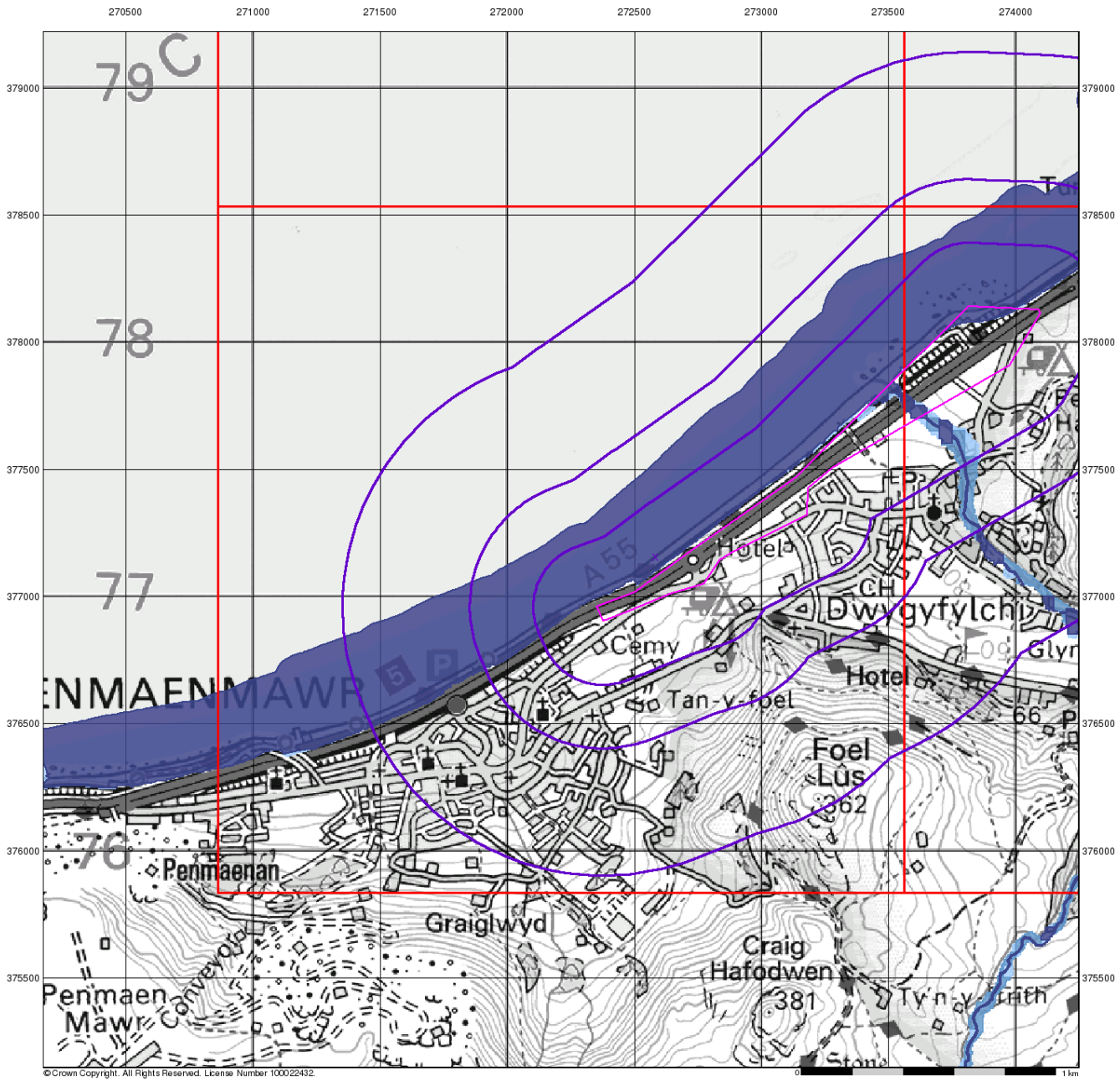
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EA/NRW RoFRS Data (1:50,000)

General

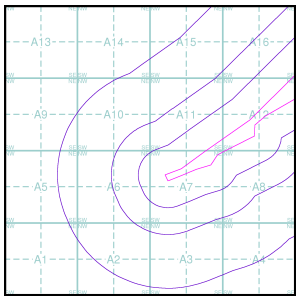
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice A



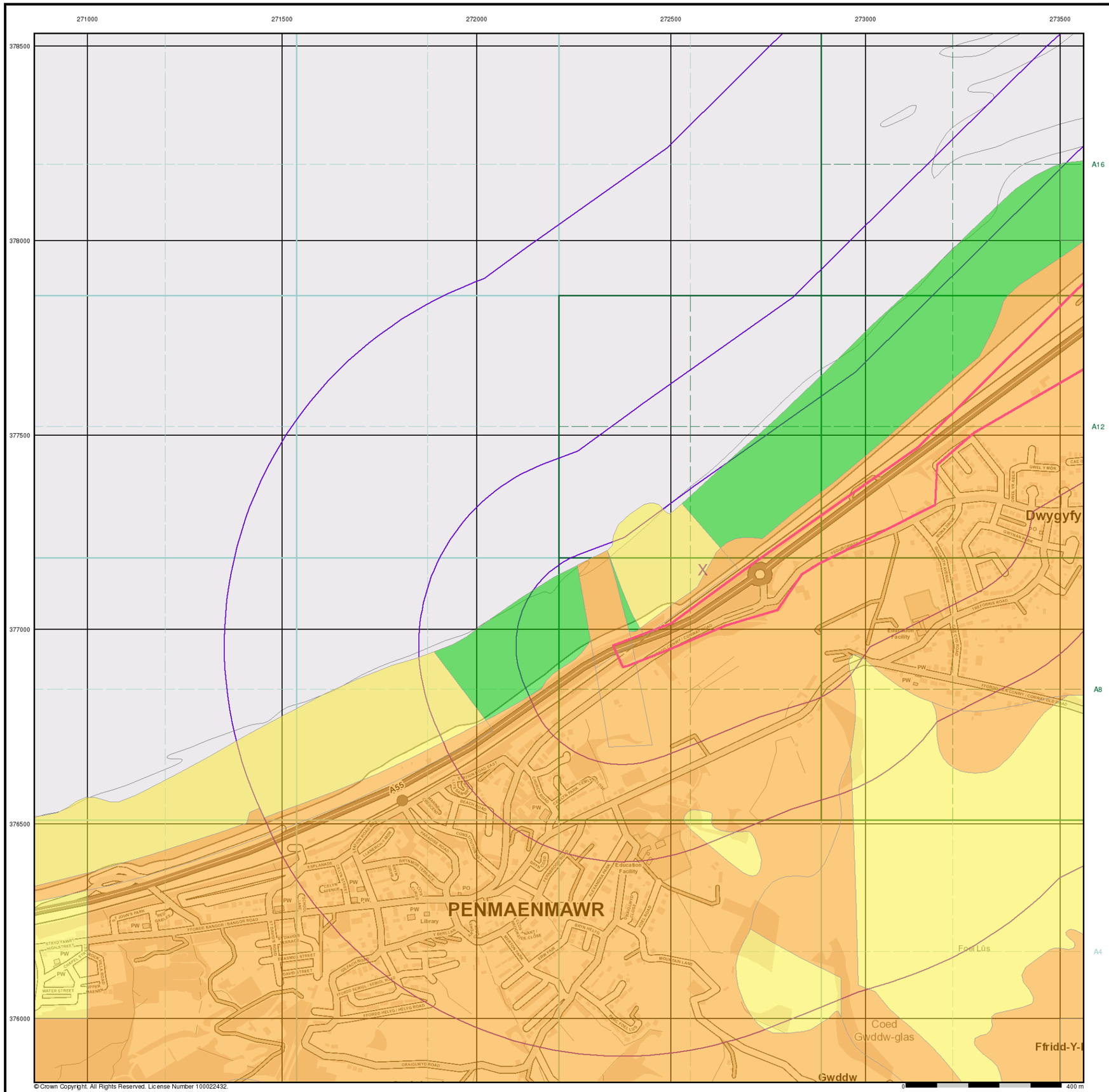
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General

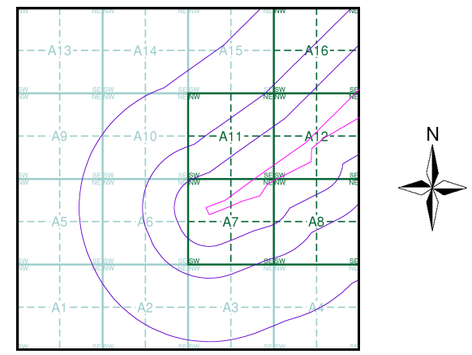
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



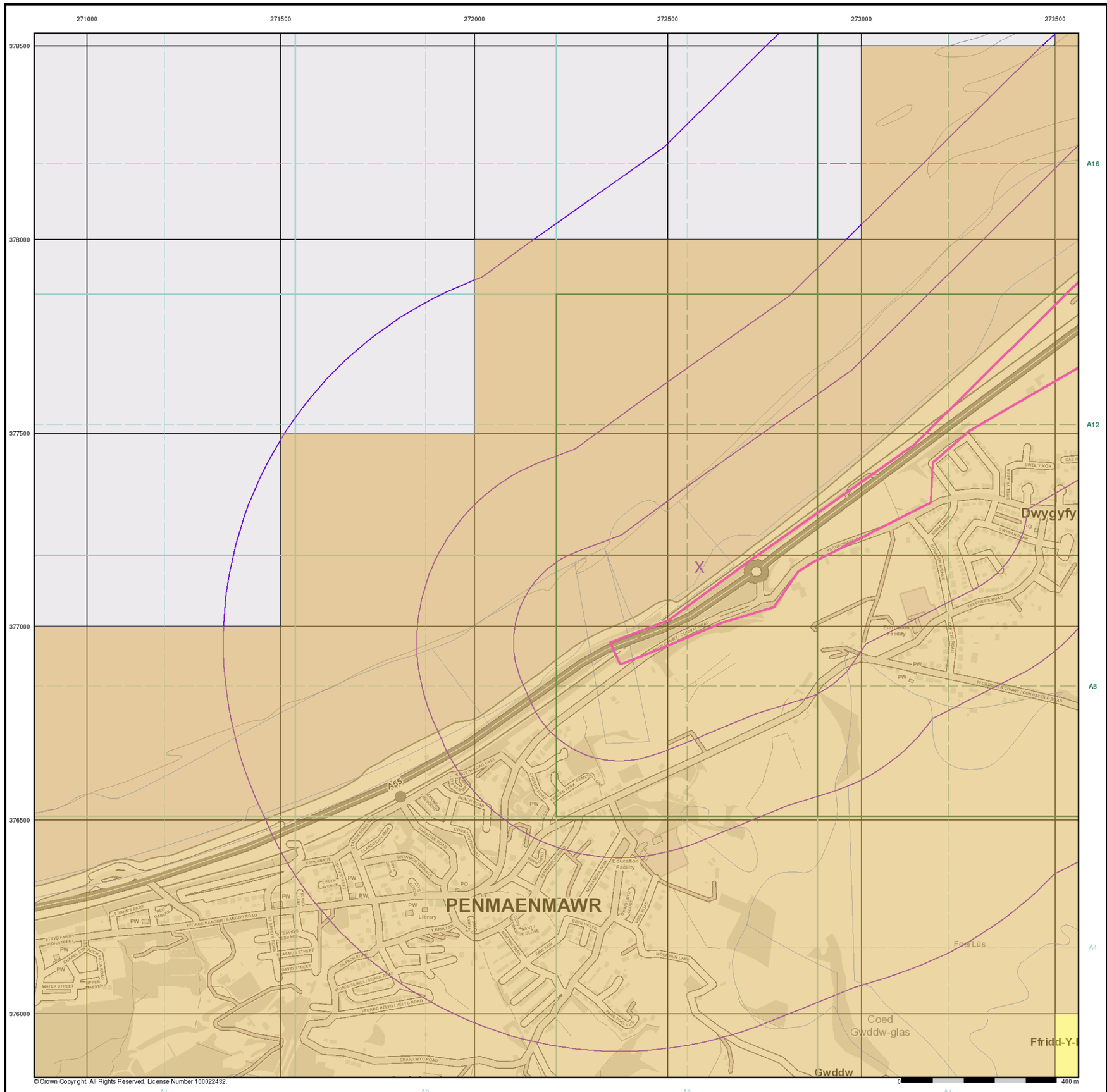
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

General

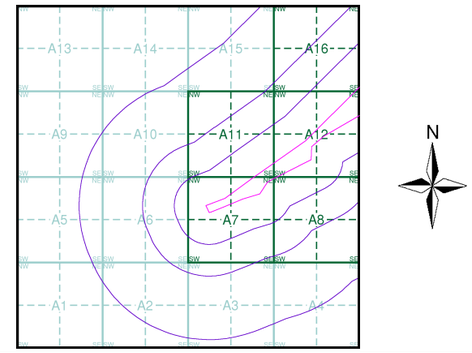
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



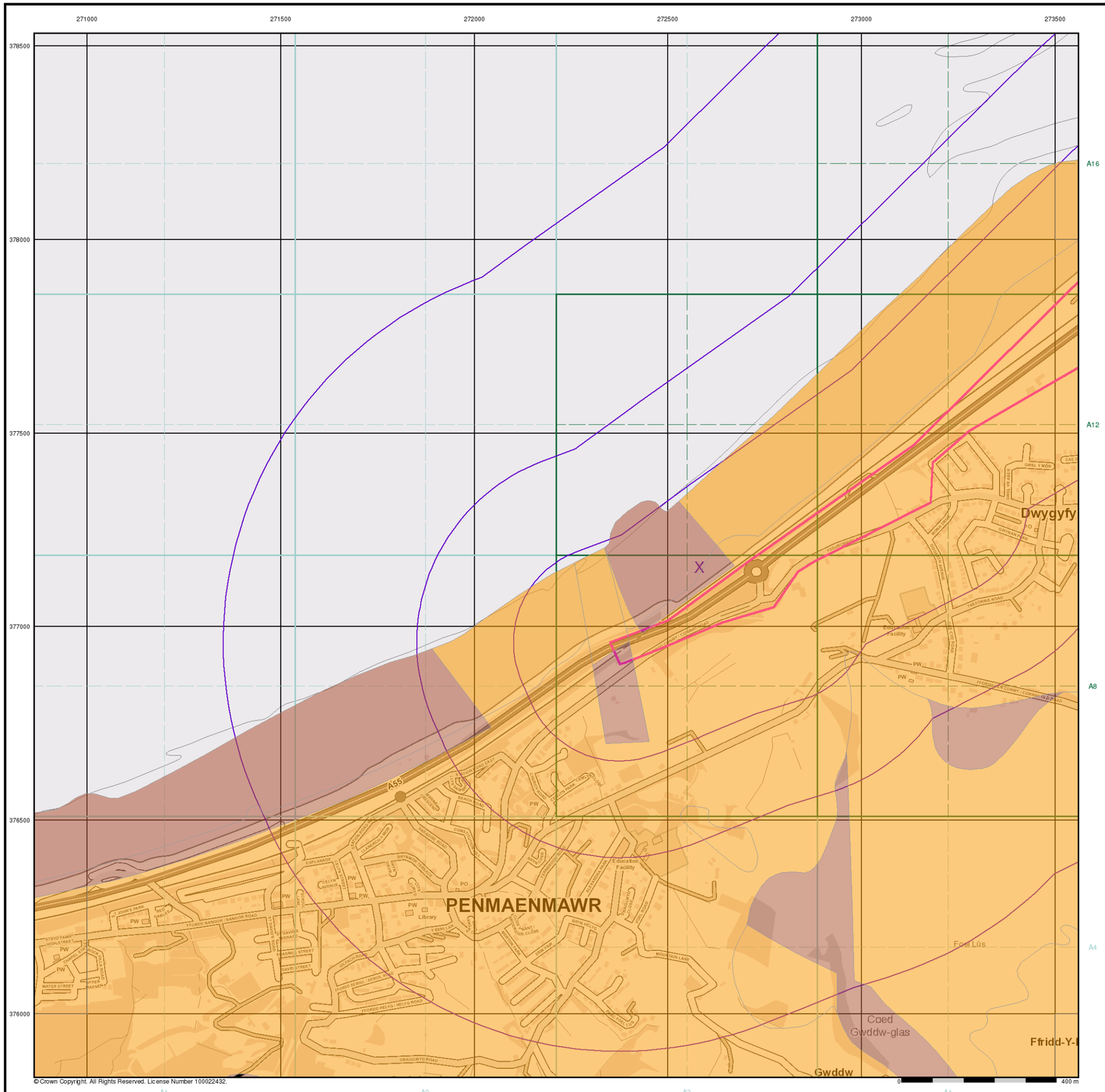
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

General

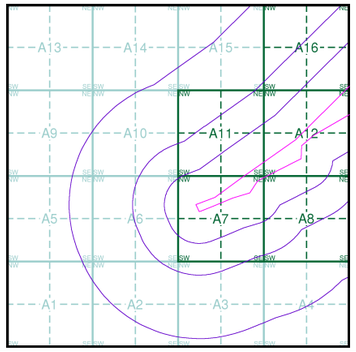
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



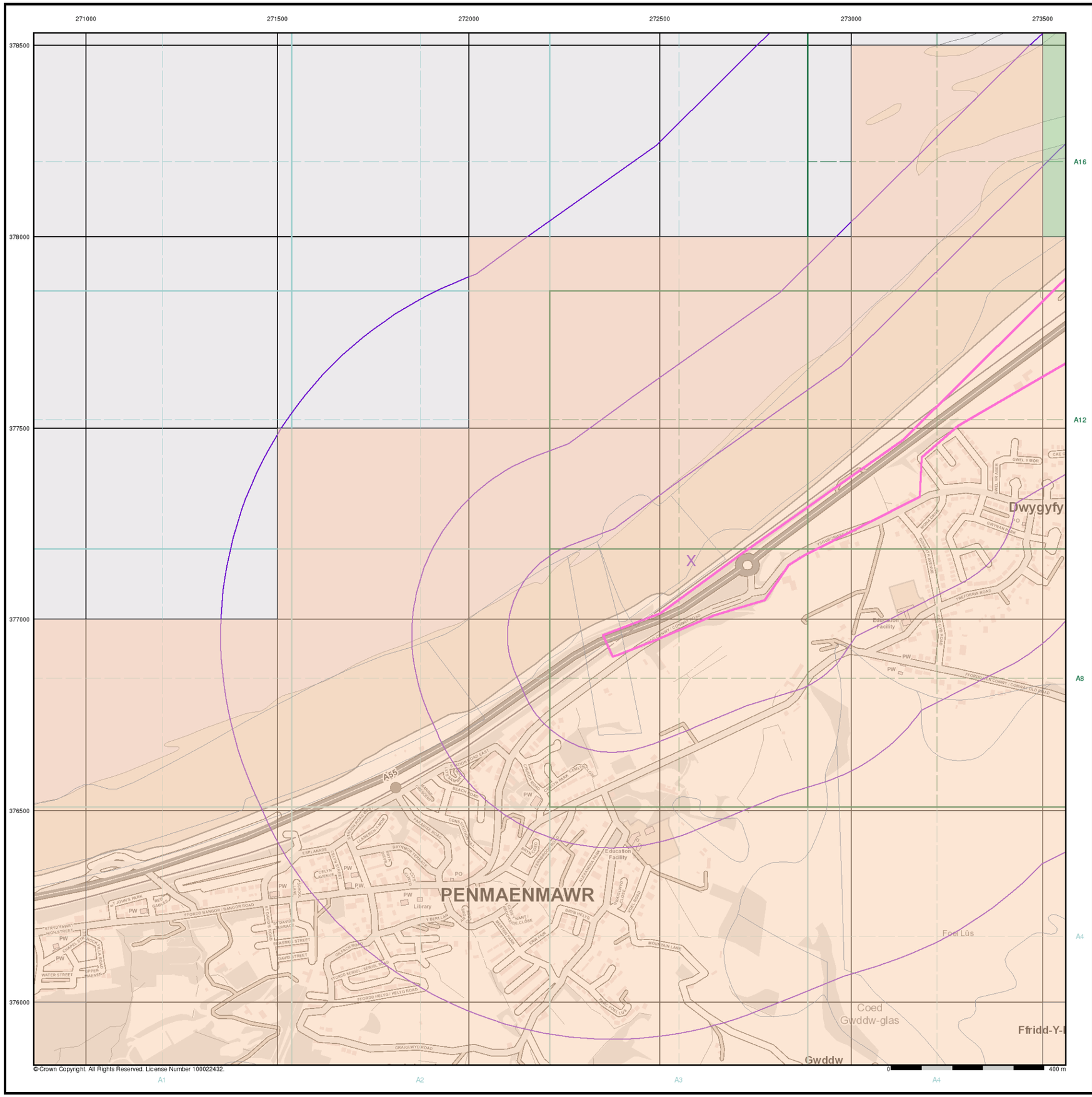
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

General

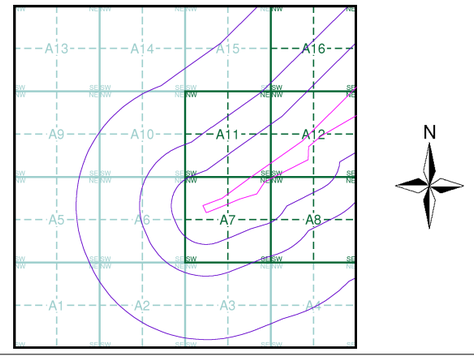
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



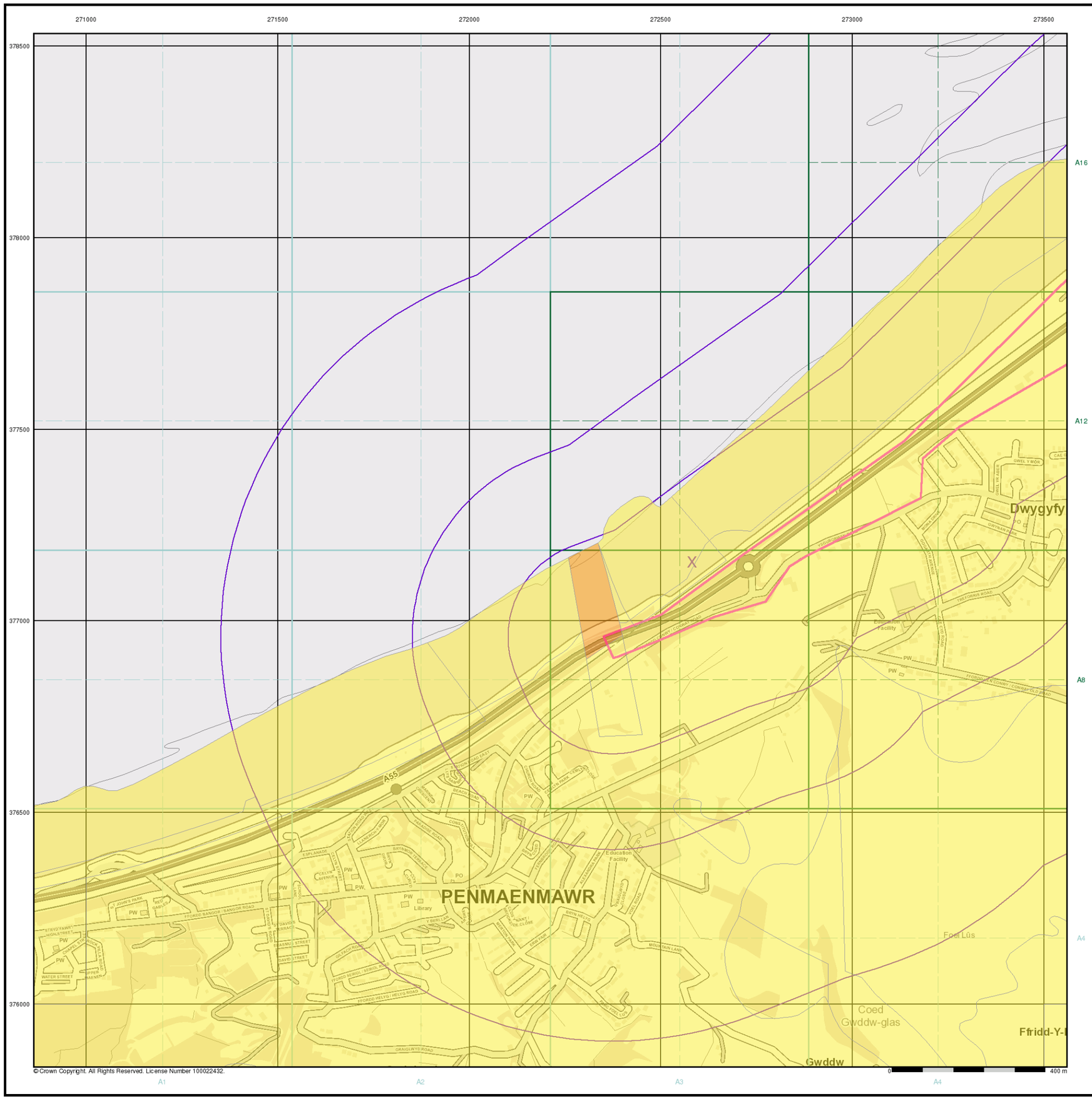
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

General

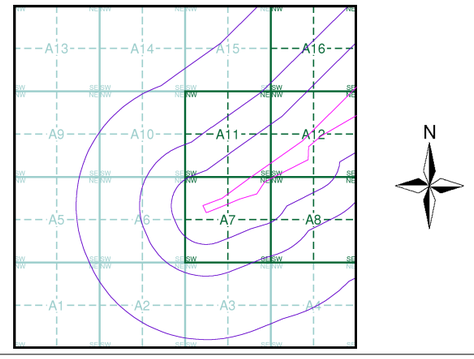
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



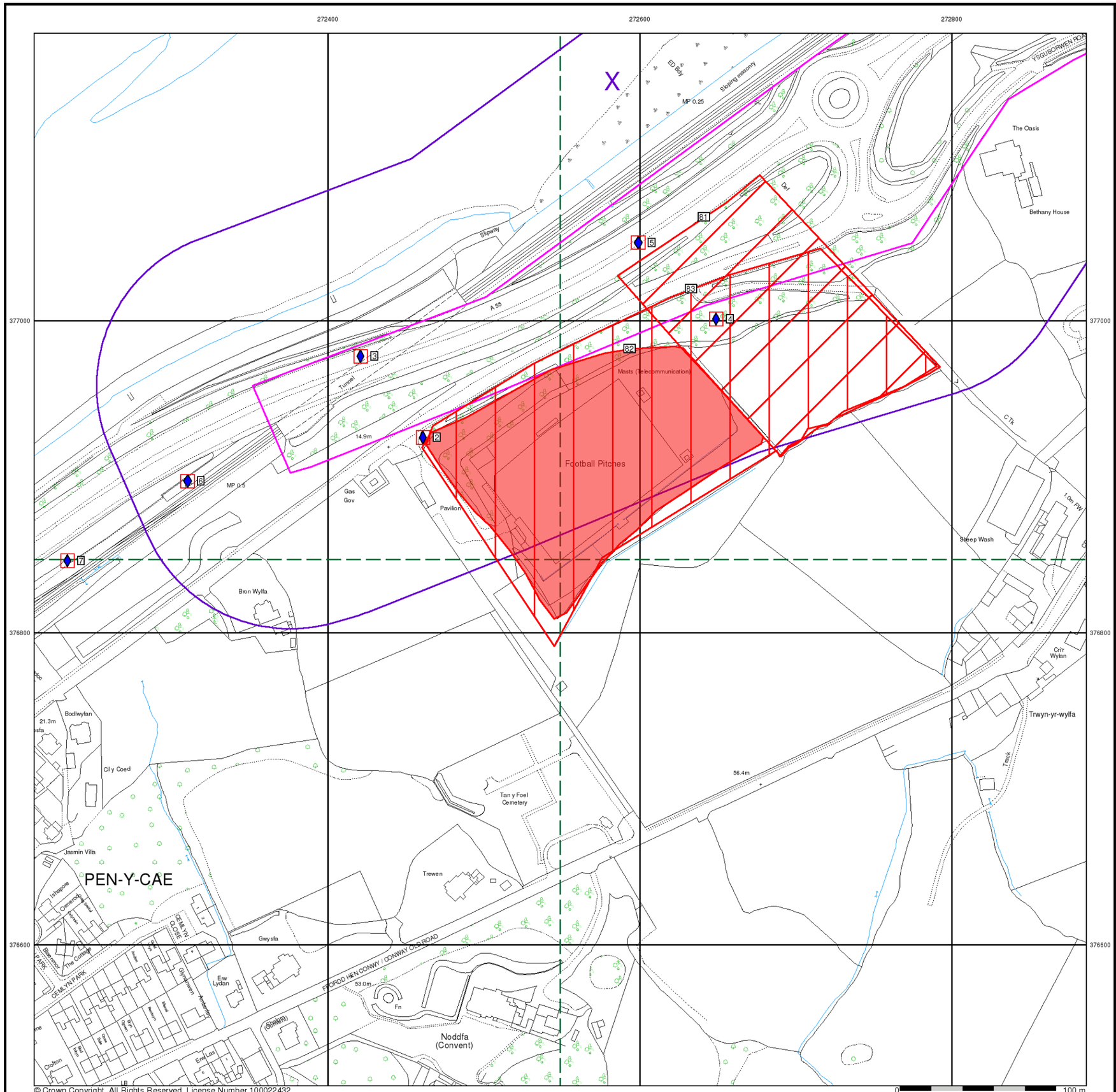
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

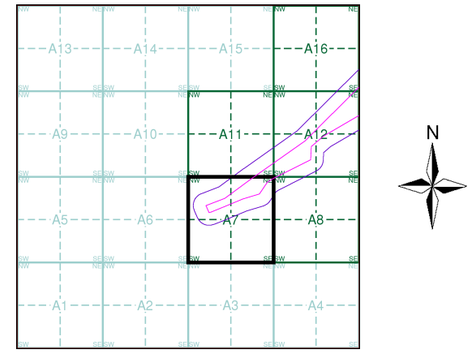
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A7



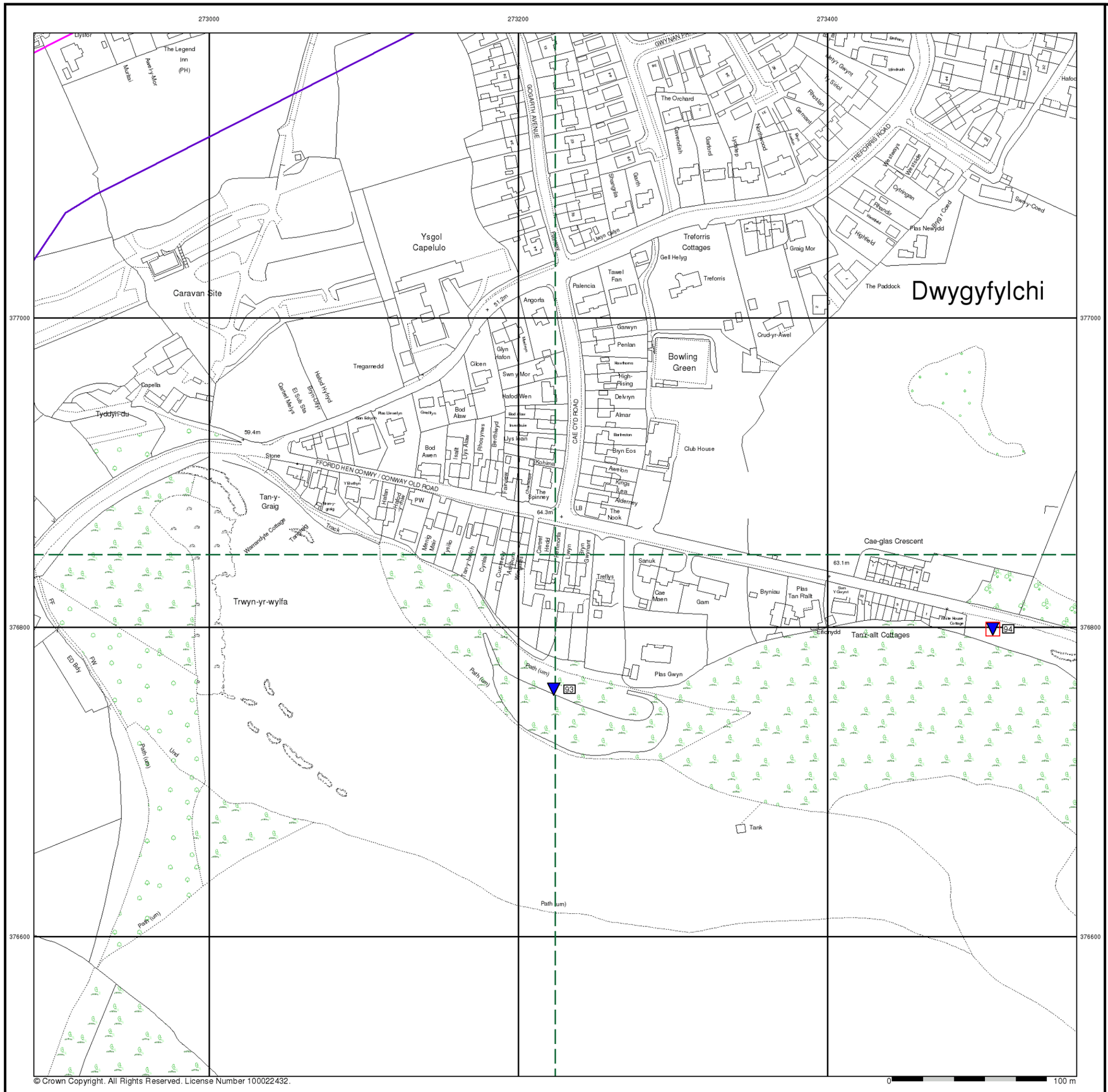
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

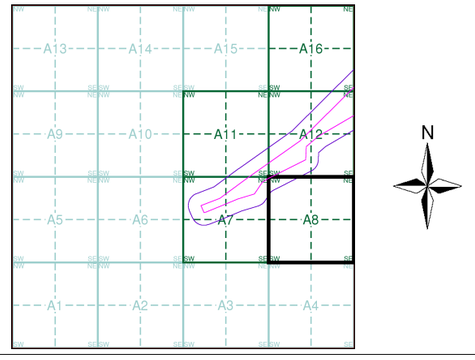
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Recorded Mineral Site

Site Sensitivity Map - Segment A8



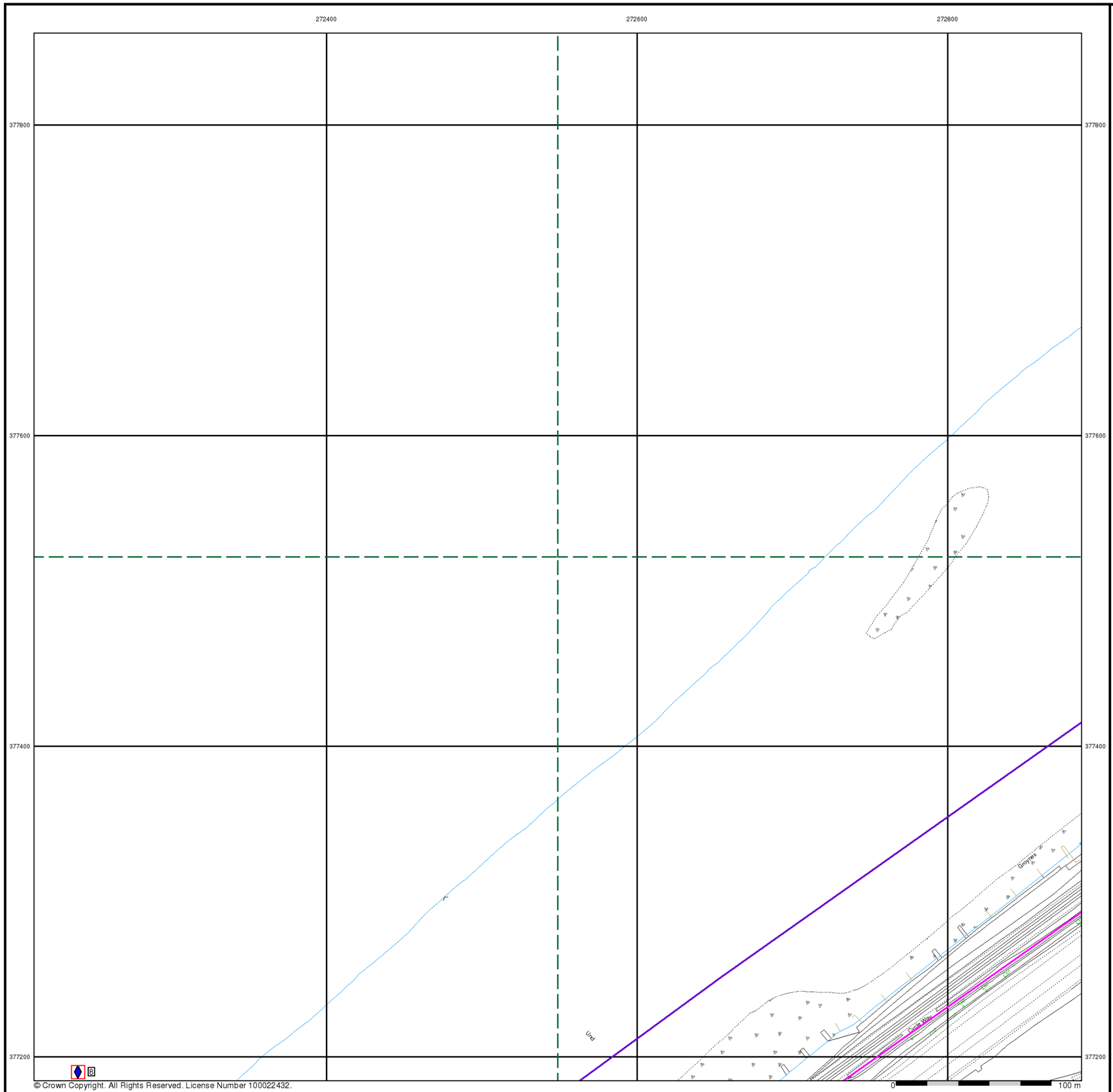
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Map ID
Several of Type at Location
Pylon
Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

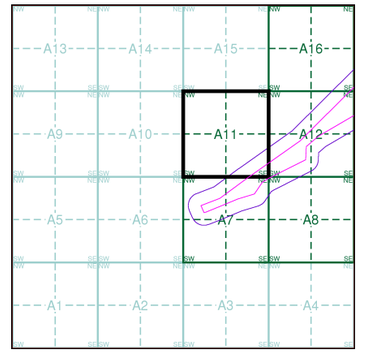
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A11



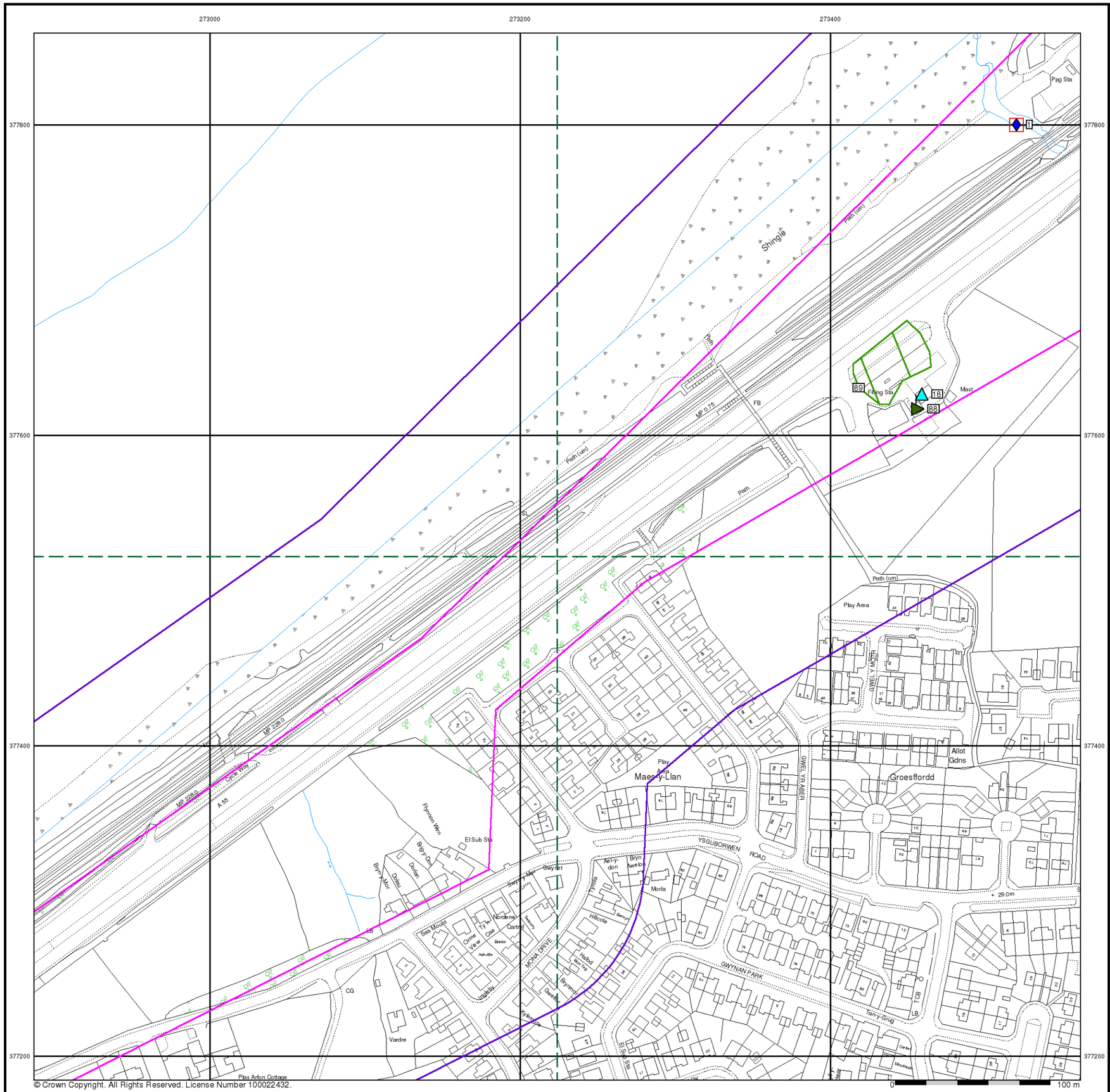
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

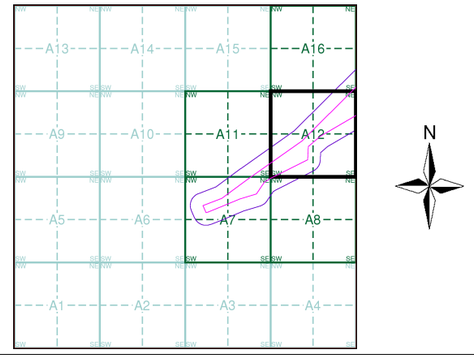
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
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- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A12



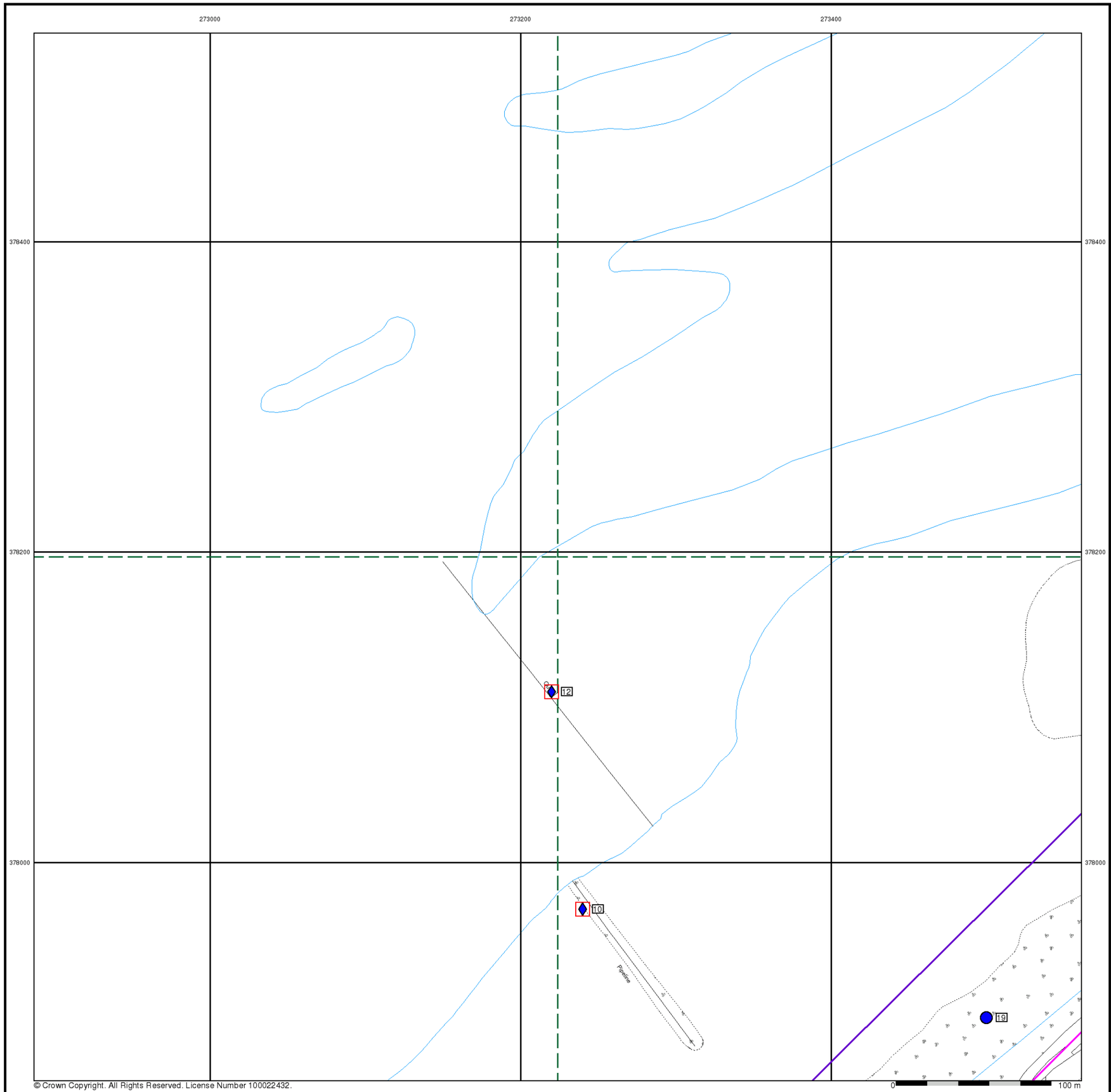
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
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- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

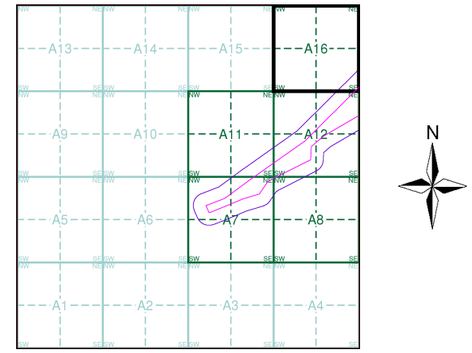
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
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- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A16



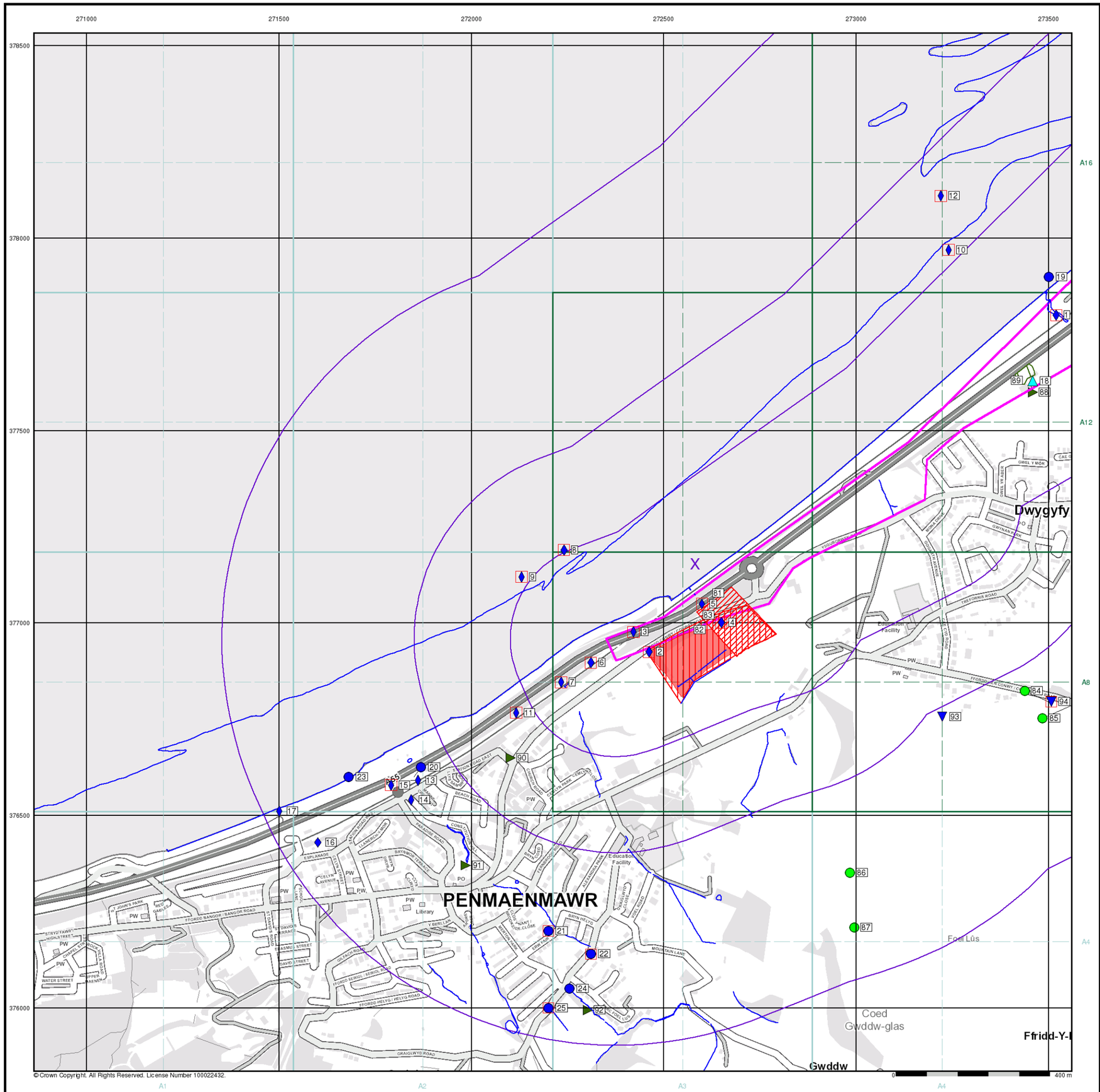
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Map ID
Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

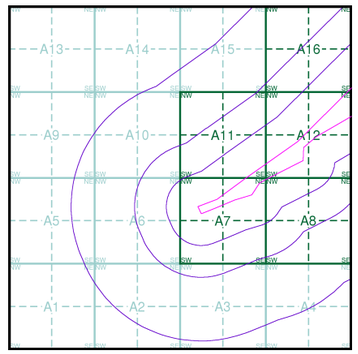
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
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- Local Authority Recorded Landfill Site
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- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



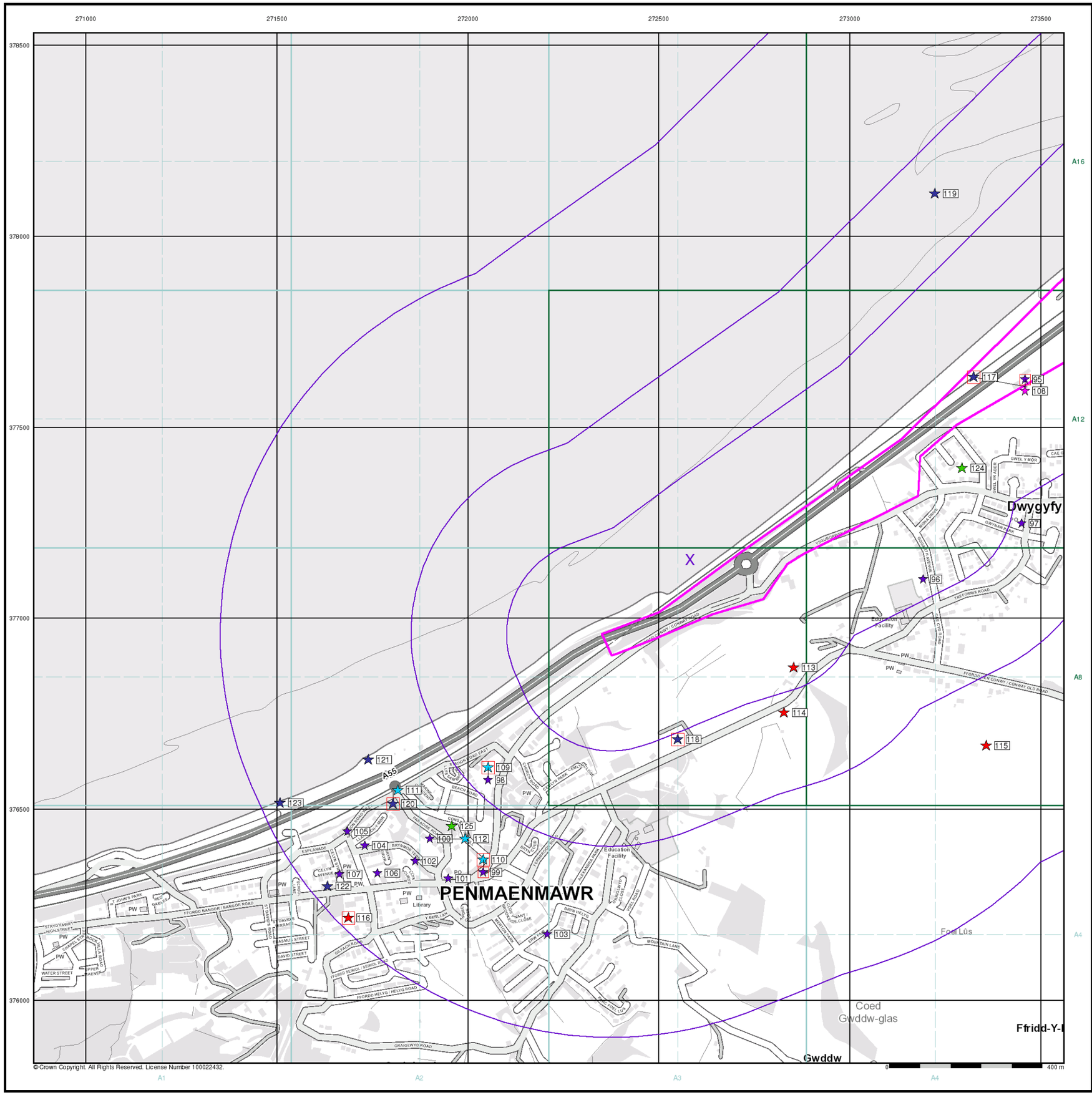
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

Industrial Land Use Map

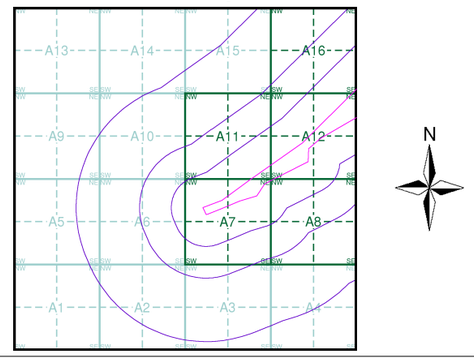
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



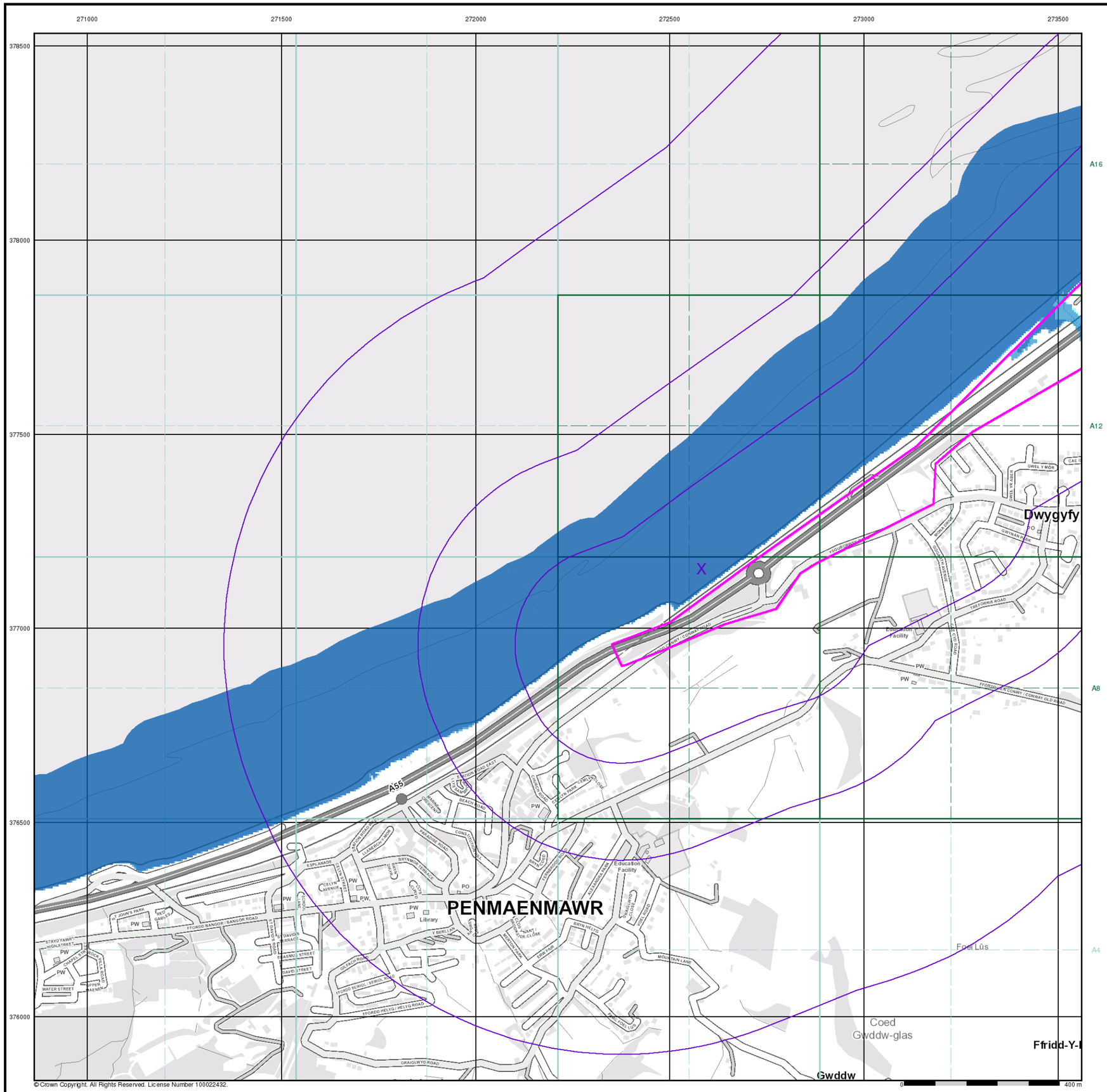
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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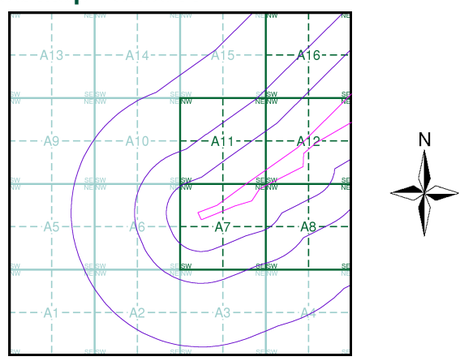
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



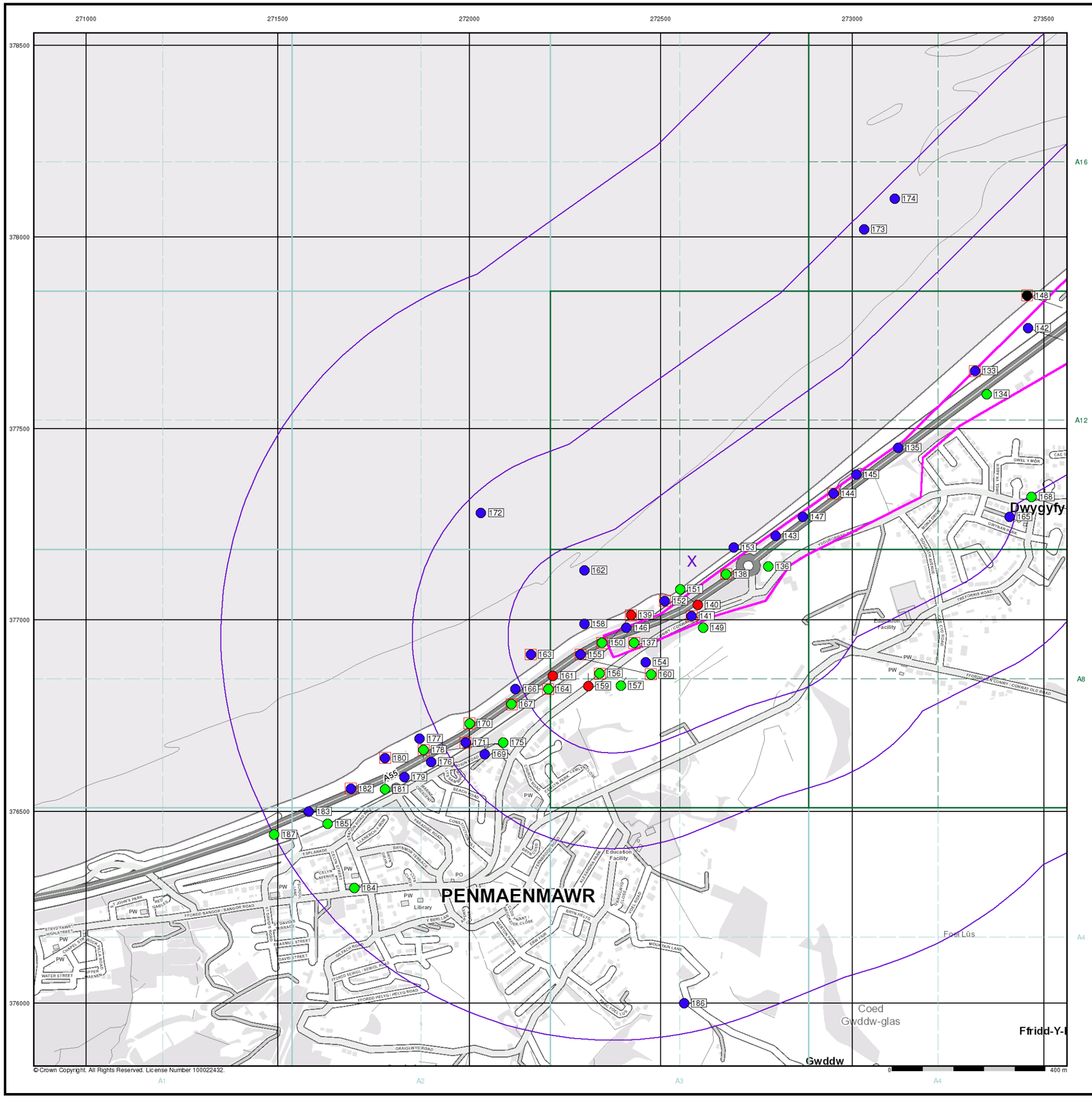
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

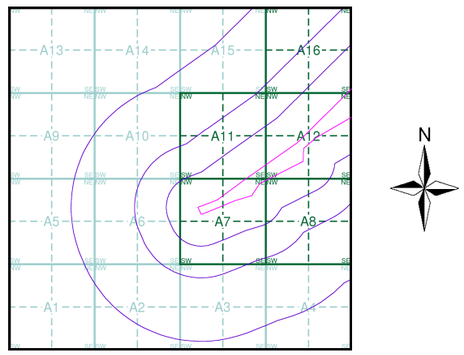
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



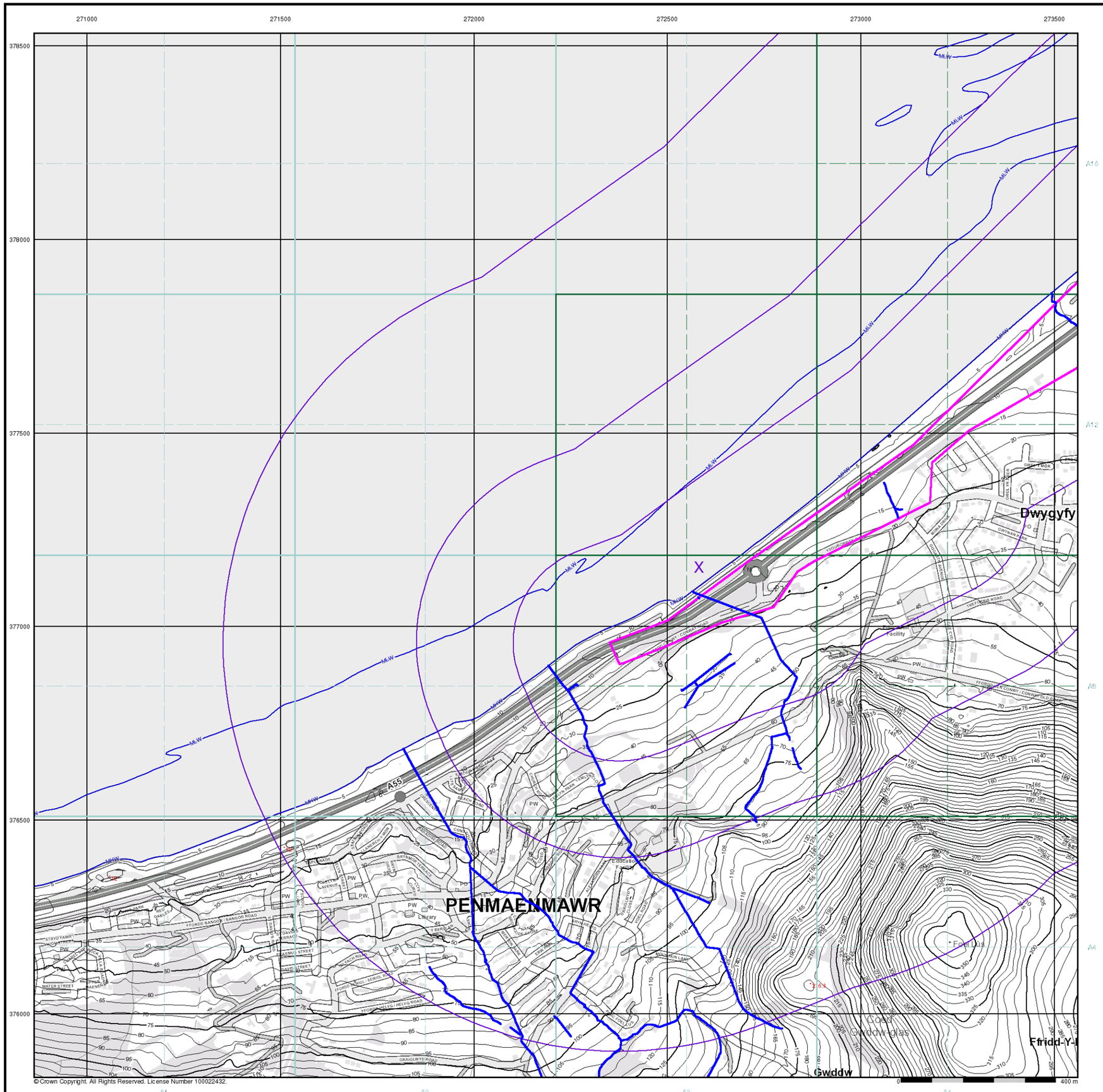
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

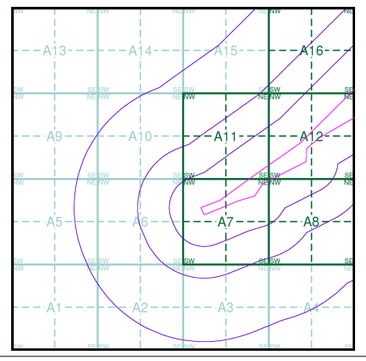
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

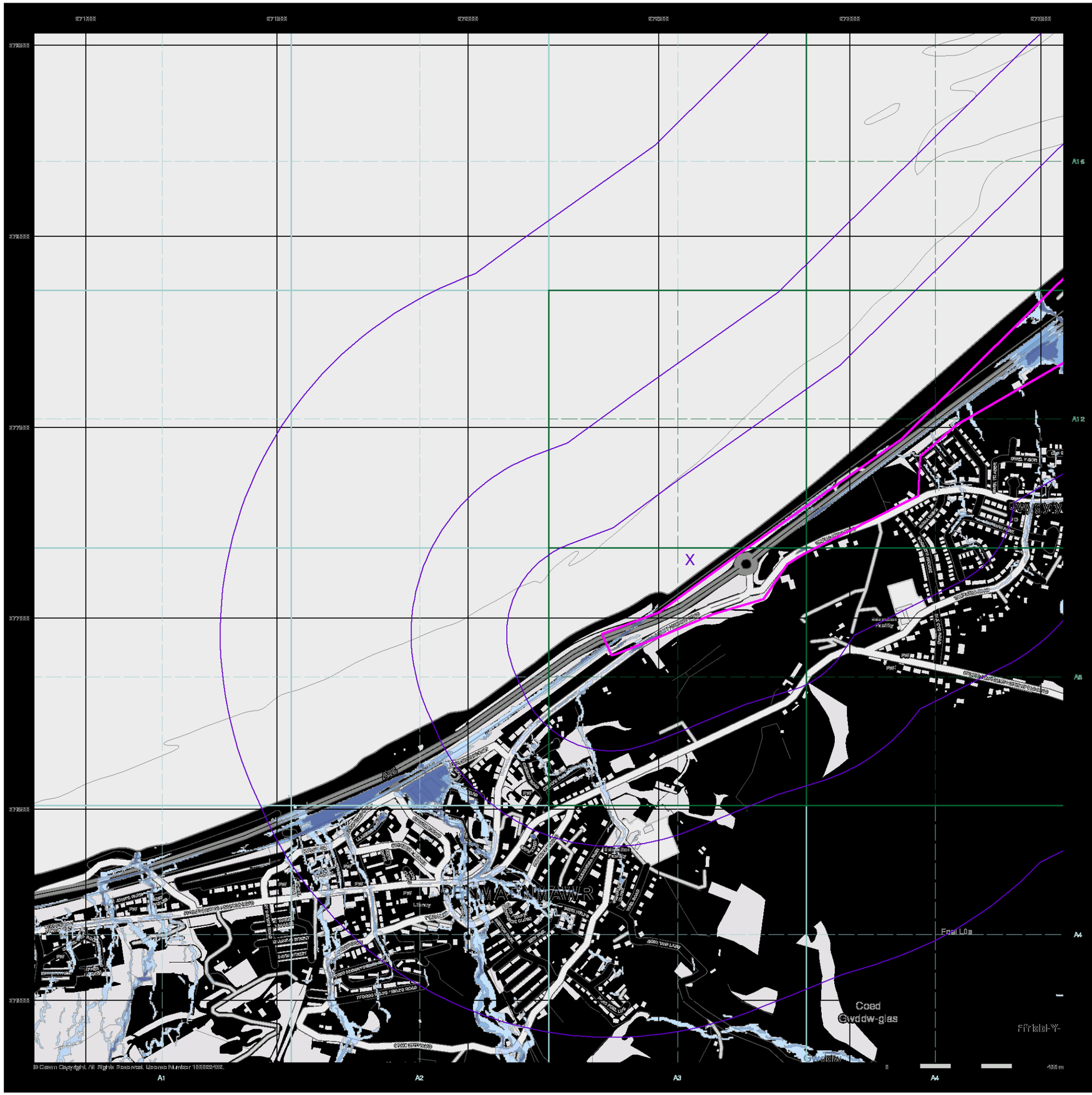
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
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Site Area (Ha):	28.4
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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

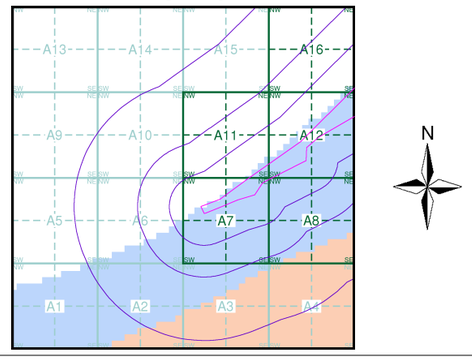
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

Order Number:	175417398_1_1
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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

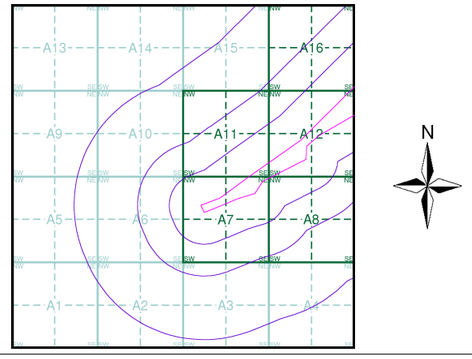
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:10,560	1888	2
Caernarvonshire	1:10,560	1901	3
Caernarvonshire	1:10,560	1915	4
Caernarvonshire	1:10,560	1938	5
Caernarvonshire	1:10,560	1953	6
Ordnance Survey Plan	1:10,000	1964	7
Ordnance Survey Plan	1:10,000	1975	8
Ordnance Survey Plan	1:10,000	1992	9
10K Raster Mapping	1:10,000	2000	10
10K Raster Mapping	1:10,000	2006	11
VectorMap Local	1:10,000	2018	12

Historical Map - Slice A



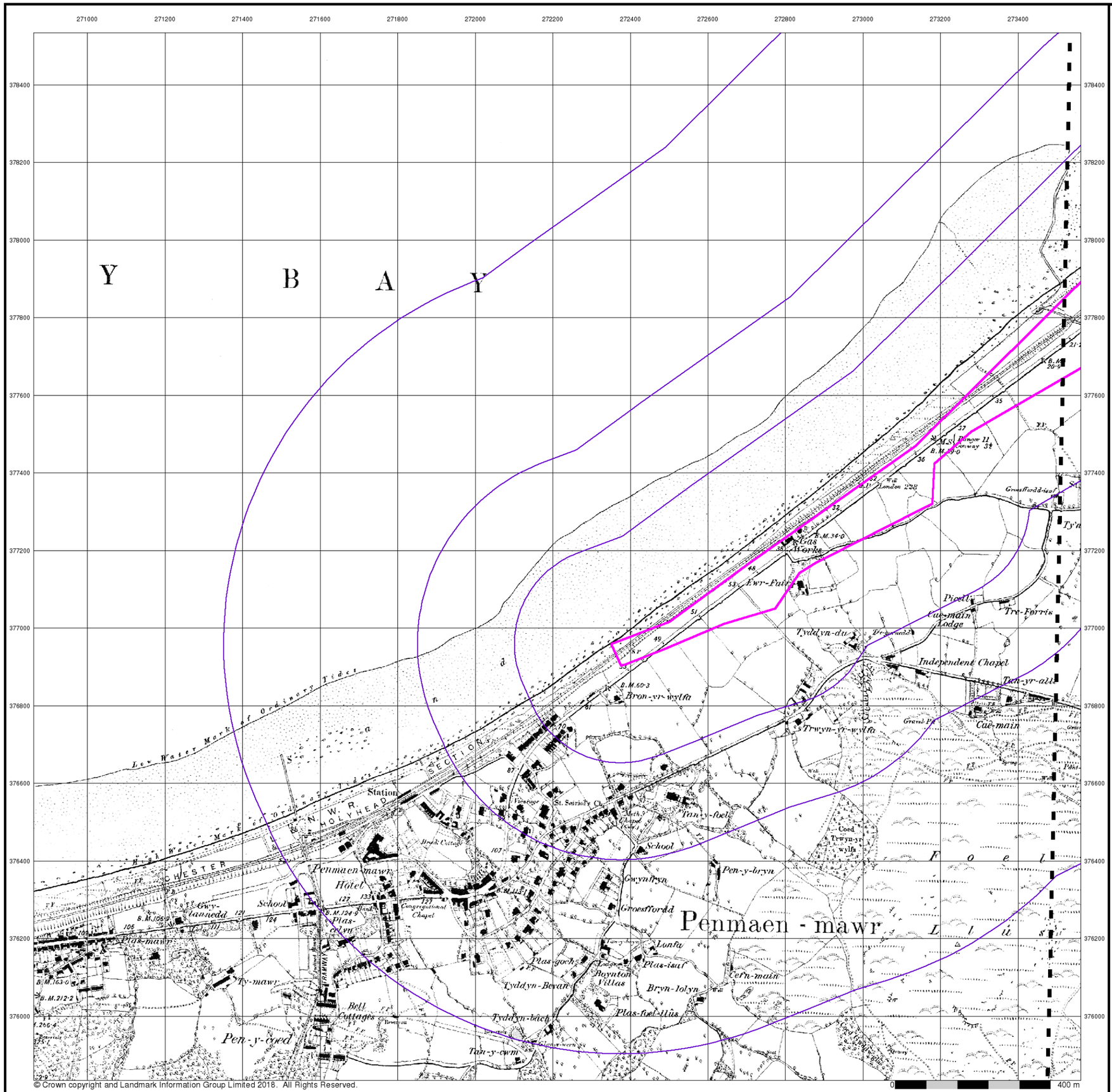
Order Details

Order Number: 175417398_1_1
Customer Ref: 1620004796 - J16
National Grid Reference: 272580, 377150
Slice: A
Site Area (Ha): 28.4
Search Buffer (m): 1000

Site Details

Site at, Penmaenmawr, Conwy

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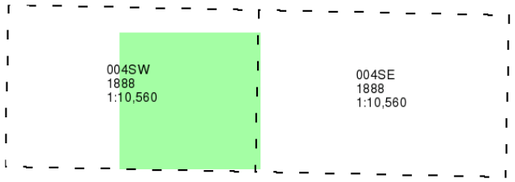
Caernarvonshire

Published 1888

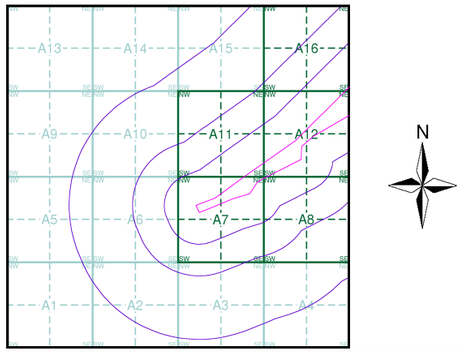
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



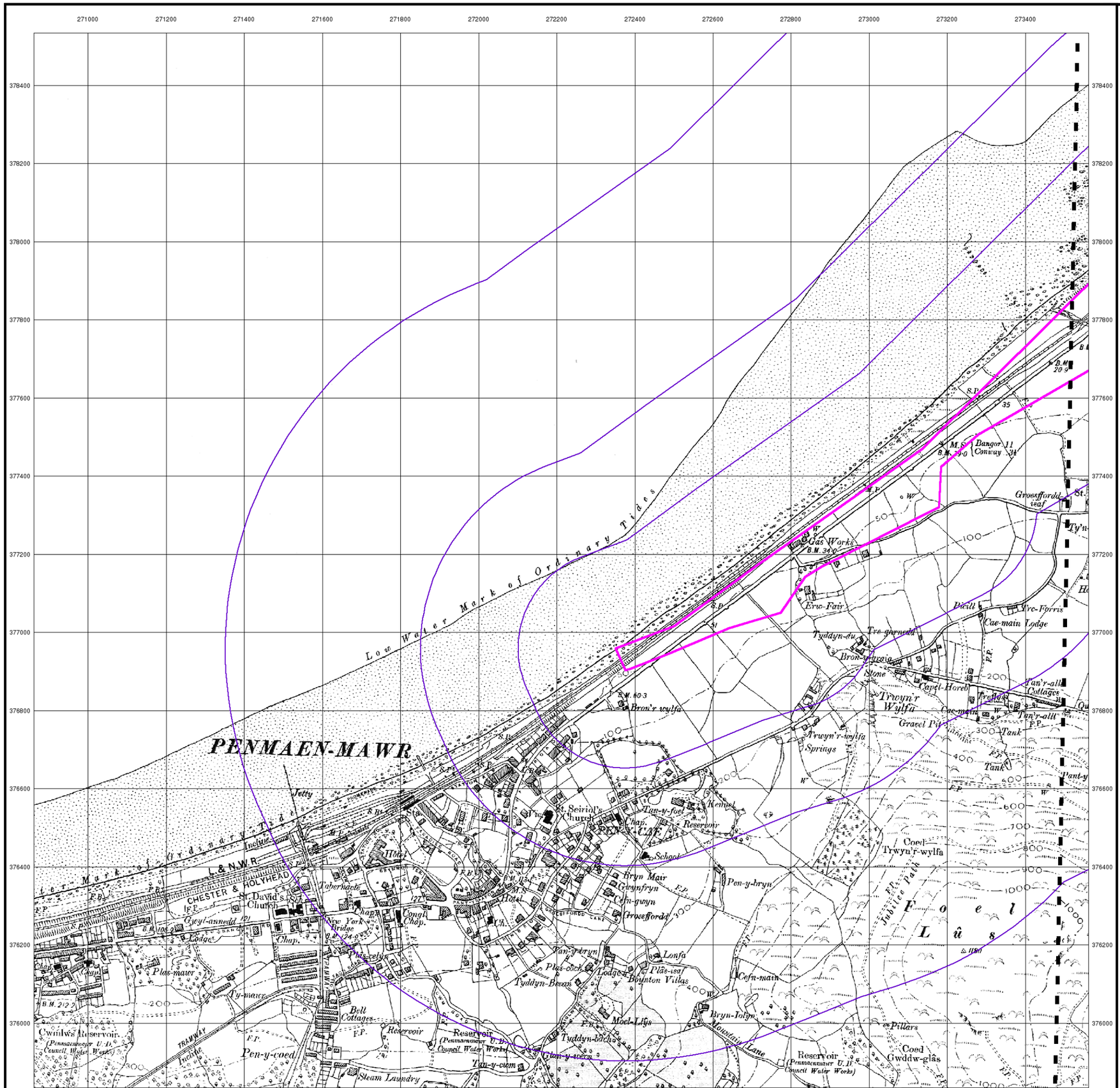
Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
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0 400 m

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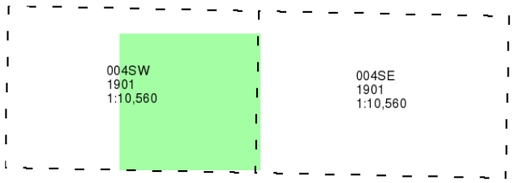
Caernarvonshire

Published 1901

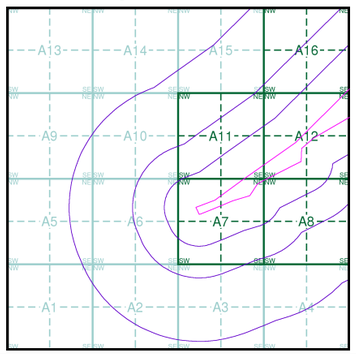
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



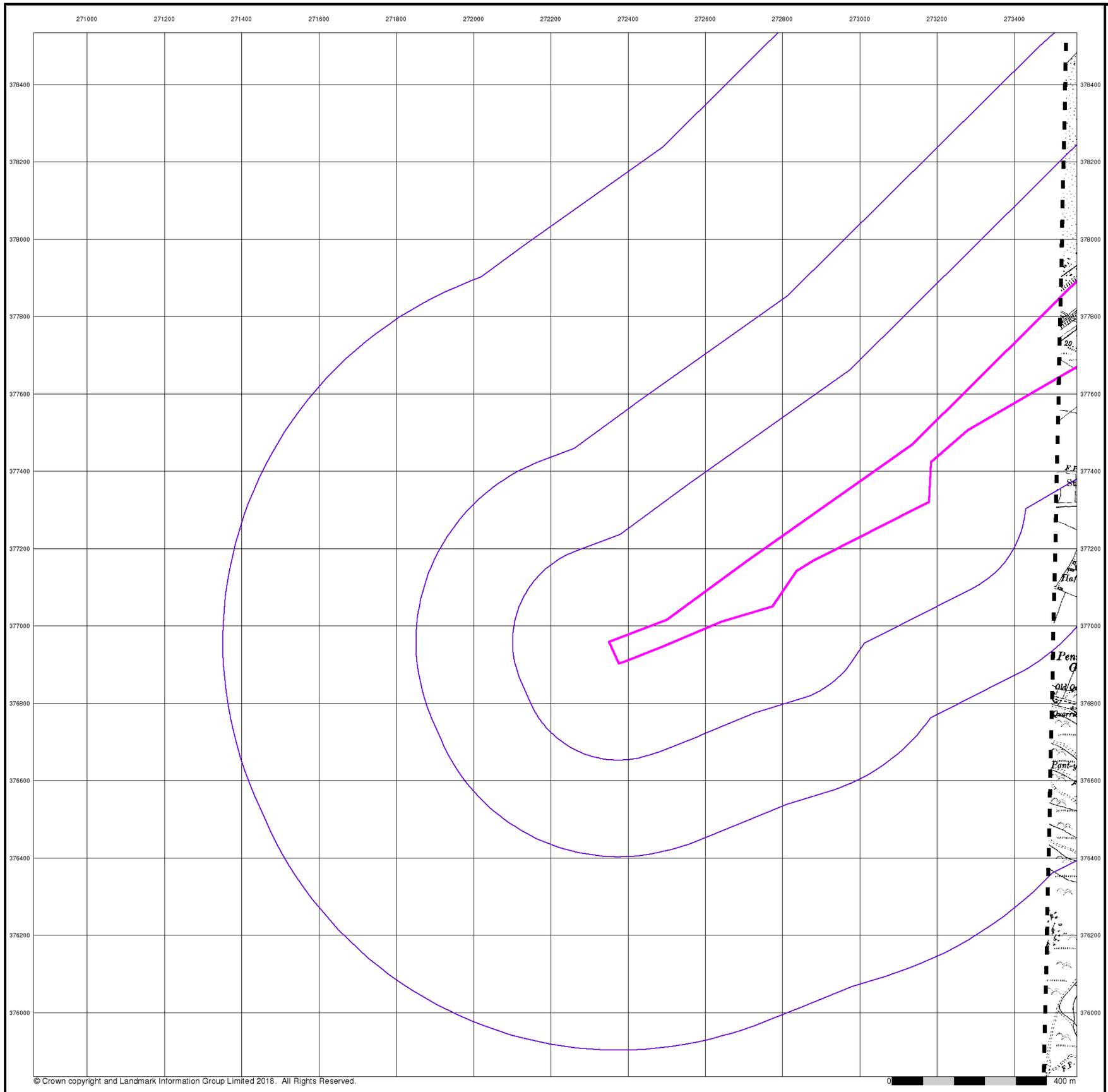
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
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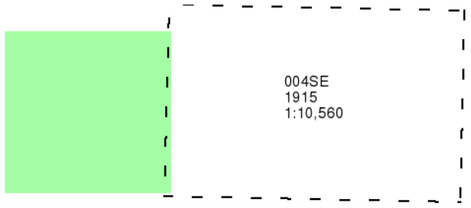
Caernarvonshire

Published 1915

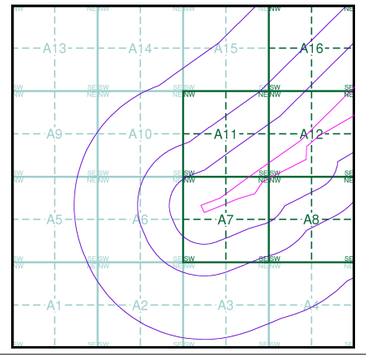
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

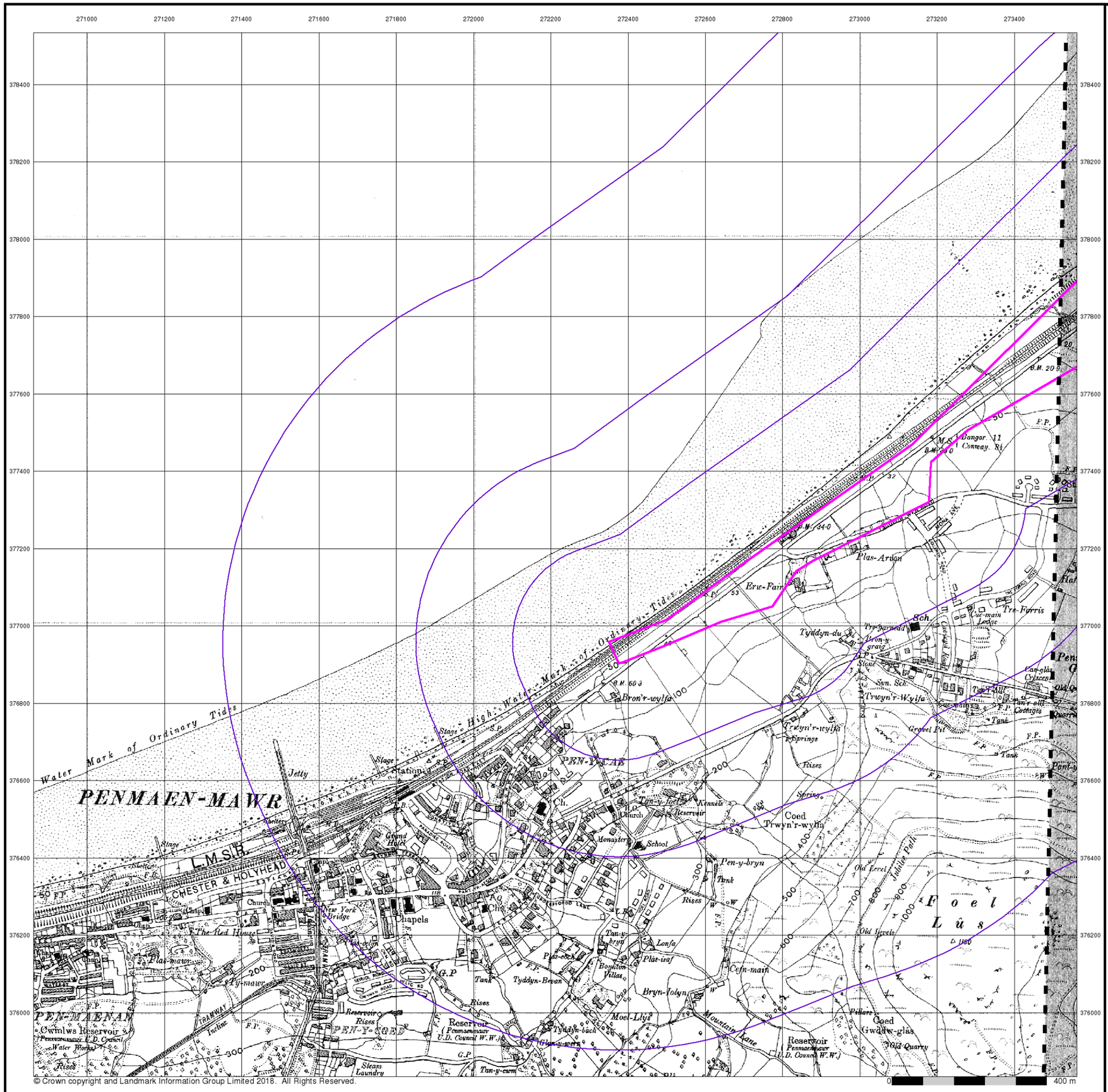
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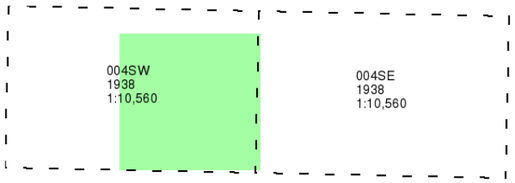
Caernarvonshire

Published 1938

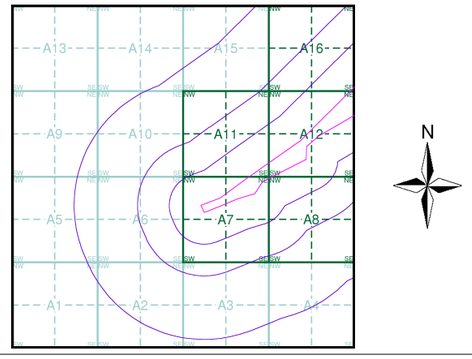
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



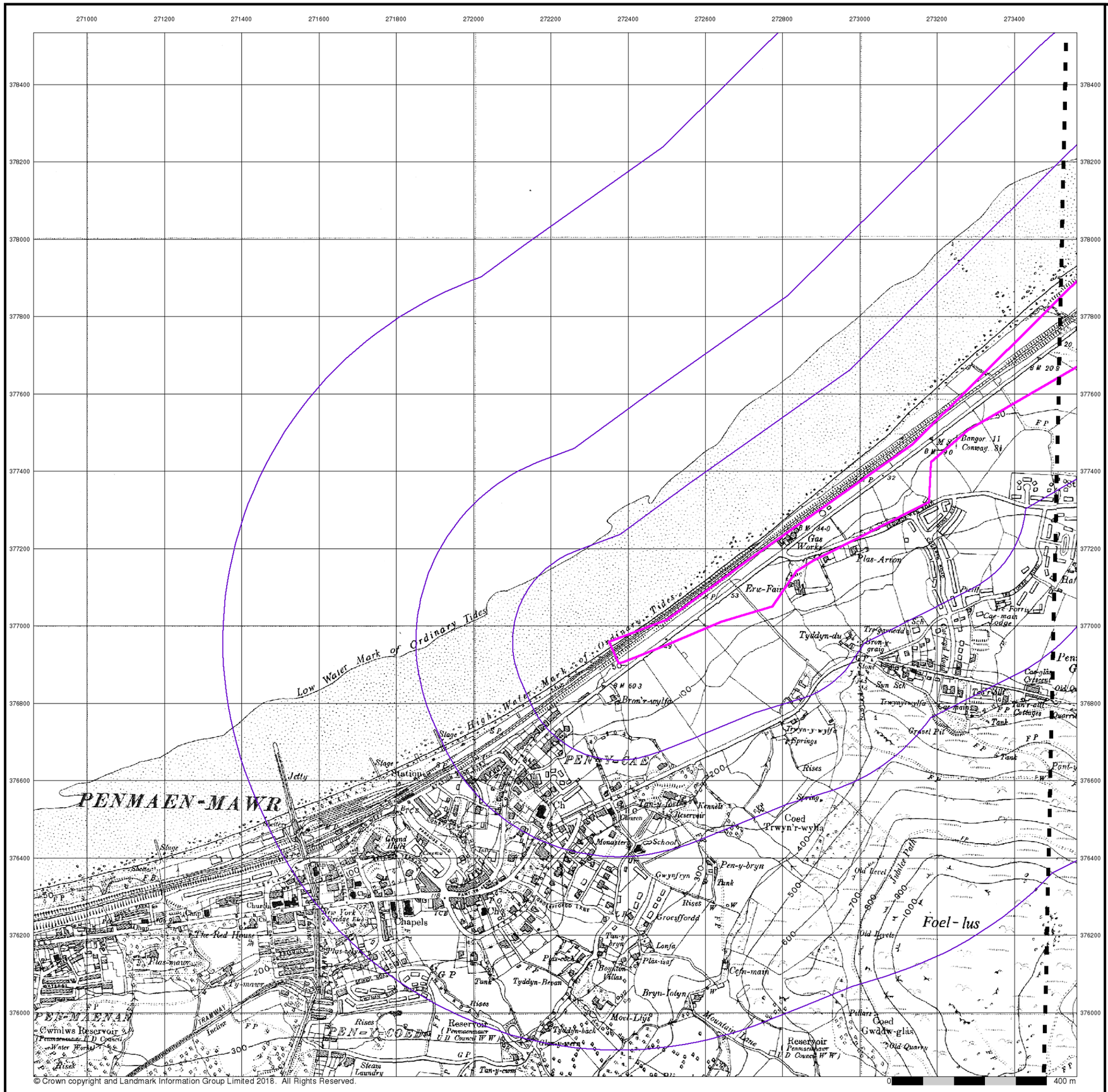
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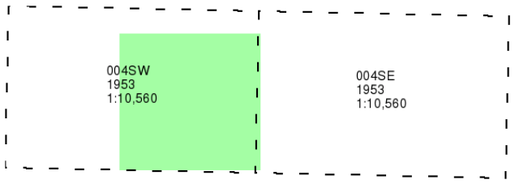
Caernarvonshire

Published 1953

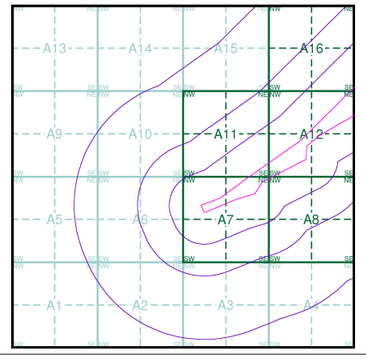
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



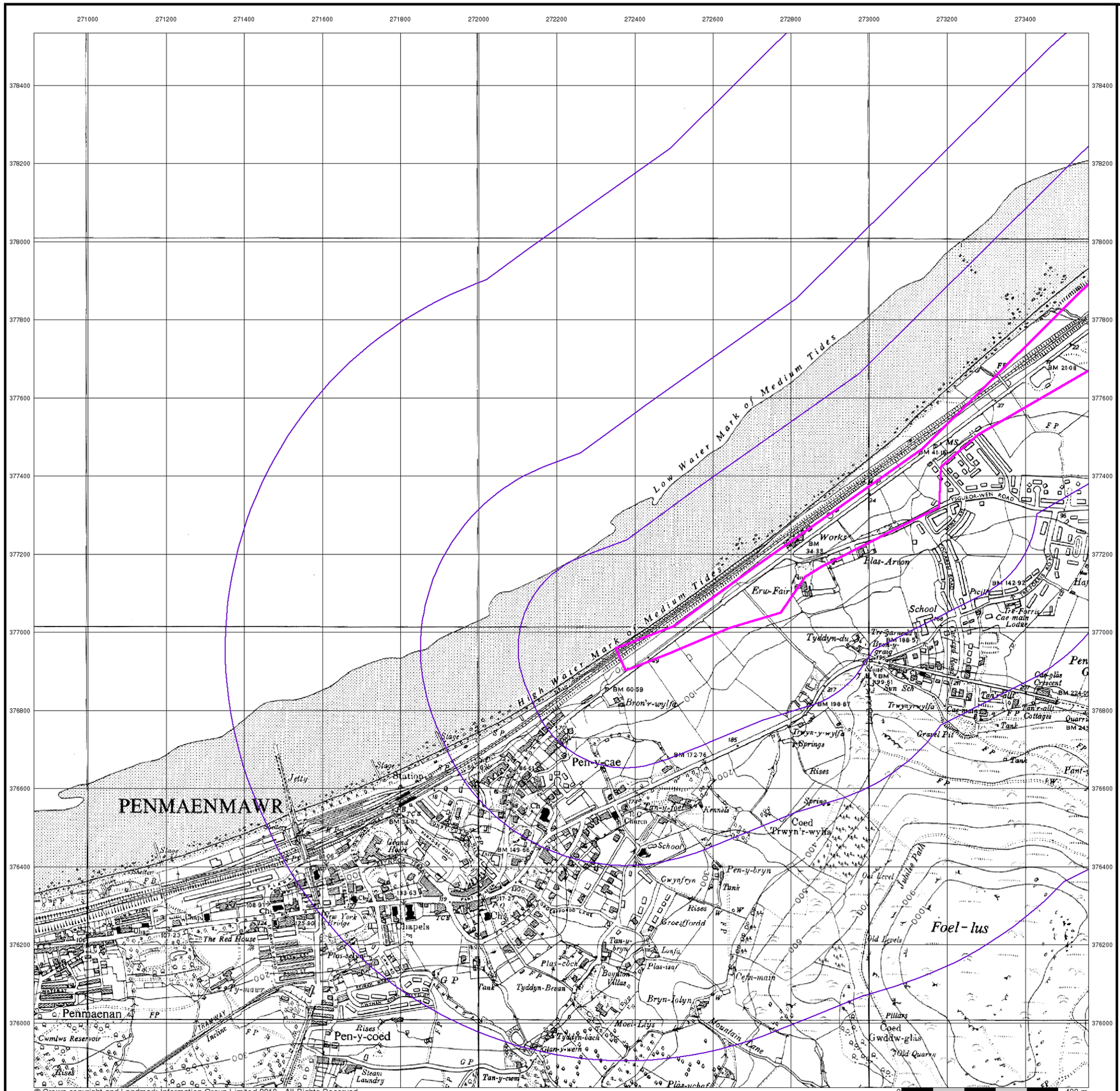
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Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Ordnance Survey Plan

Published 1964

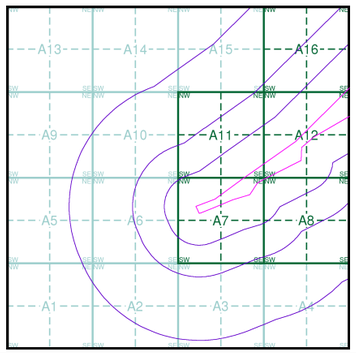
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SH77NW
1964
1:10,560

Historical Map - Slice A



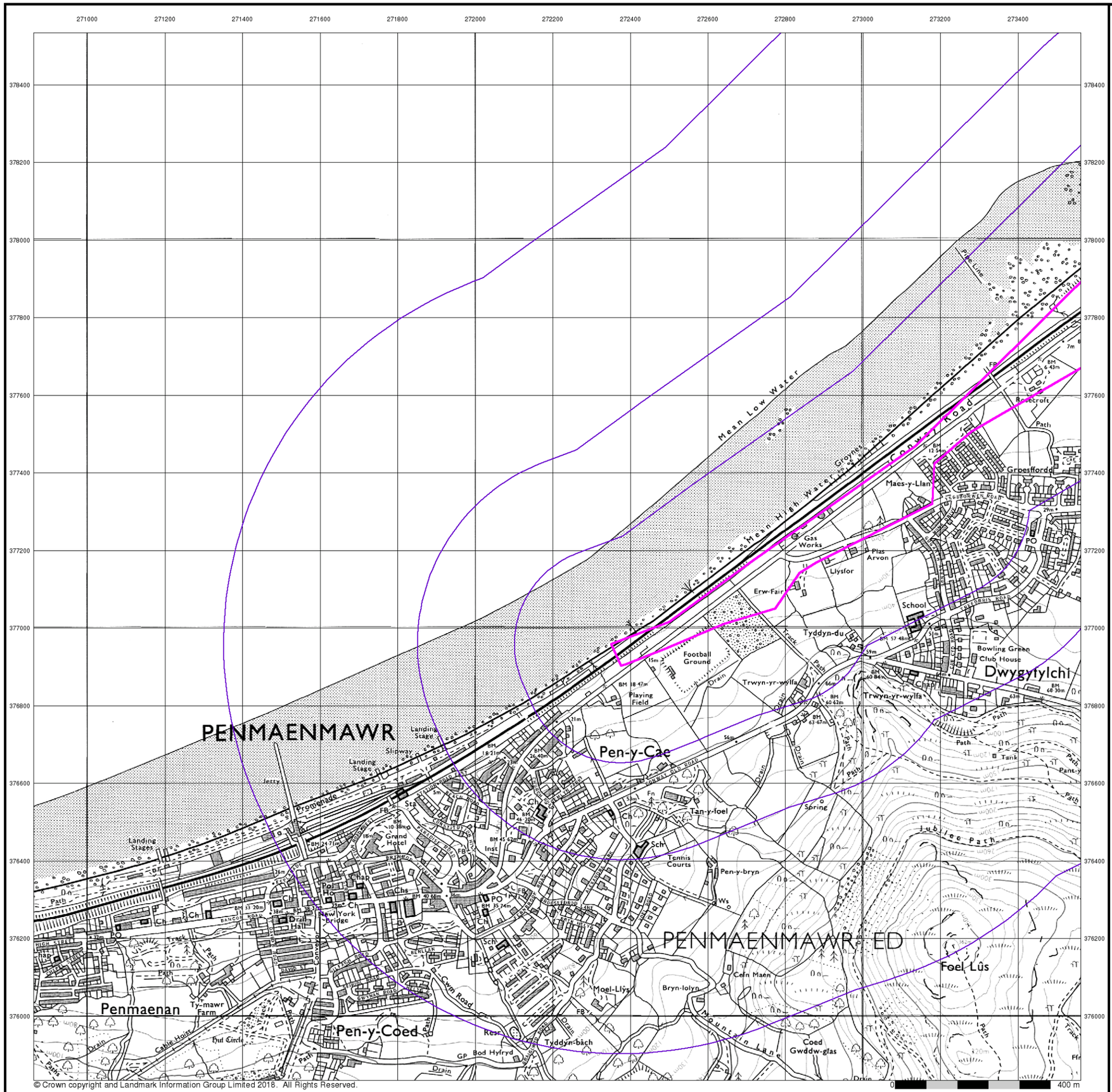
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Ordnance Survey Plan

Published 1975

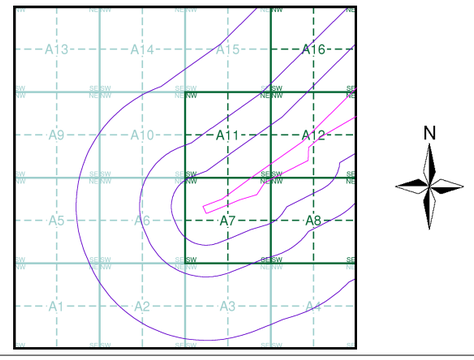
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SH77NW
1975
1:10,000

Historical Map - Slice A



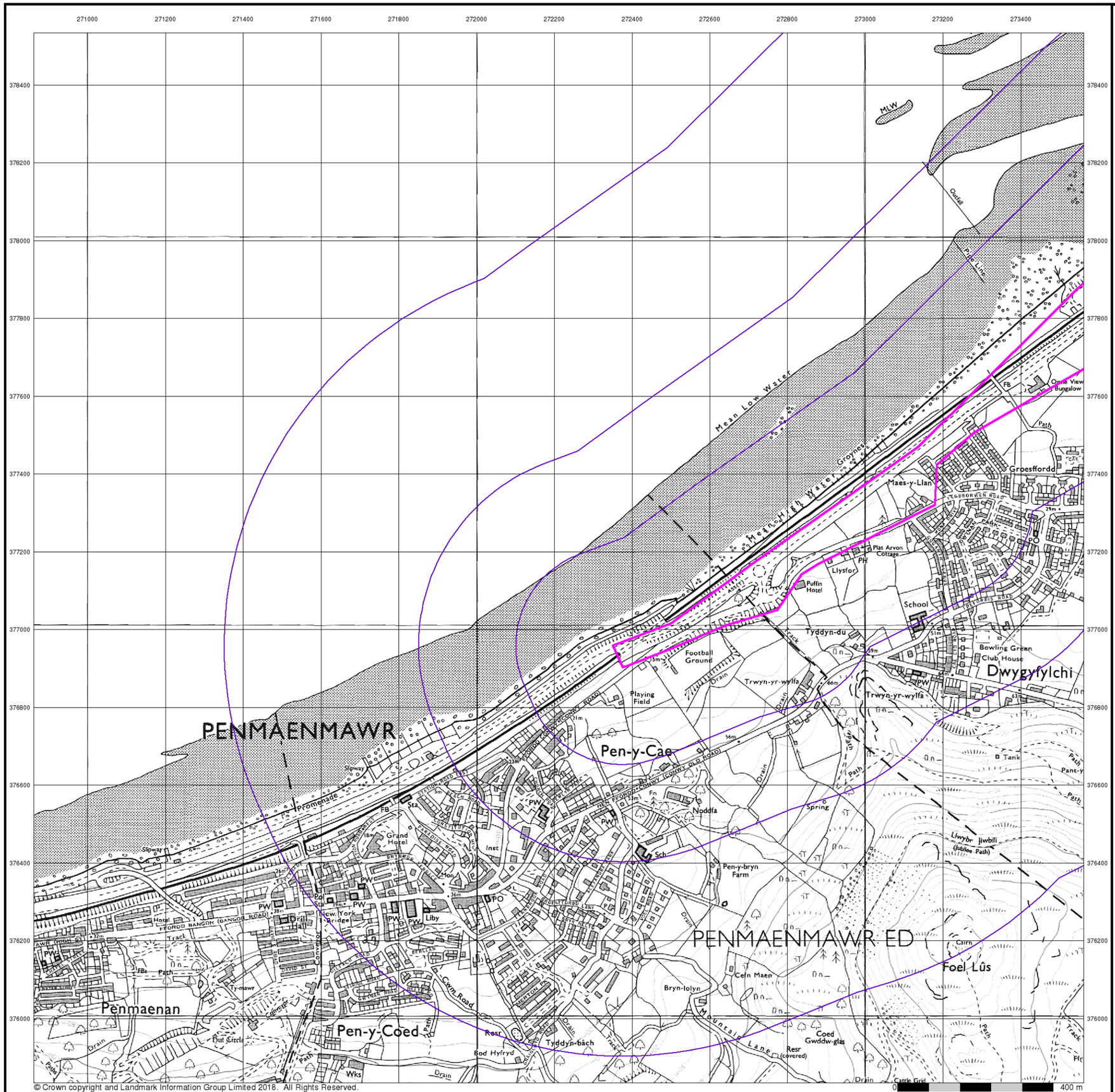
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Ordnance Survey Plan

Published 1992

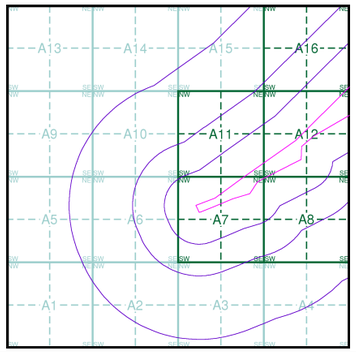
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SH77NW
1992
1:10,000

Historical Map - Slice A



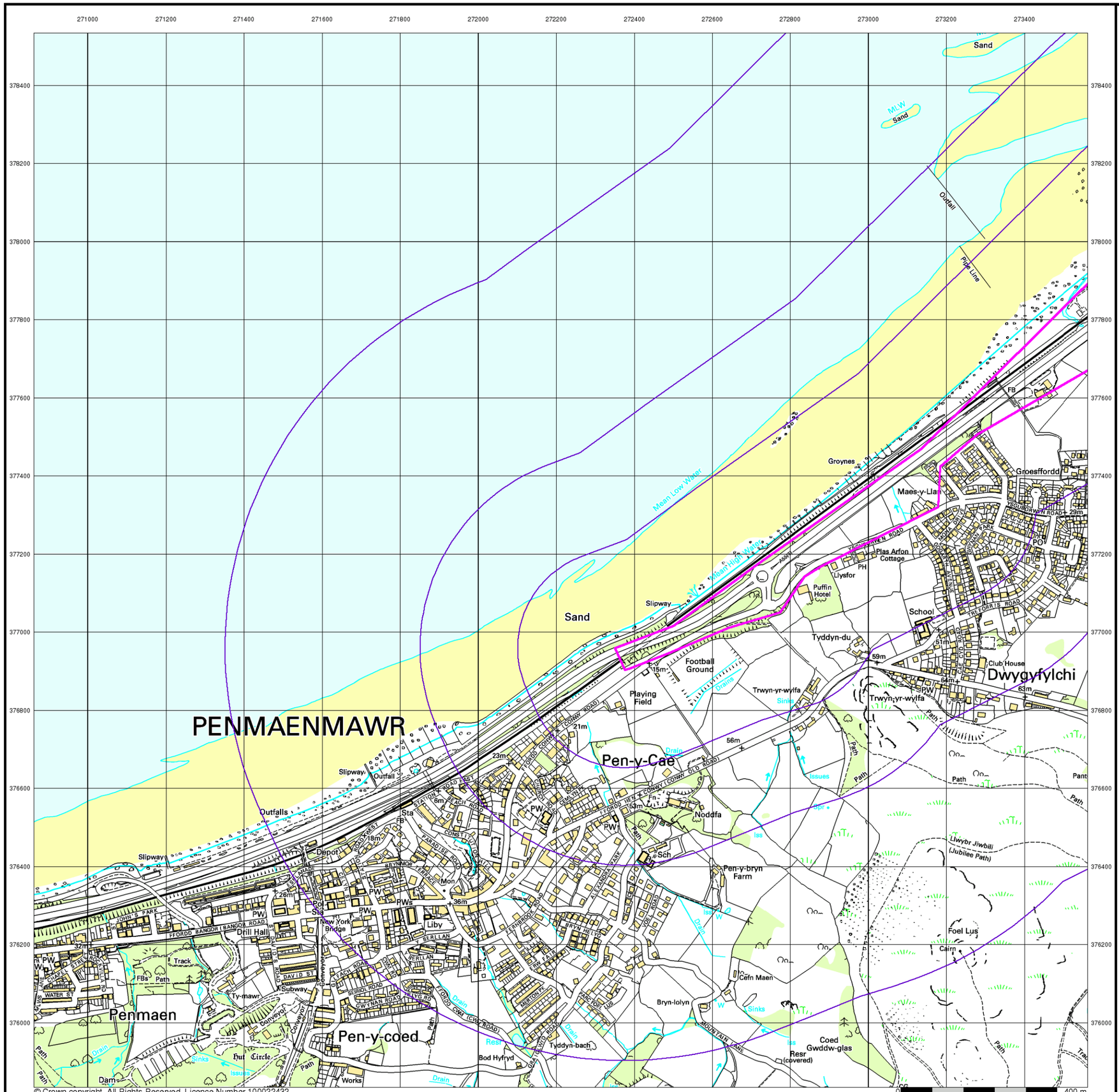
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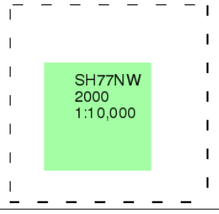
10k Raster Mapping

Published 2000

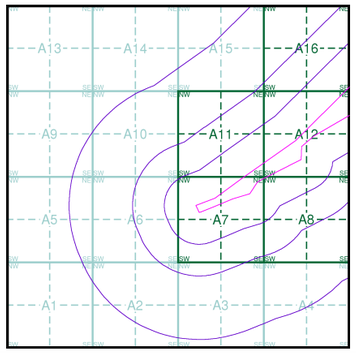
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



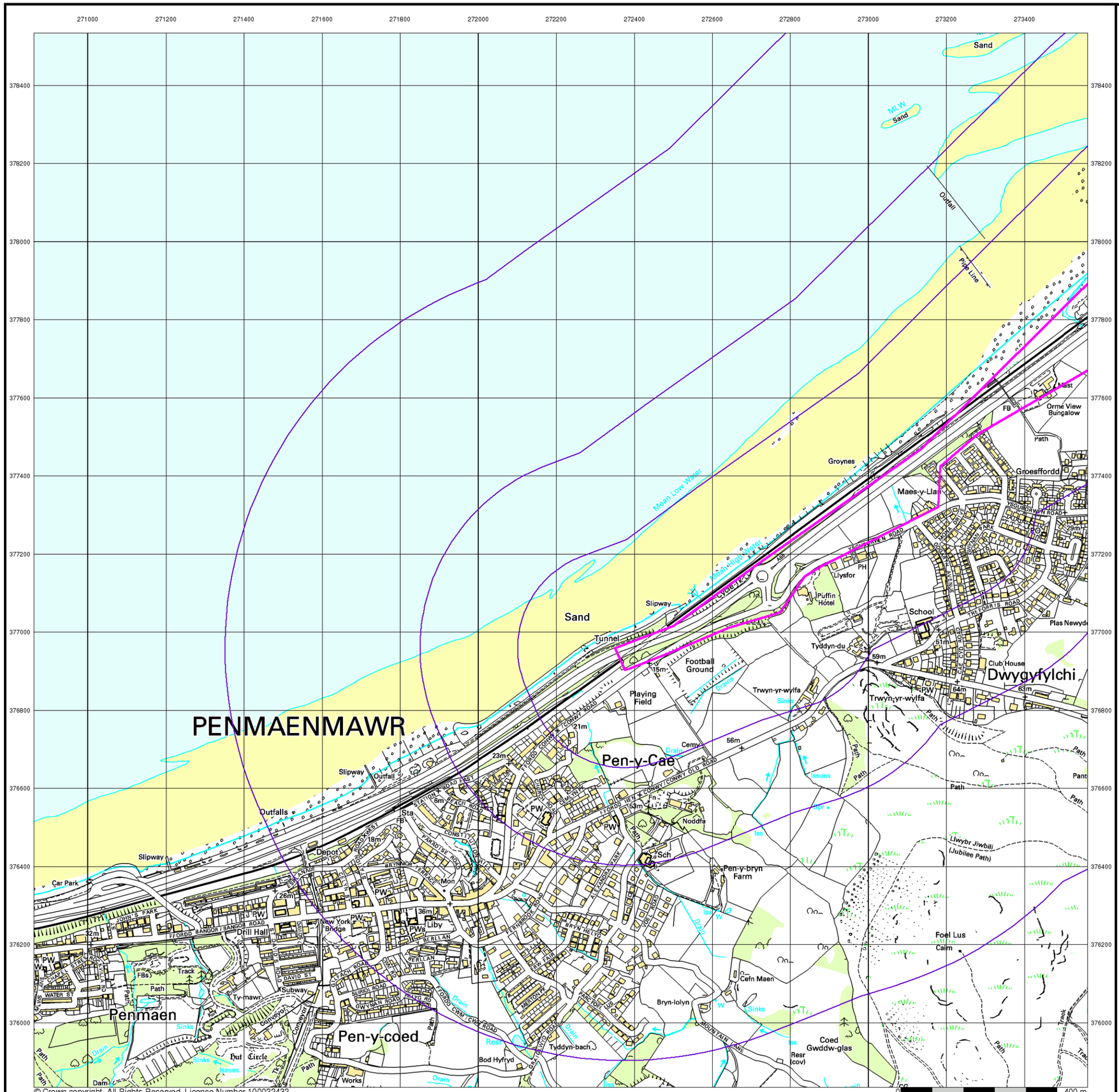
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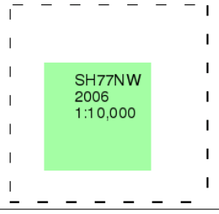
10k Raster Mapping

Published 2006

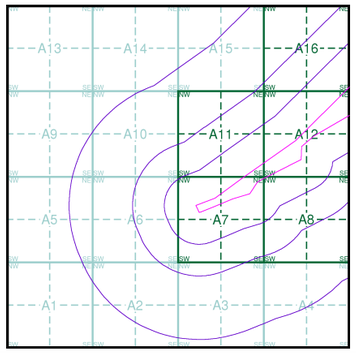
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

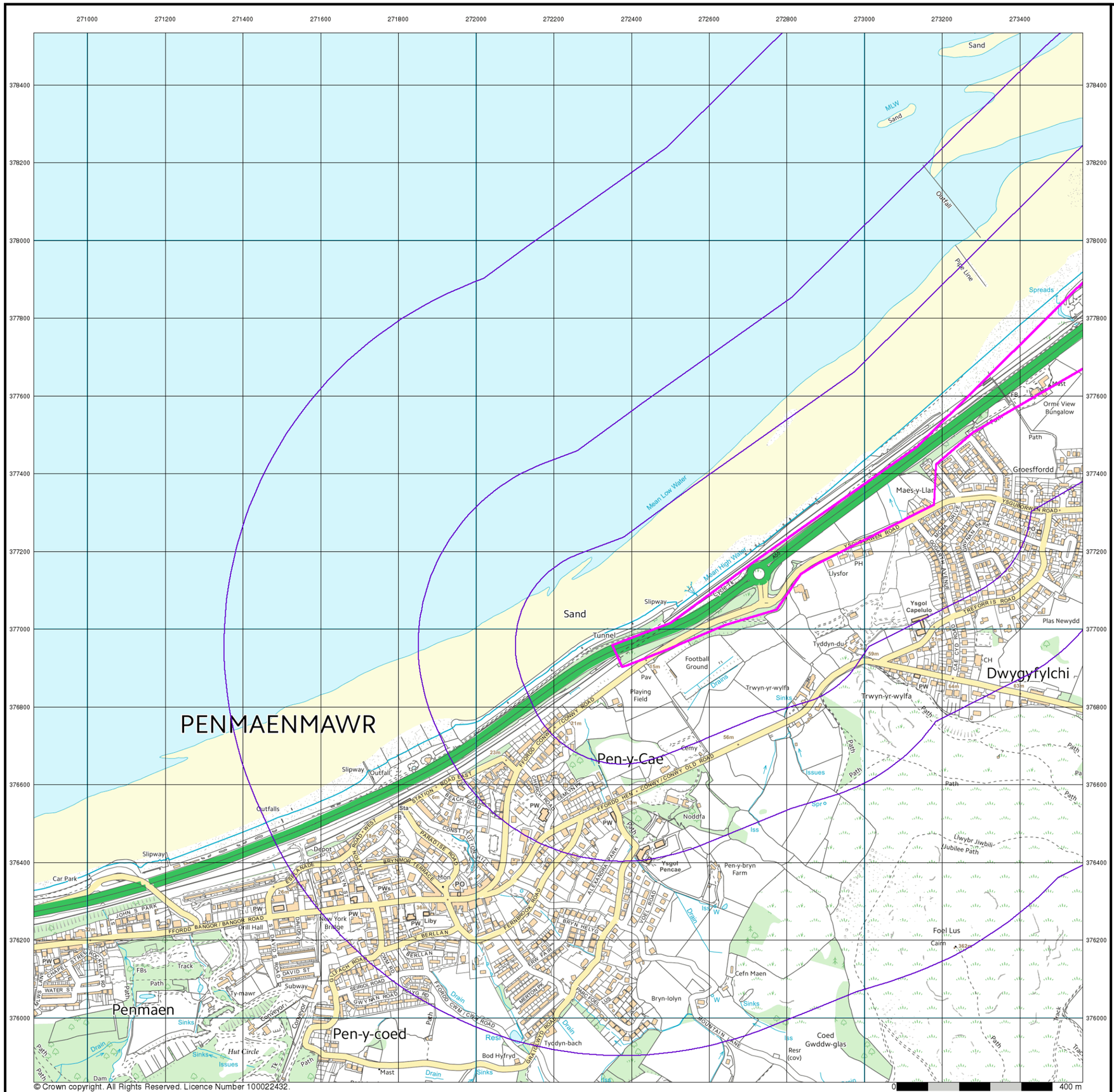
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National Grid Reference:	272580, 377150
Slice:	A
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Search Buffer (m):	1000

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VectorMap Local

Published 2018

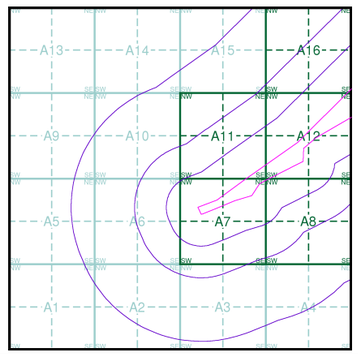
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SH77NW
2018
Variable

Historical Map - Slice A



Order Details

Order Number:	175417398_1_1
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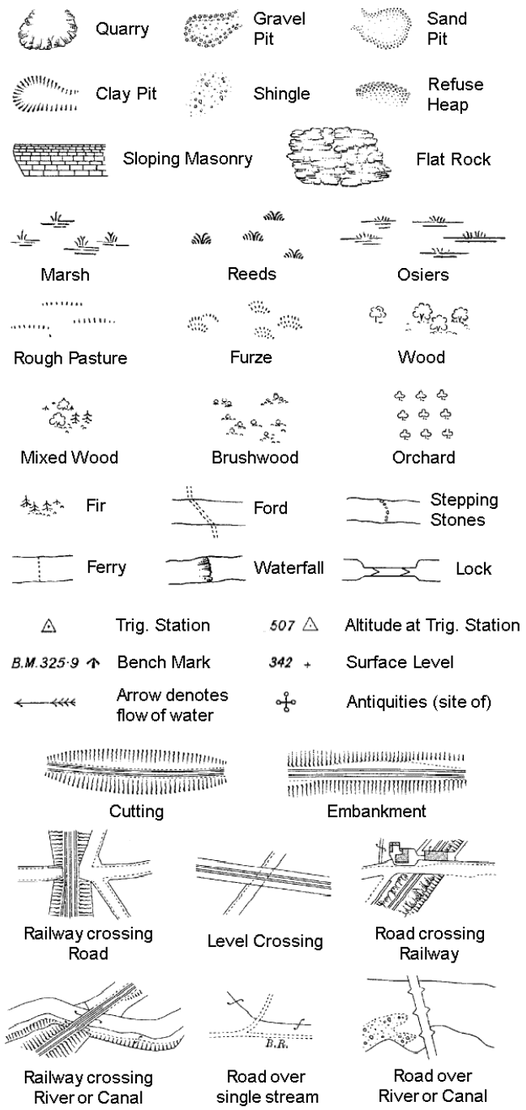
Site at, Penmaenmawr, Conwy

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

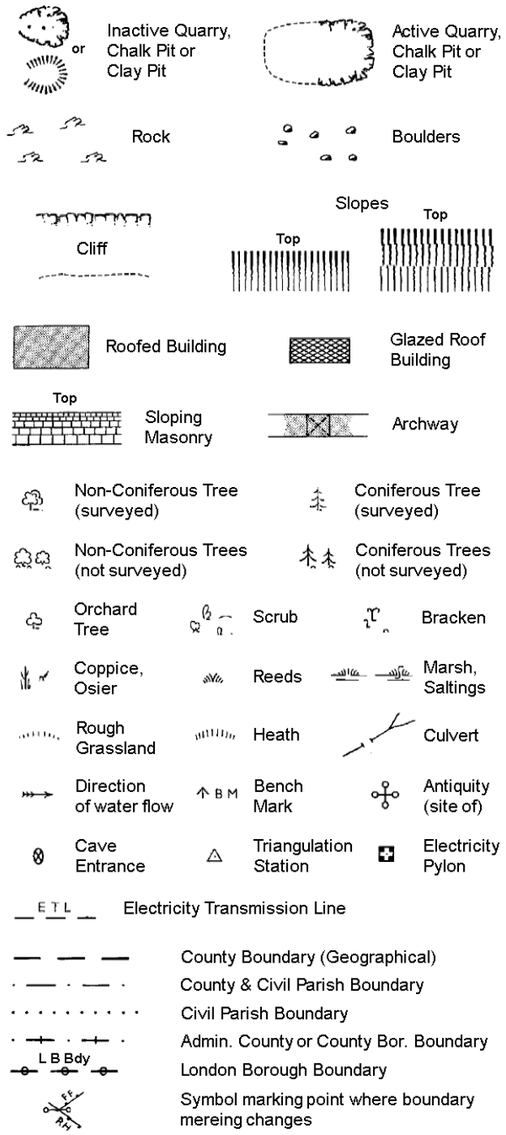
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

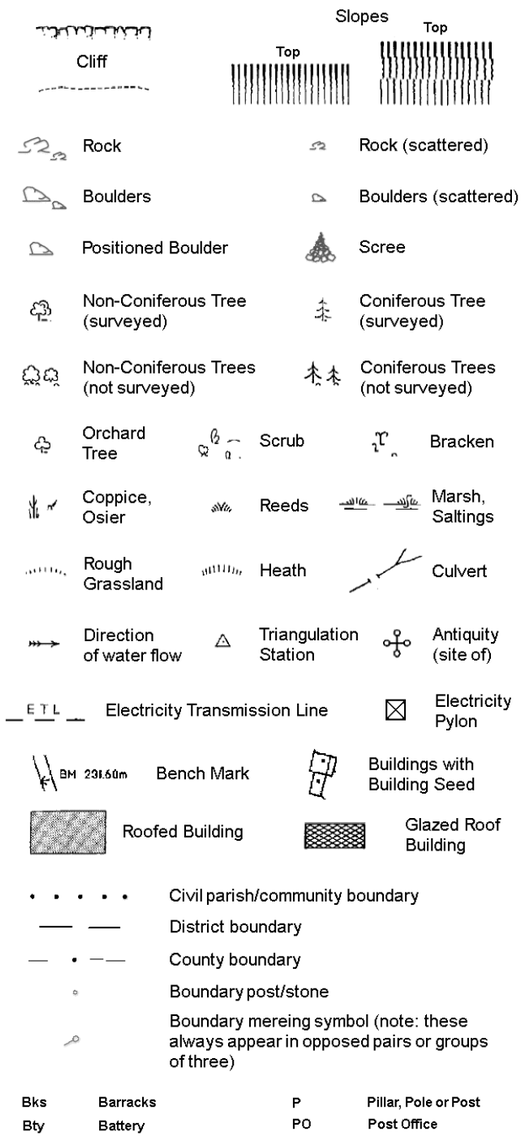
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

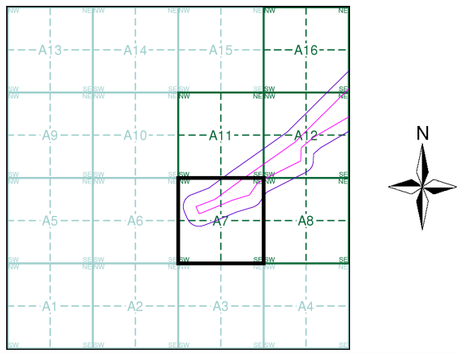
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1966	5
Additional SIMs	1:2,500	1977	6
Additional SIMs	1:2,500	1991	7
Ordnance Survey Plan	1:2,500	1992	8
Large-Scale National Grid Data	1:2,500	1995	9
Historical Aerial Photography	1:2,500	2000	10

Historical Map - Segment A7

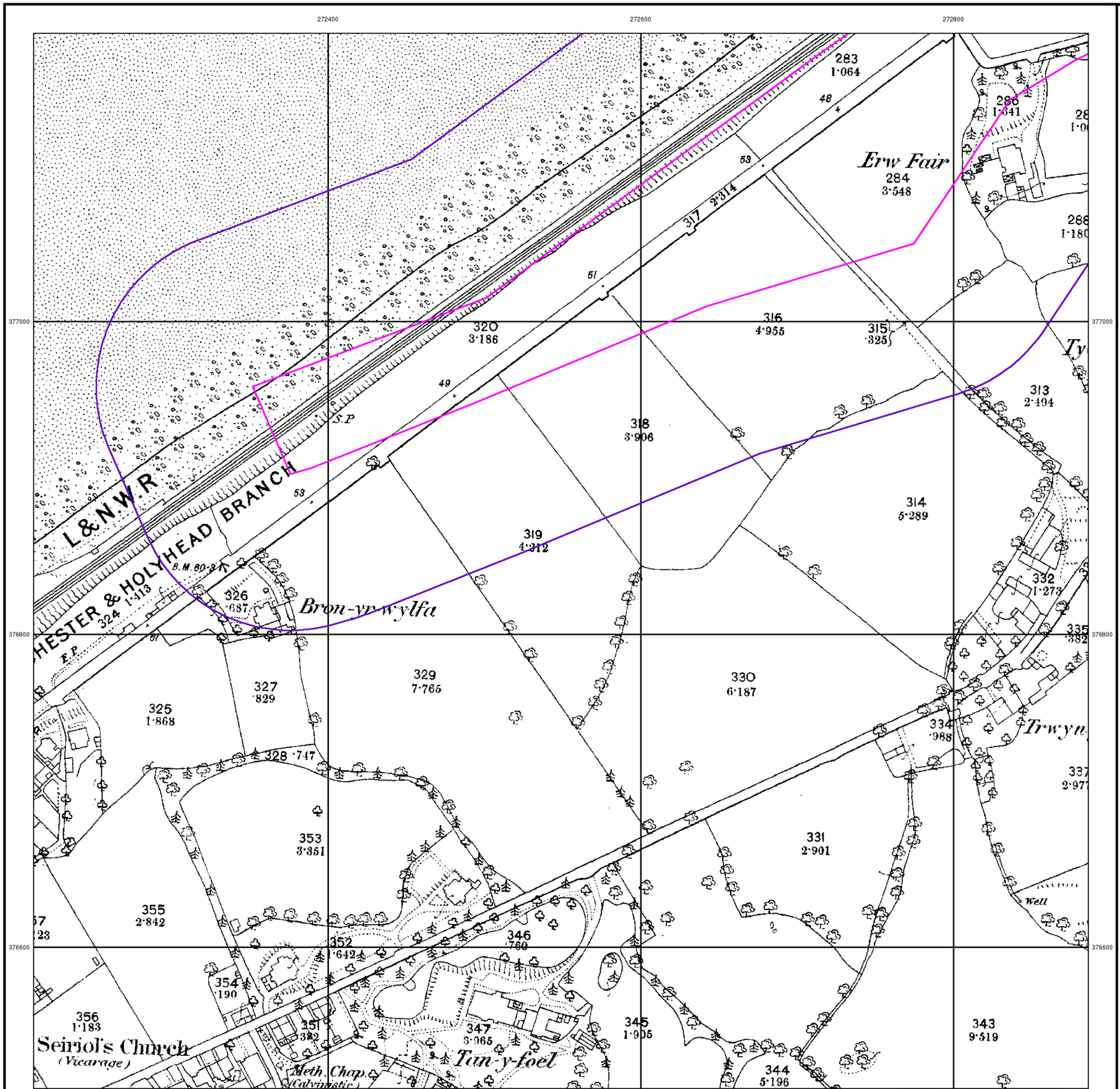


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Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy



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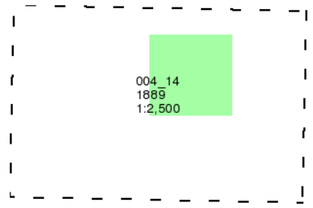
Caernarvonshire

Published 1889

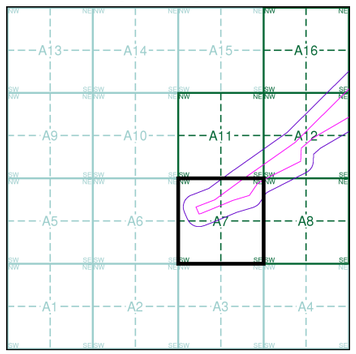
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7



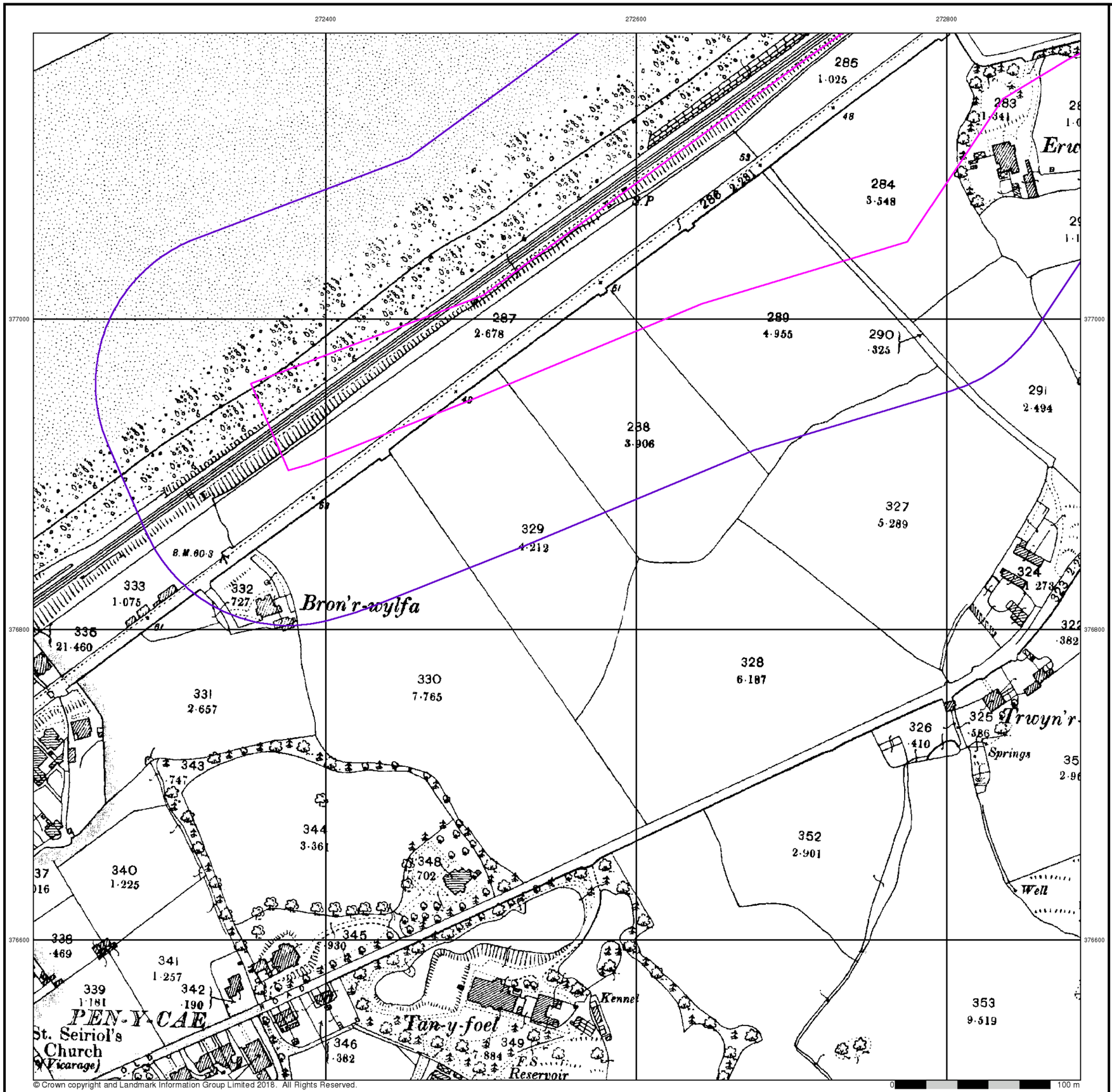
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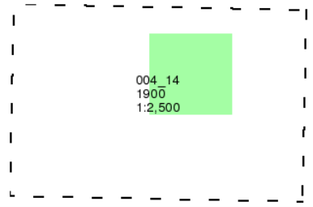
Caernarvonshire

Published 1900

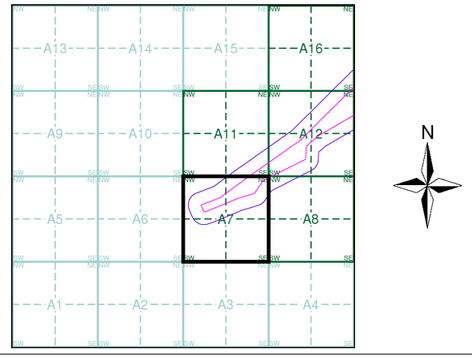
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7



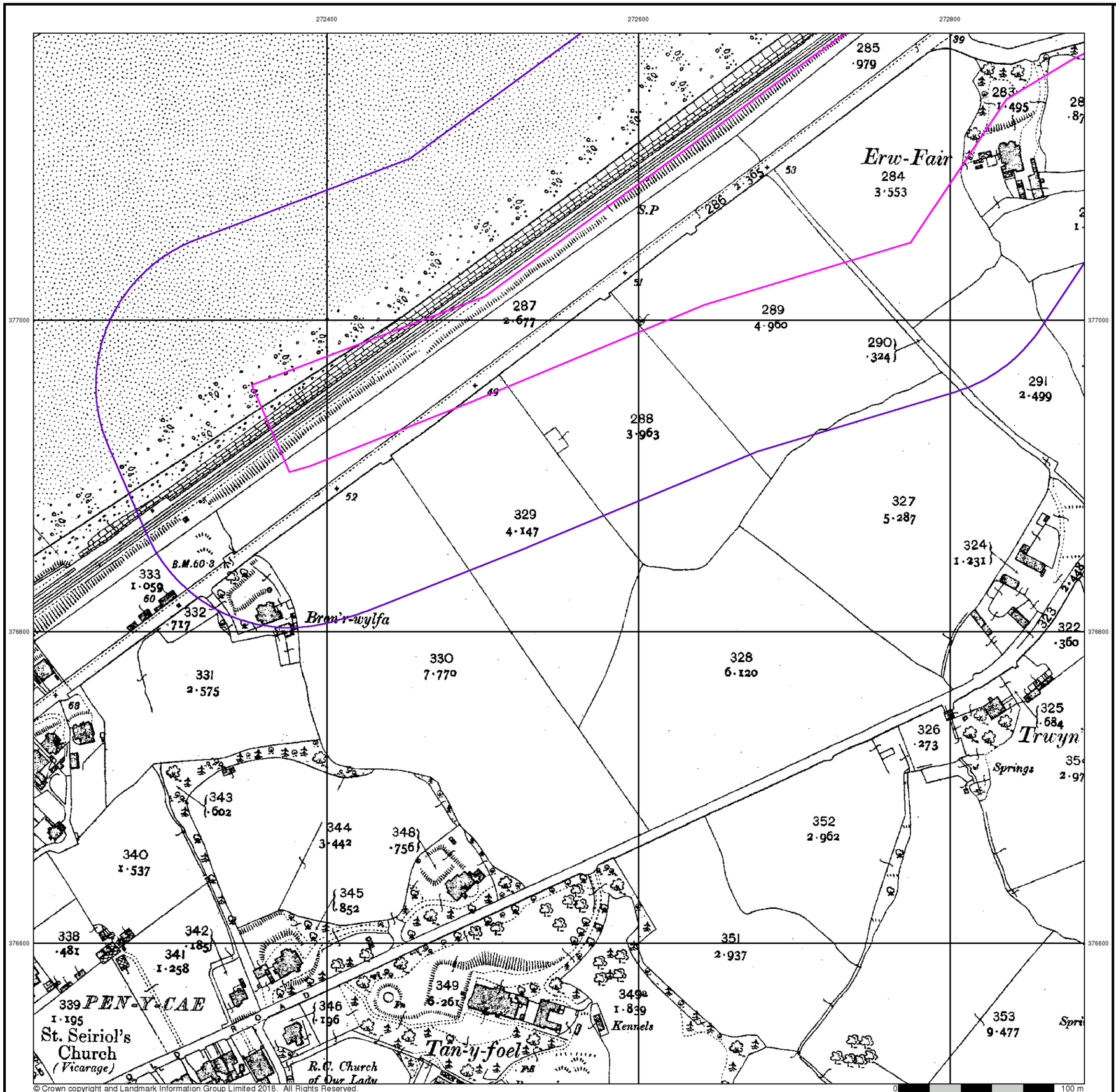
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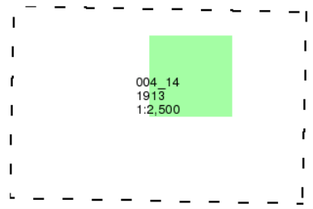
Caernarvonshire

Published 1913

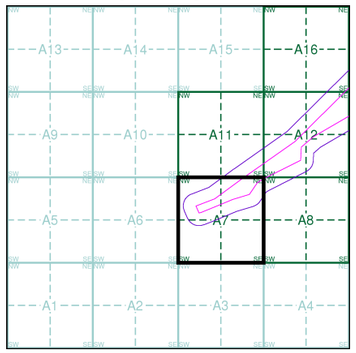
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7



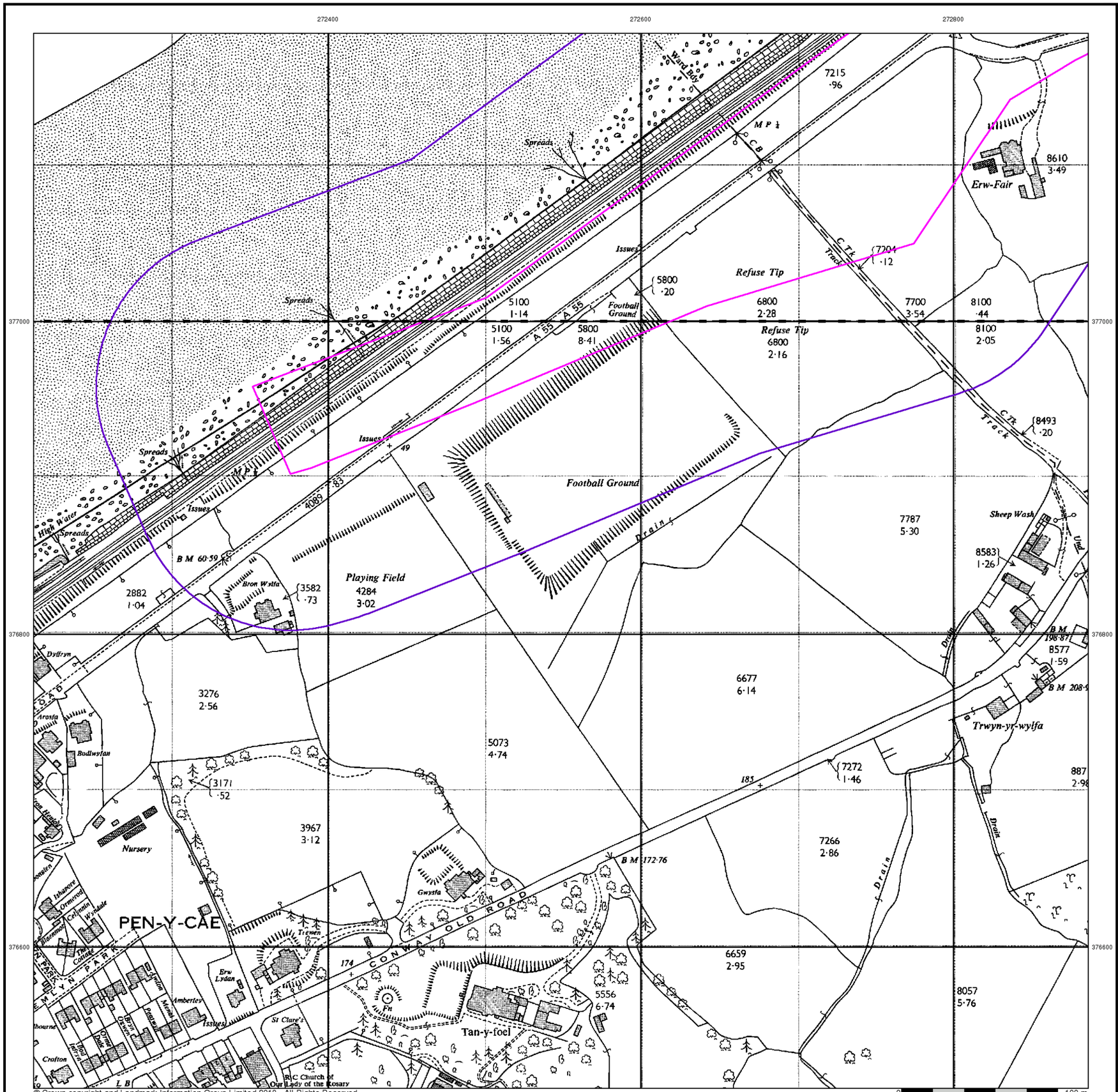
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

Ordnance Survey Plan

Published 1966

Source map scale - 1:2,500

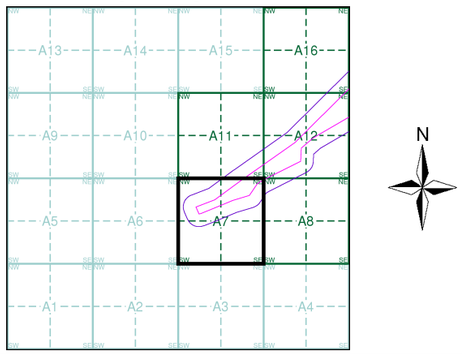
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SH7277
1966
1:2,500

SH7276
1966
1:2,500

Historical Map - Segment A7



Order Details

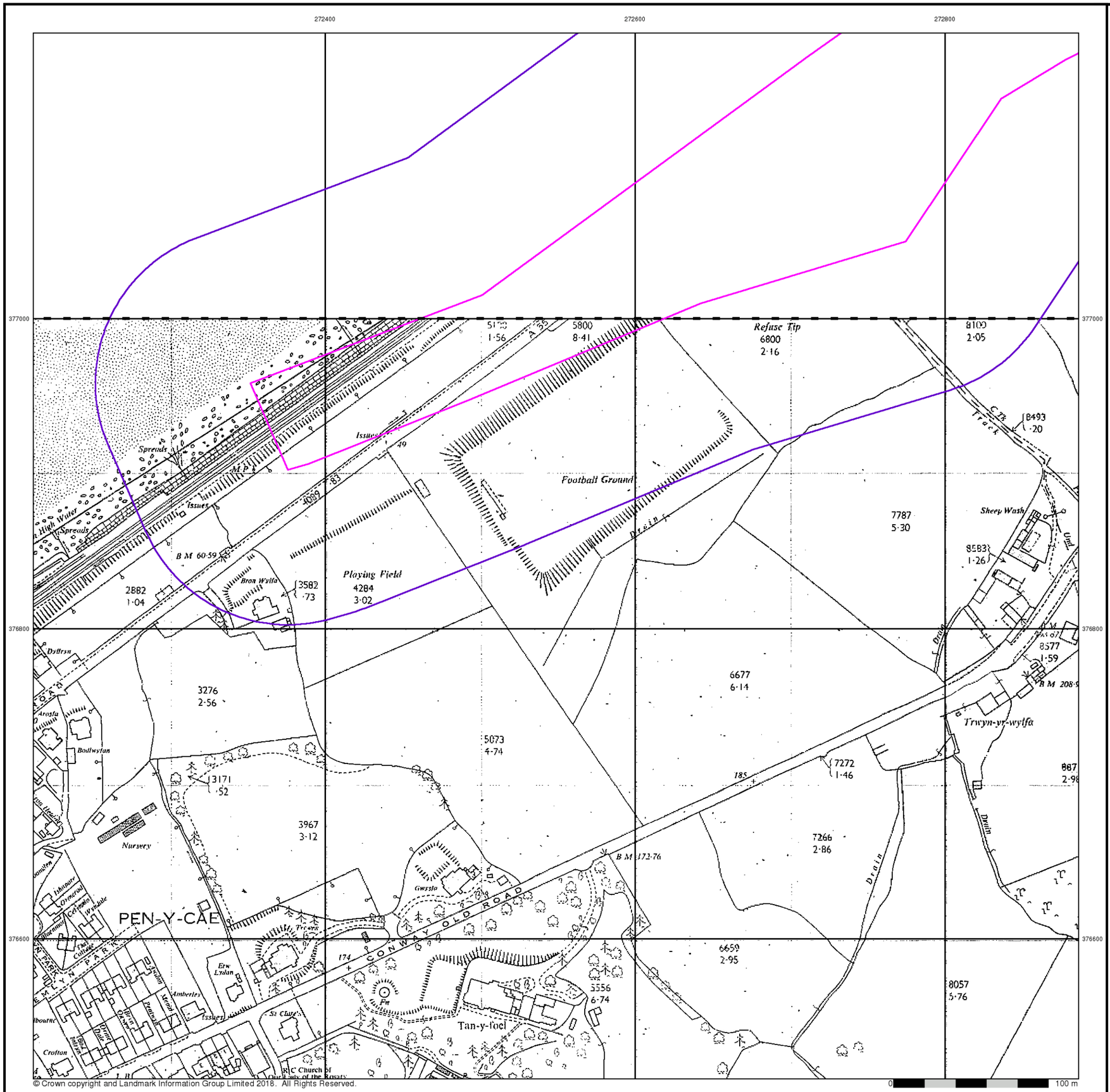
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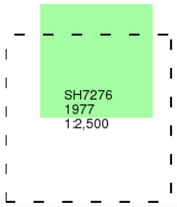
Additional SIMs

Published 1977

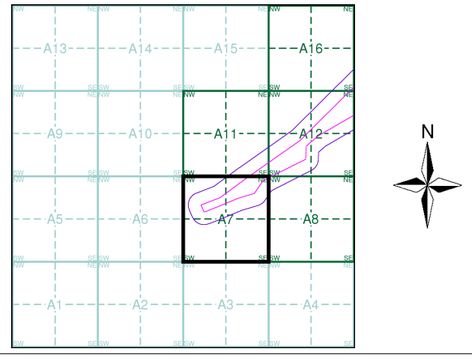
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A7



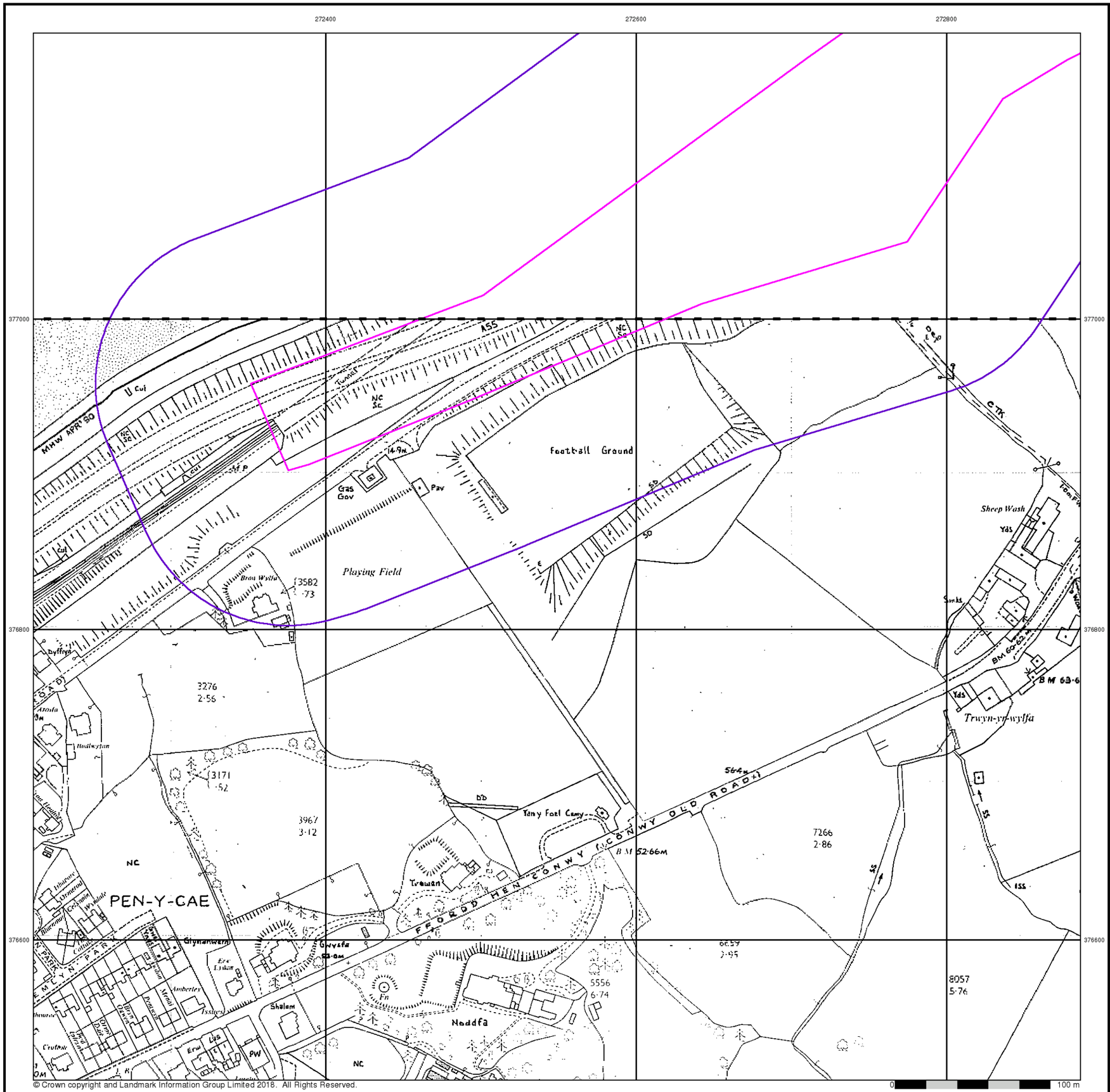
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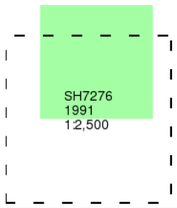
Additional SIMs

Published 1991

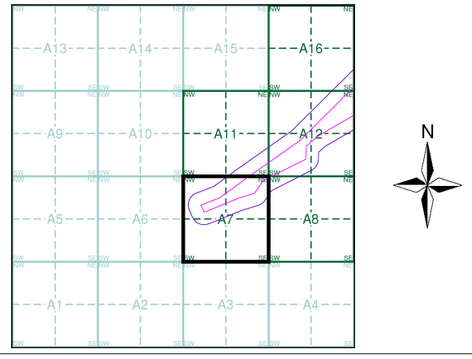
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7

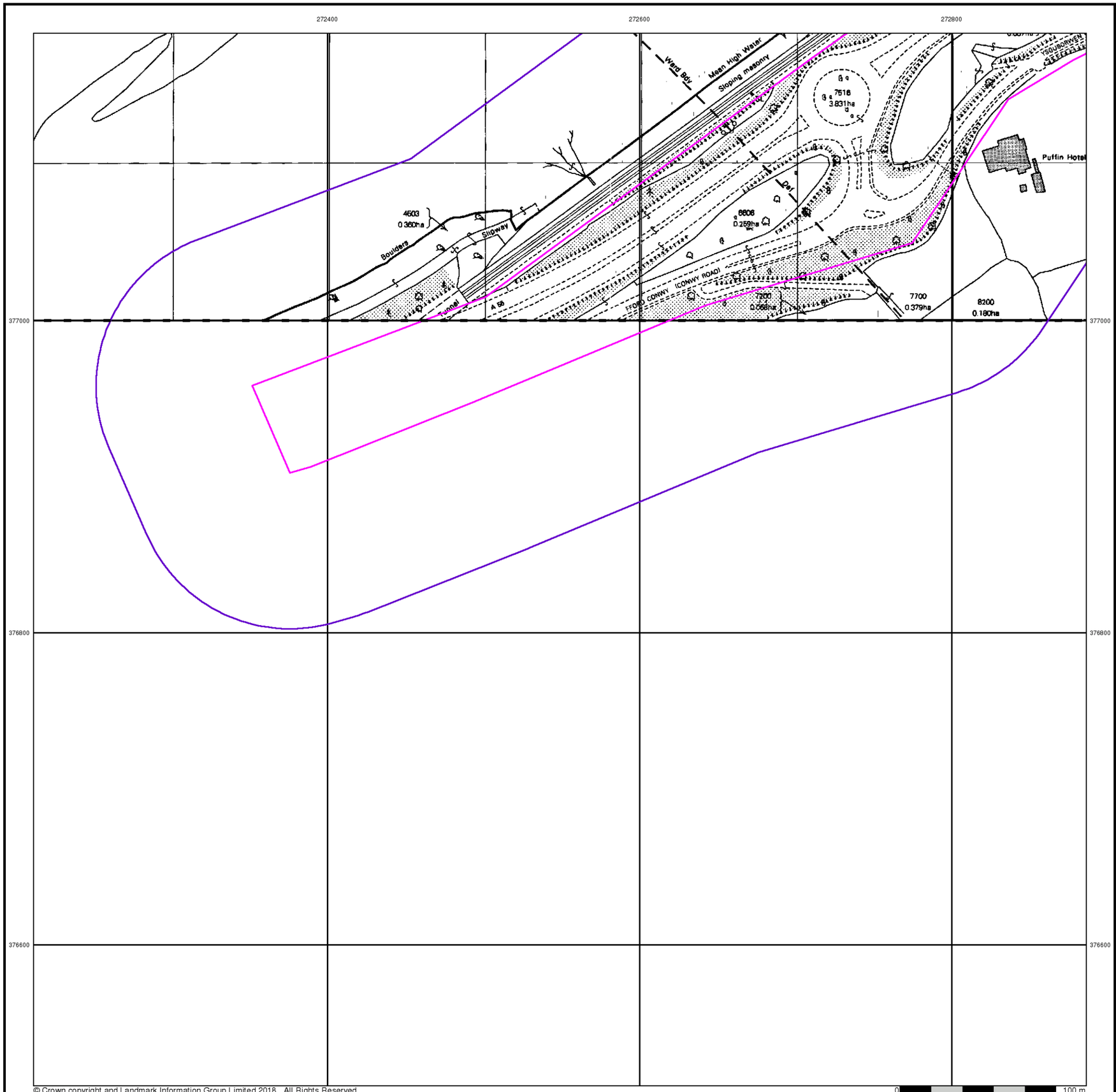


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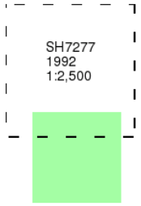
Ordnance Survey Plan

Published 1992

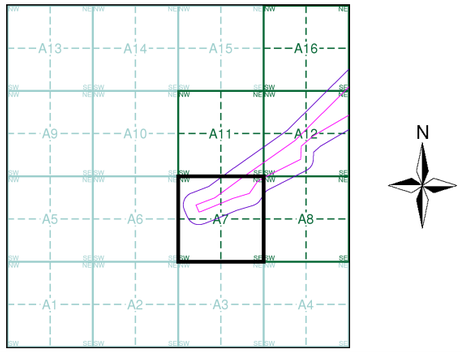
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A7



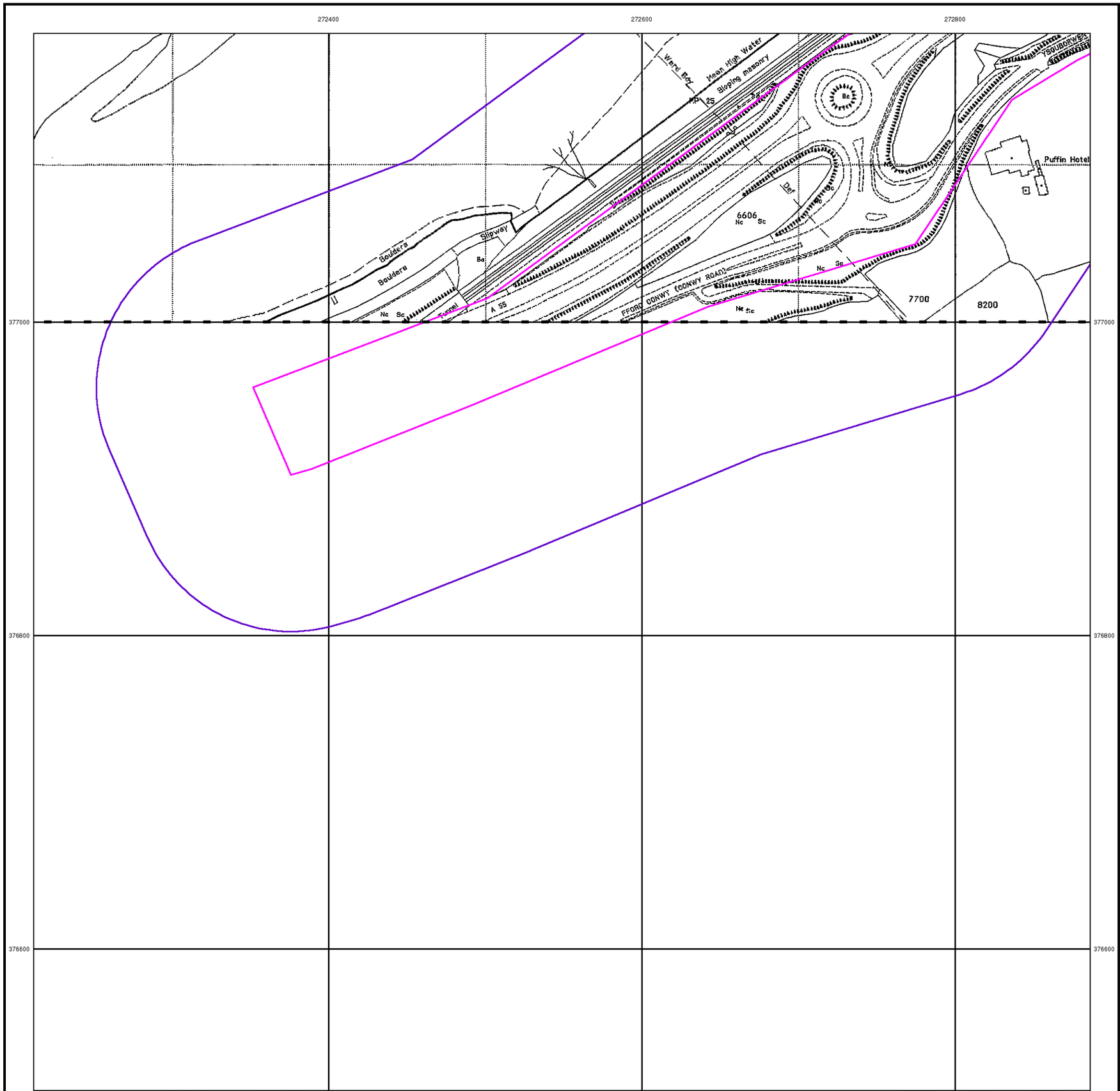
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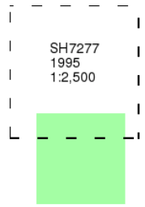
Large-Scale National Grid Data

Published 1995

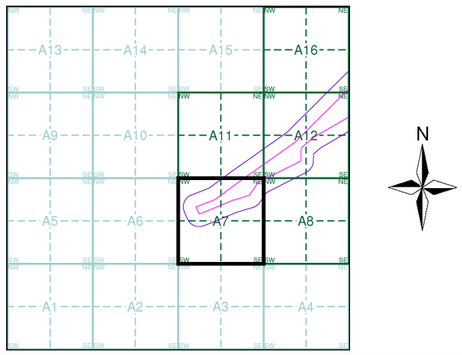
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

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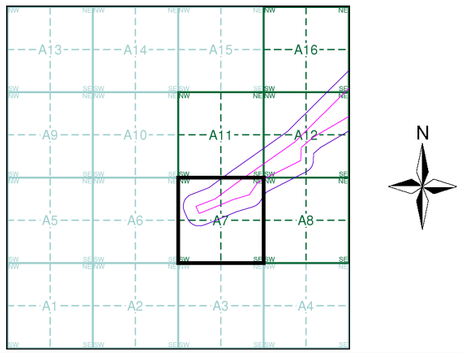
RAMBOLL

Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A7



Order Details

Order Number:	175417398_1_1
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Slice:	A
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Site Details

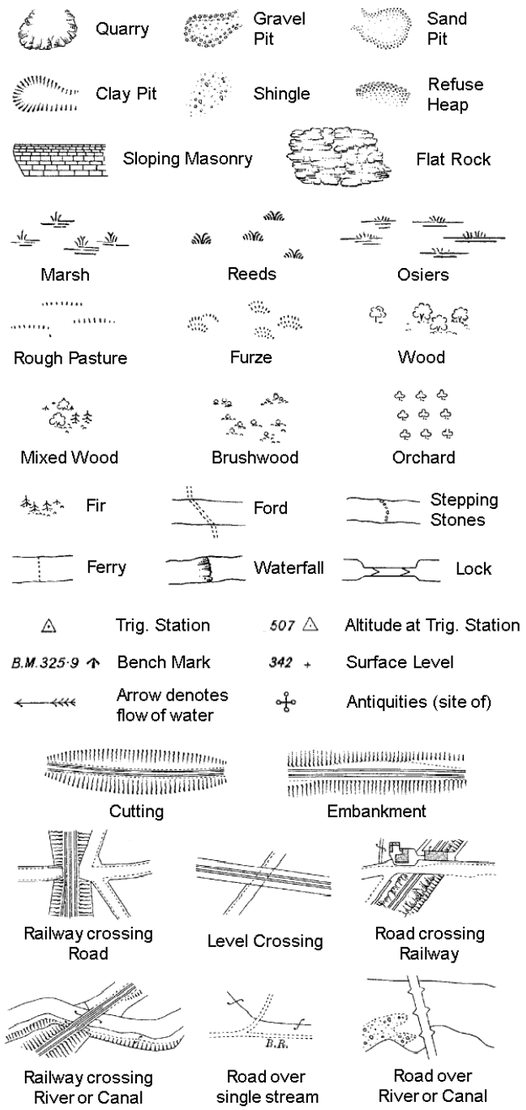
Site at, Penmaenmawr, Conwy

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

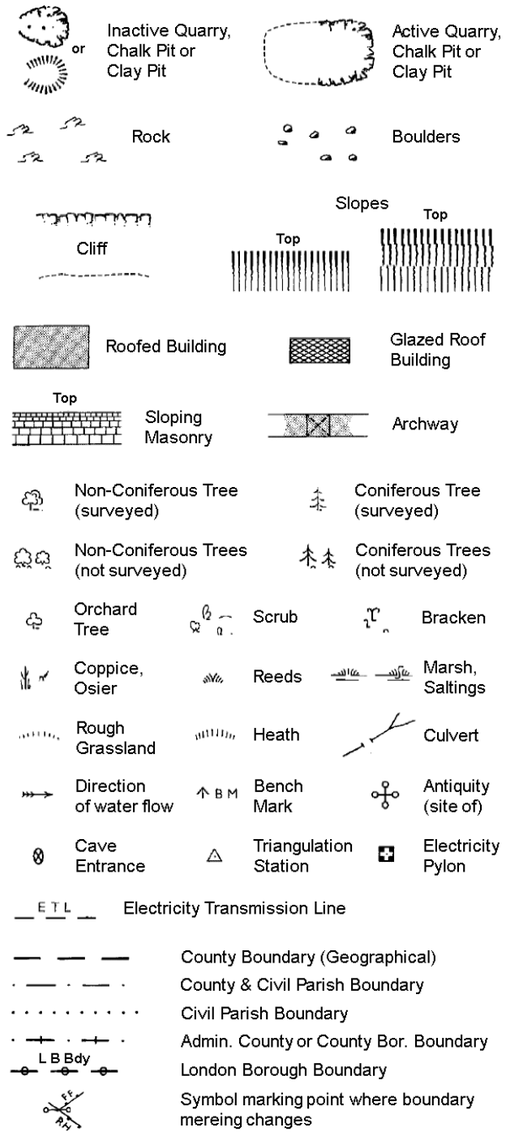
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

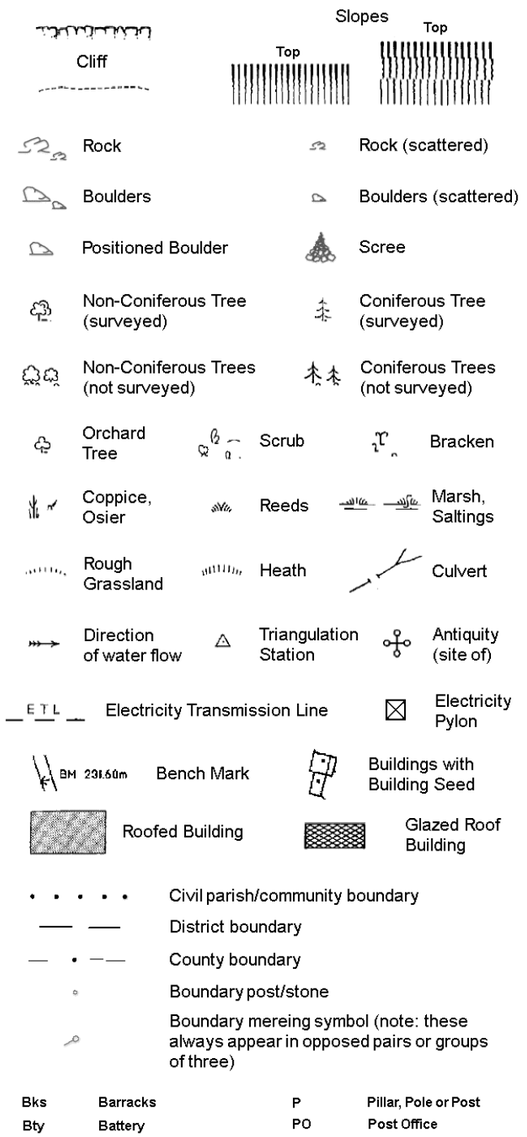
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

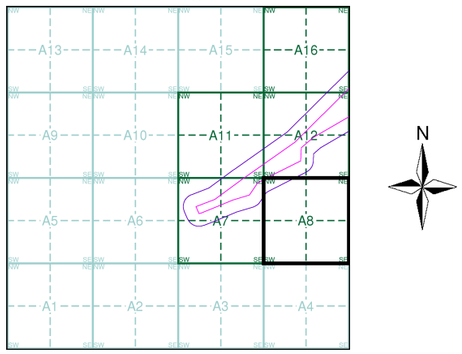
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1966	5
Supply of Unpublished Survey Information	1:2,500	1973	6
Additional SIMs	1:2,500	1977 - 1991	7
Additional SIMs	1:2,500	1991	8
Ordnance Survey Plan	1:2,500	1992	9
Large-Scale National Grid Data	1:2,500	1995	10
Historical Aerial Photography	1:2,500	2000	11

Historical Map - Segment A8



Order Details

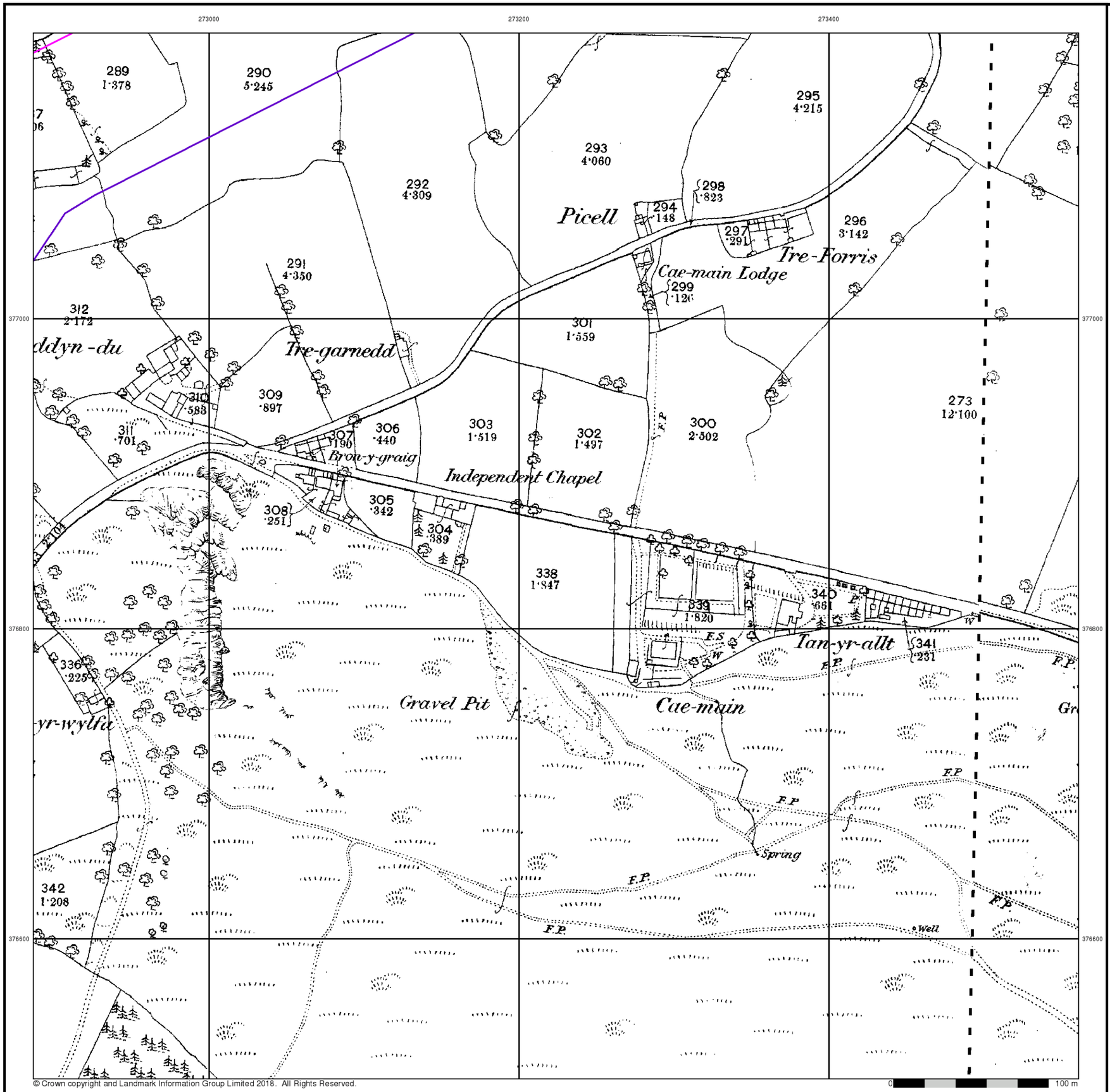
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Site Details

Site at, Penmaenmawr, Conwy

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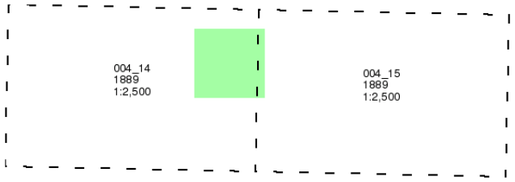
Caernarvonshire

Published 1889

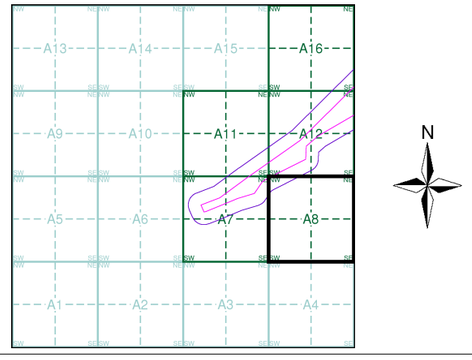
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A8



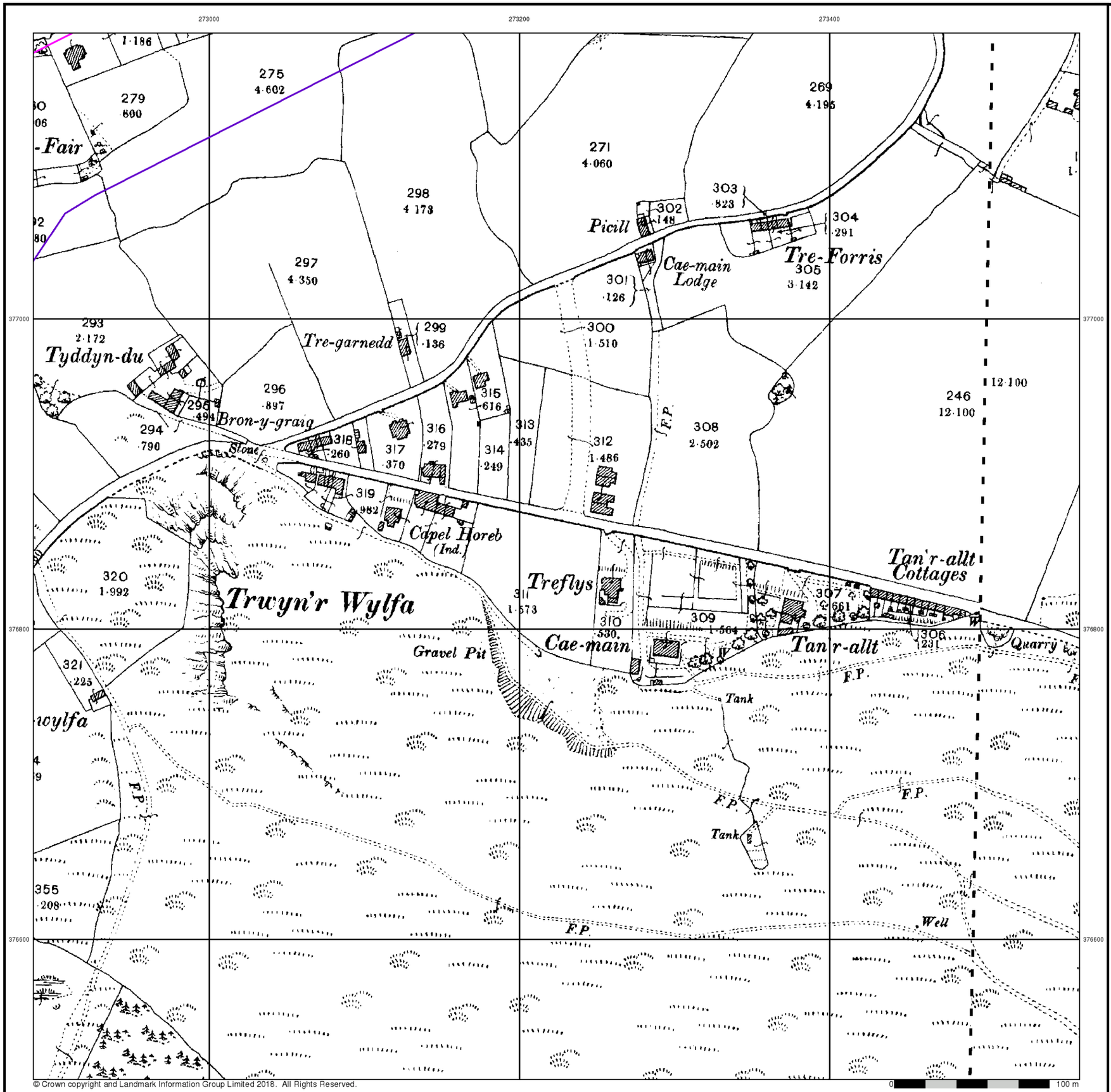
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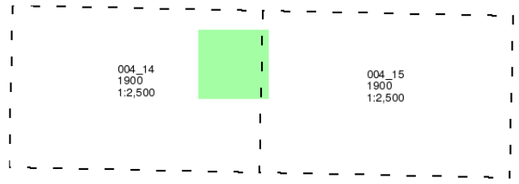
Caernarvonshire

Published 1900

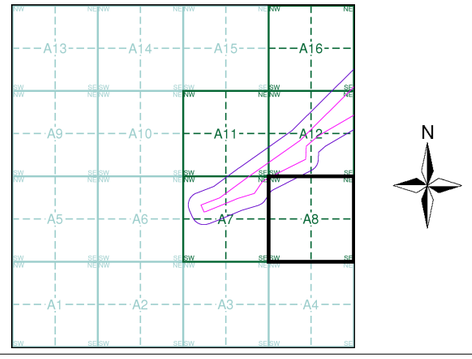
Source map scale - 1:2,500

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Historical Map - Segment A8



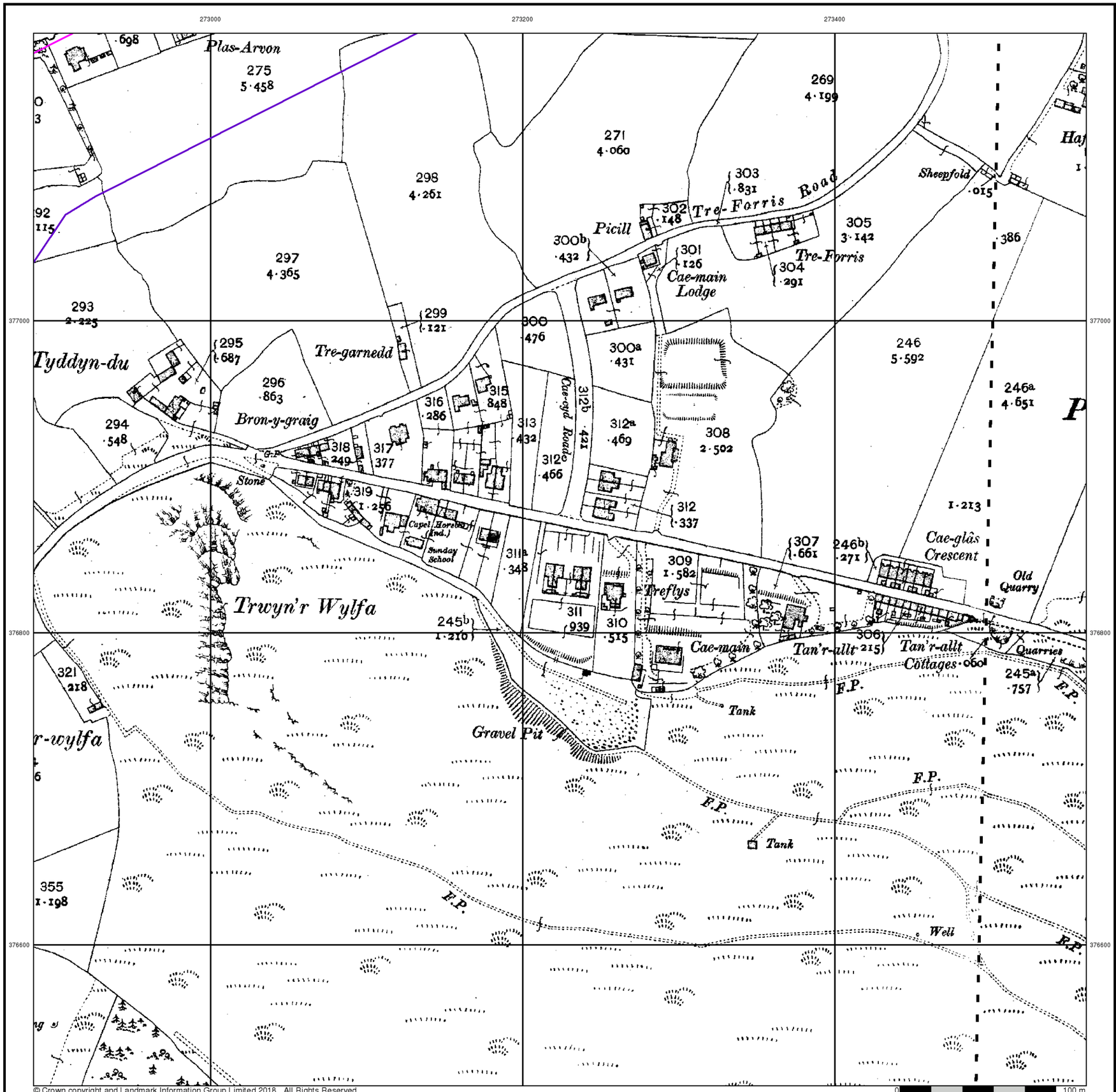
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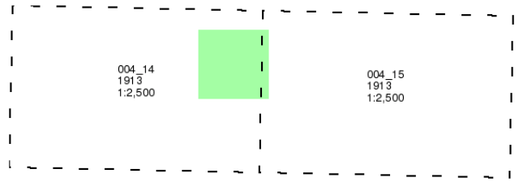
Caernarvonshire

Published 1913

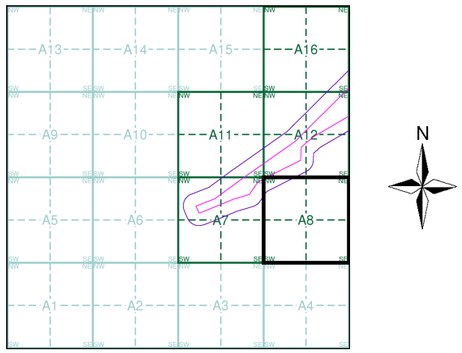
Source map scale - 1:2,500

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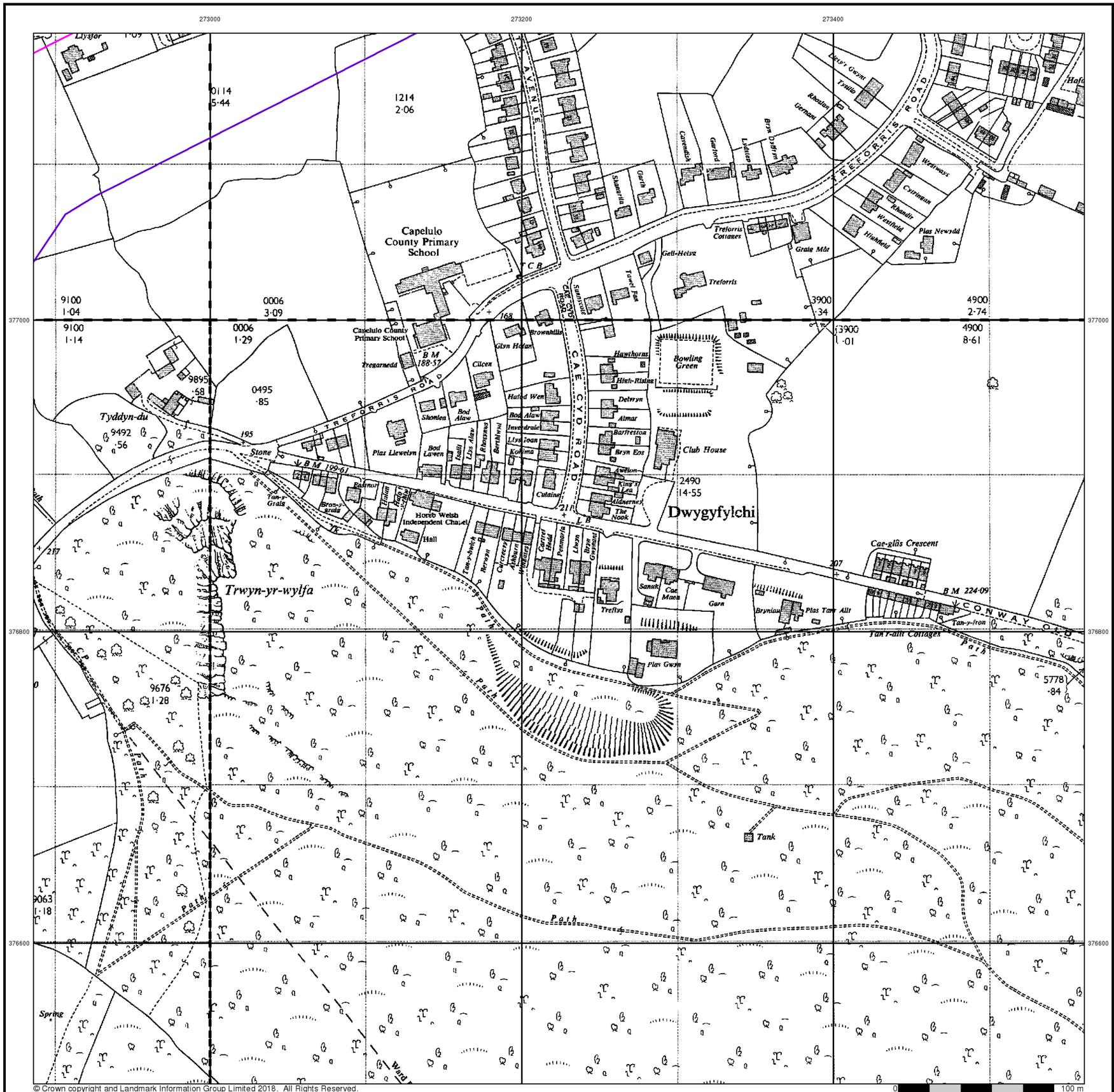
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Ordnance Survey Plan

Published 1966

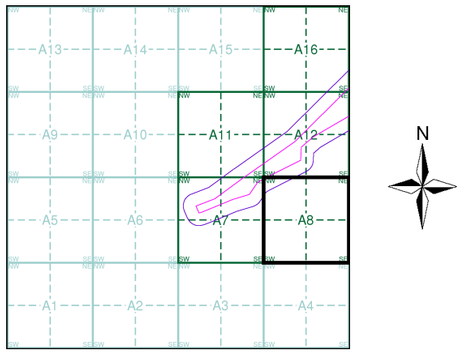
Source map scale - 1:2,500

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Map Name(s) and Date(s)

SH7277 1966 1:2,500	SH7377 1966 1:2,500
SH7276 1966 1:2,500	SH7376 1966 1:2,500

Historical Map - Segment A8



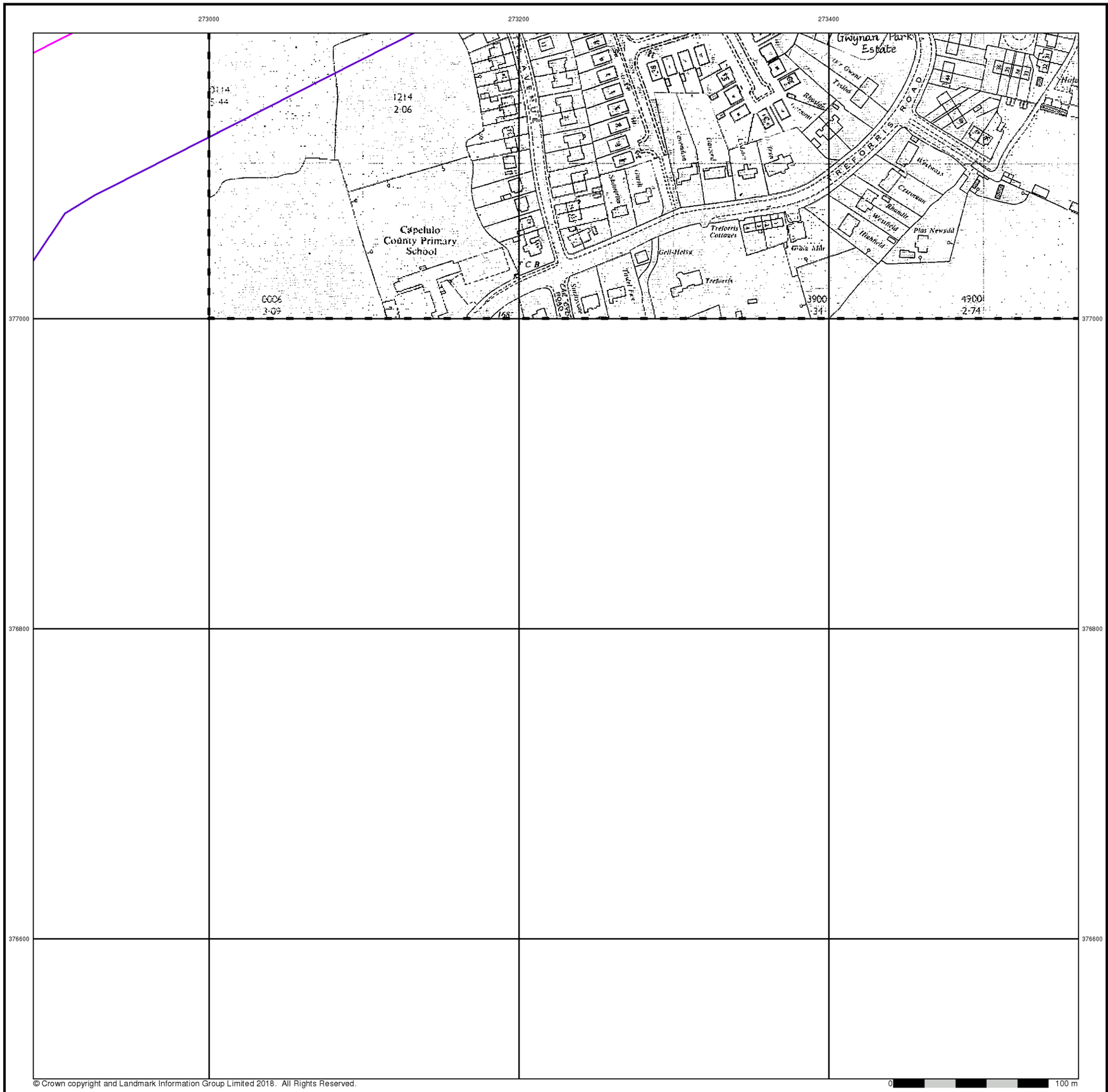
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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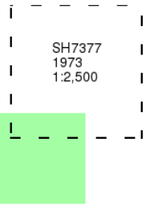
Supply of Unpublished Survey Information

Published 1973

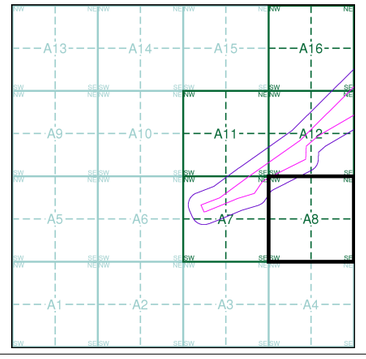
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



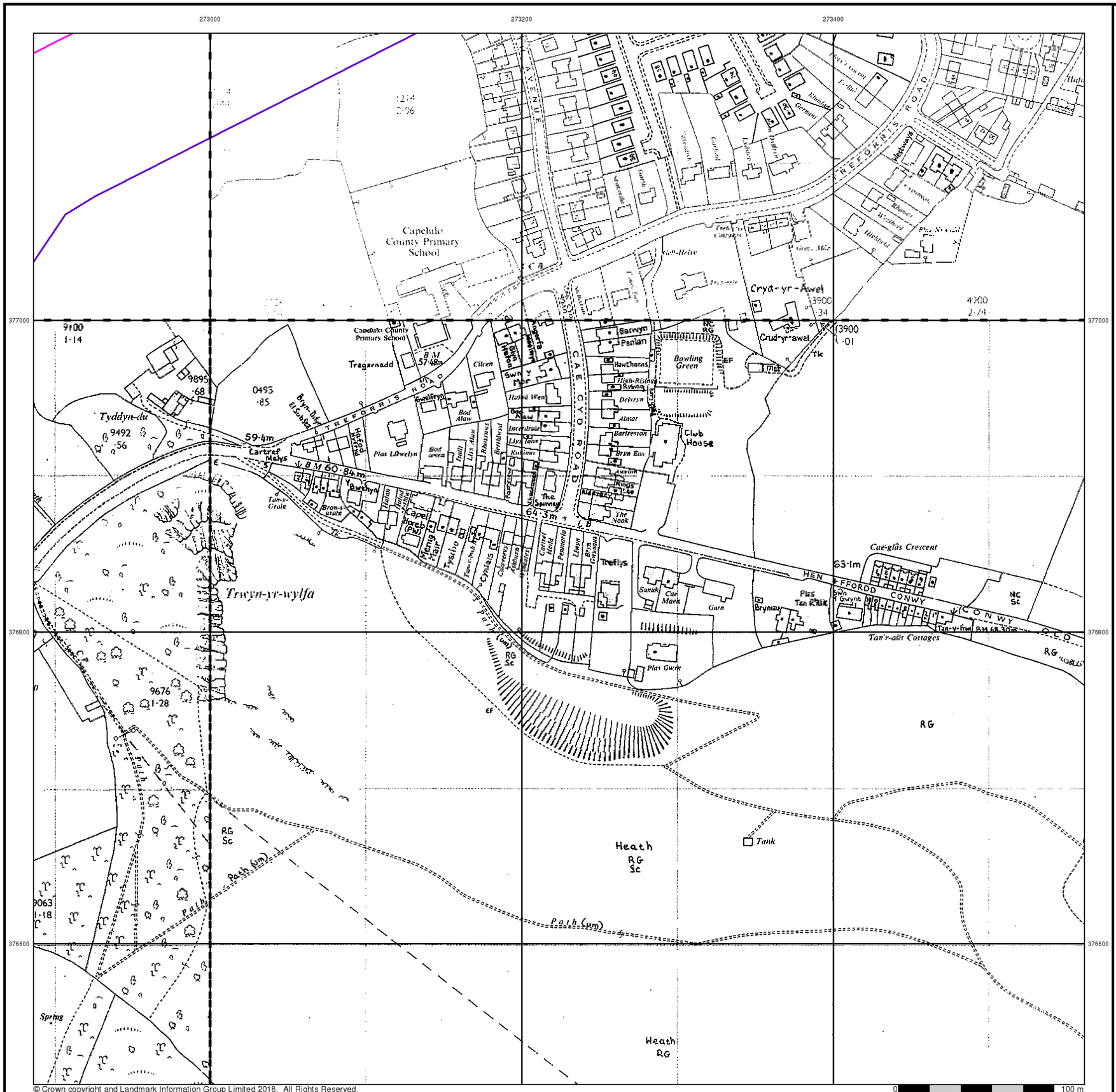
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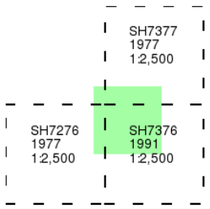
Additional SIMs

Published 1977 - 1991

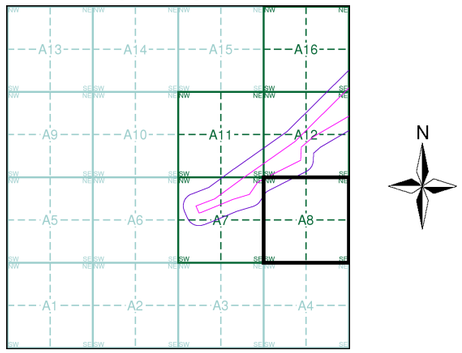
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



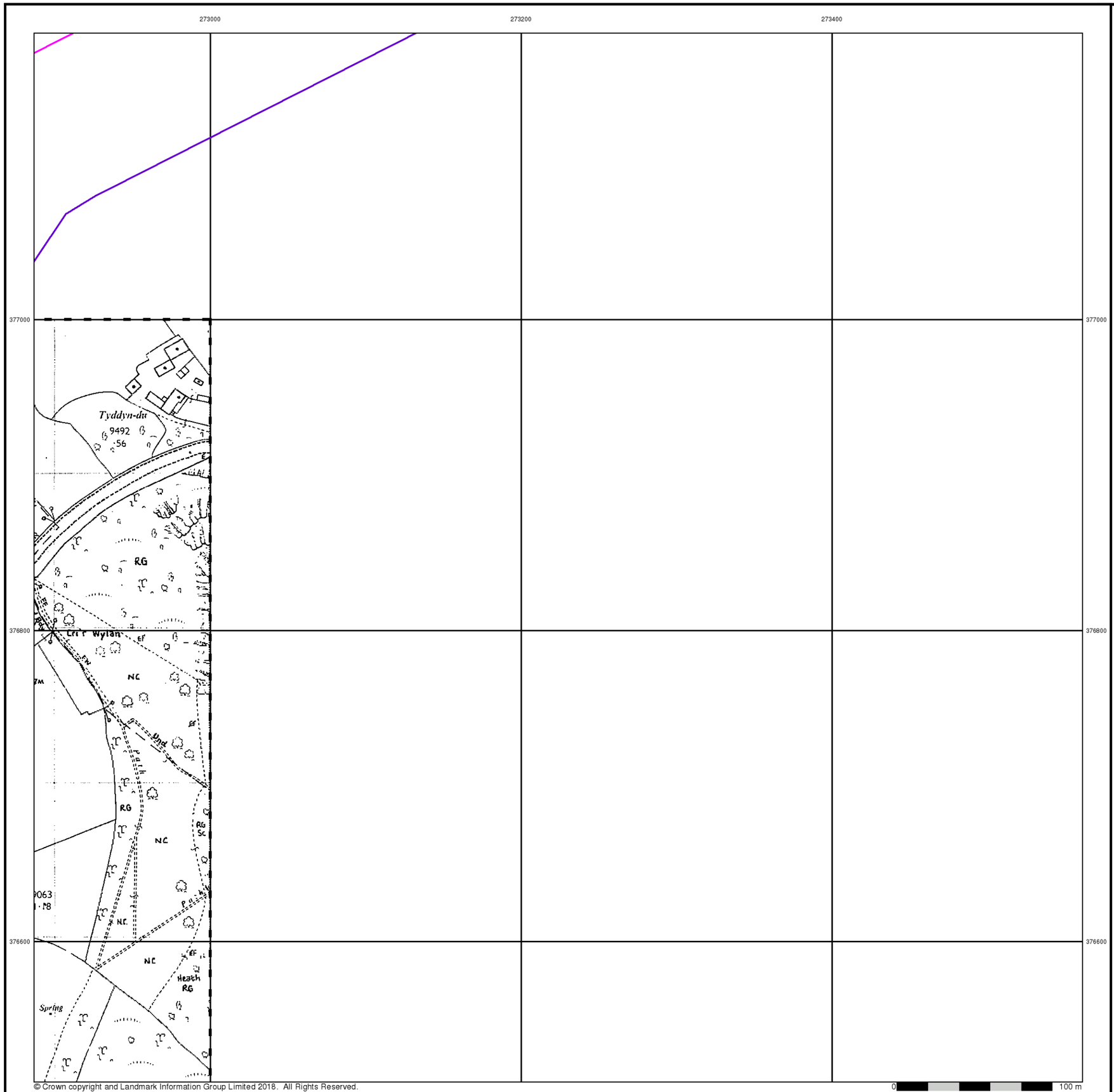
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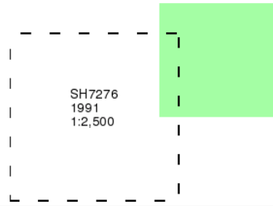
Additional SIMs

Published 1991

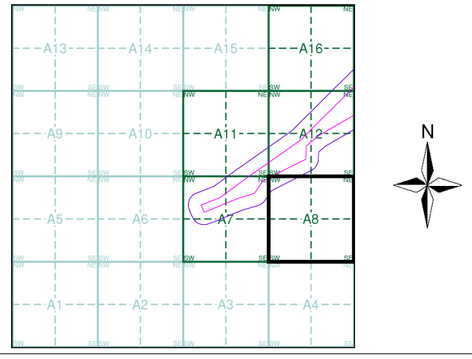
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A8



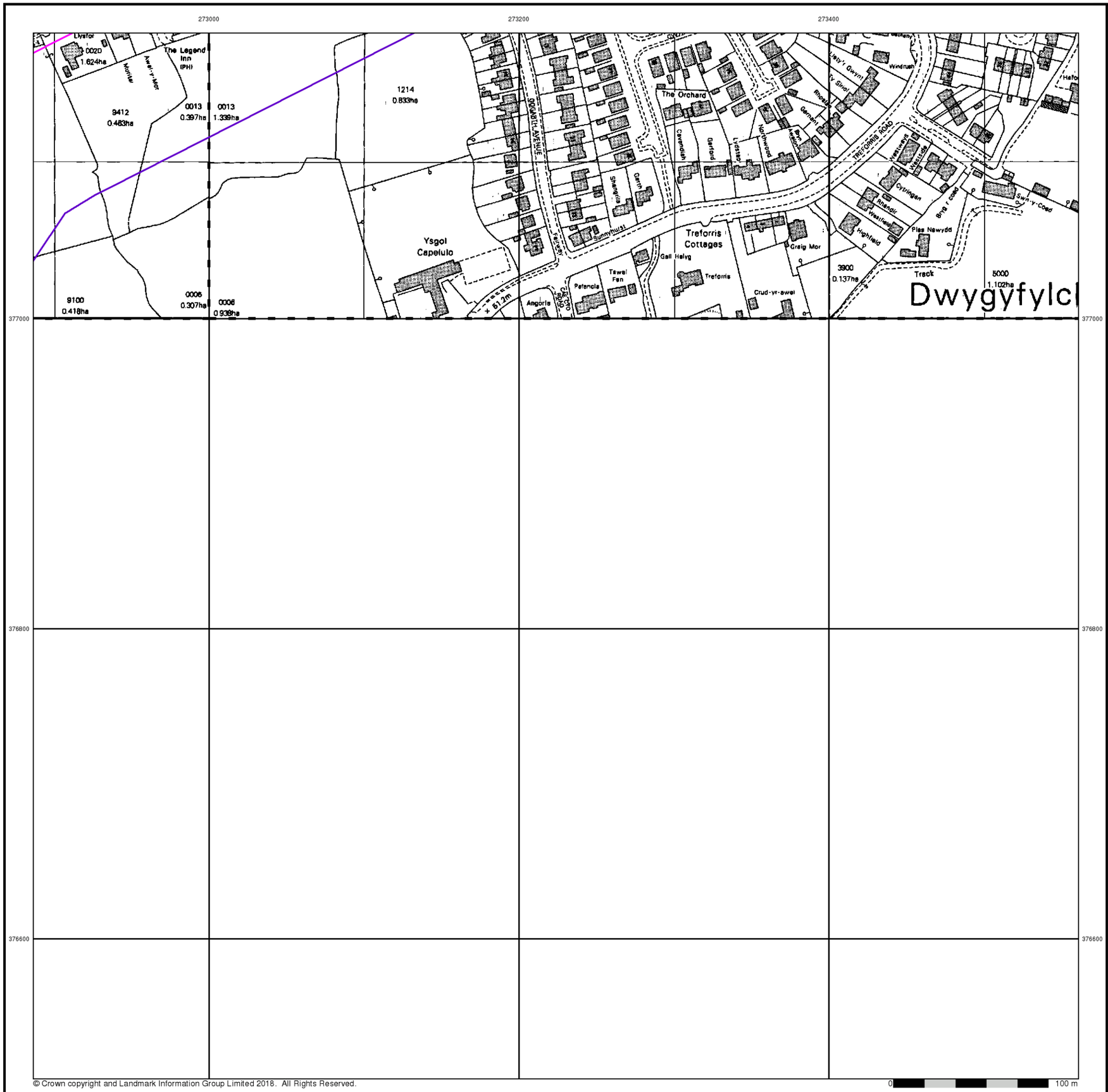
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Slice:	A
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0 100 m

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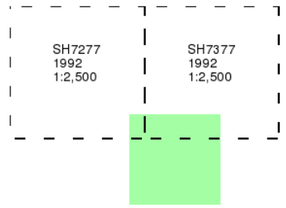
Ordnance Survey Plan

Published 1992

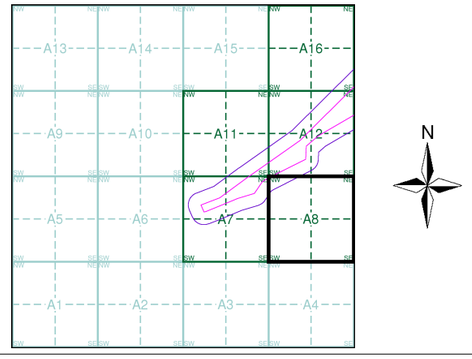
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

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273000
273200
273400
377000
376800
376600
Ysgol Capeluda
Treforris Cottages
TREFORRIS ROAD
GOGARTH AVENUE
DAE CYD ROAD
The Orchard
Bowling Green
Club House
Cae-glas Crescent
Tan'r-allt Cottages
HEN FFORDD CONWY
CONWY OLD ROAD
Trwyn yr-wylfa
Rock
Heath
Tank
Path (um)
Track
Plas Gwyn
Plas Newydd
Swyn-y-Coed
Highfield
Tregarnedd
Plas Elewelyn
Tan-y-Graig
The Legend Inn (PH)
The Spinney
The Nook
Aldermey
Sanuk
Garn
Cae Haen
Brynlau
Plas Tan R'allt
Tan-y-Fron
Penlencia
Angorfa
Barwyn
Perlan
Hawthorns
High Rising
Dalvryn
Almar
Barfreston
Bryn Eos
Alwelon
Kingsley
Bod Alaw
Bod Awen
Hafod Wen
Swyn Mor
Bircen
Tawel Fan
Craig Mor
Crud-yr-ewel
Traeth
Dwyg
5000
0020
0013
0006
0495
9412
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1214
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59.4m
64.3m
63.3m
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S.B.M.
Stone
Sc
Ro
Hc
PW
Ho
Ty Bothy
Ty Striol
Ty Gwyn
Oytrigan
Rhiandir
Tynewydd
Tyn-y-Graig
Tyn-y-Maes
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Tyn-y-Llwy



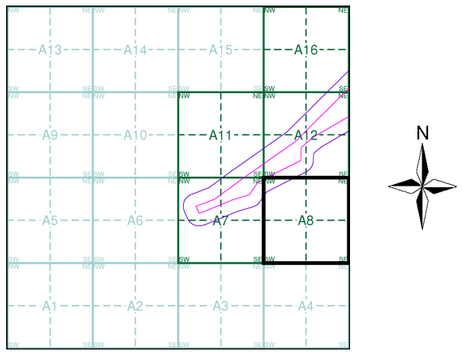
RAMBOLL

Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A8



Order Details

Order Number:	175417398_1_1
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National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

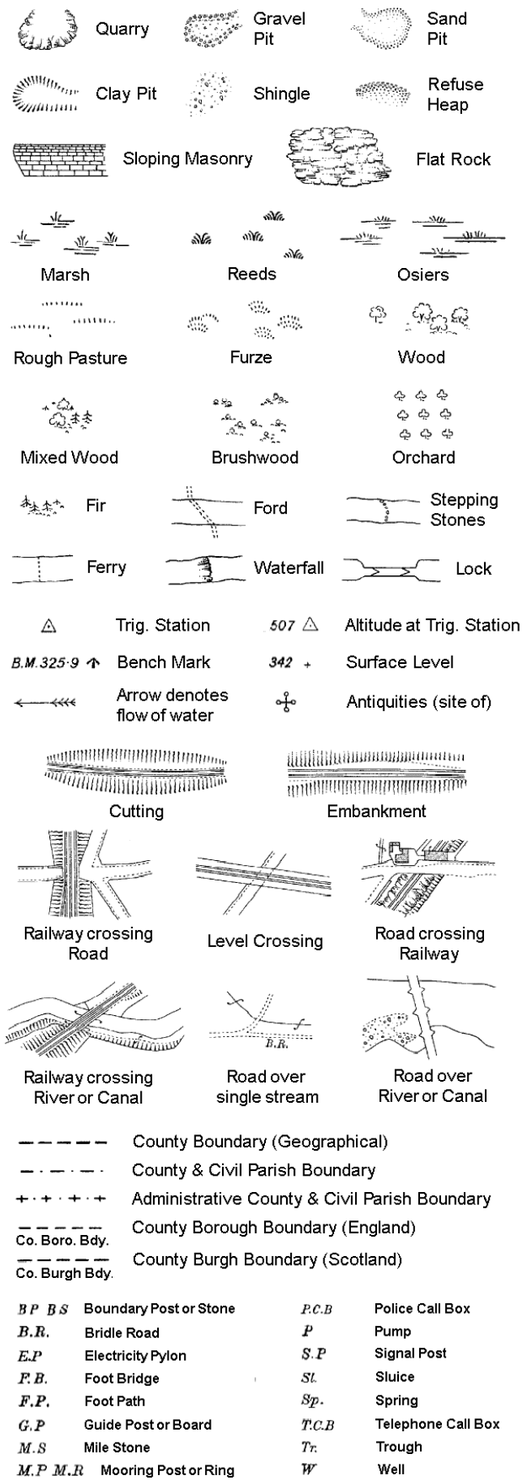
Site at, Penmaenmawr, Conwy

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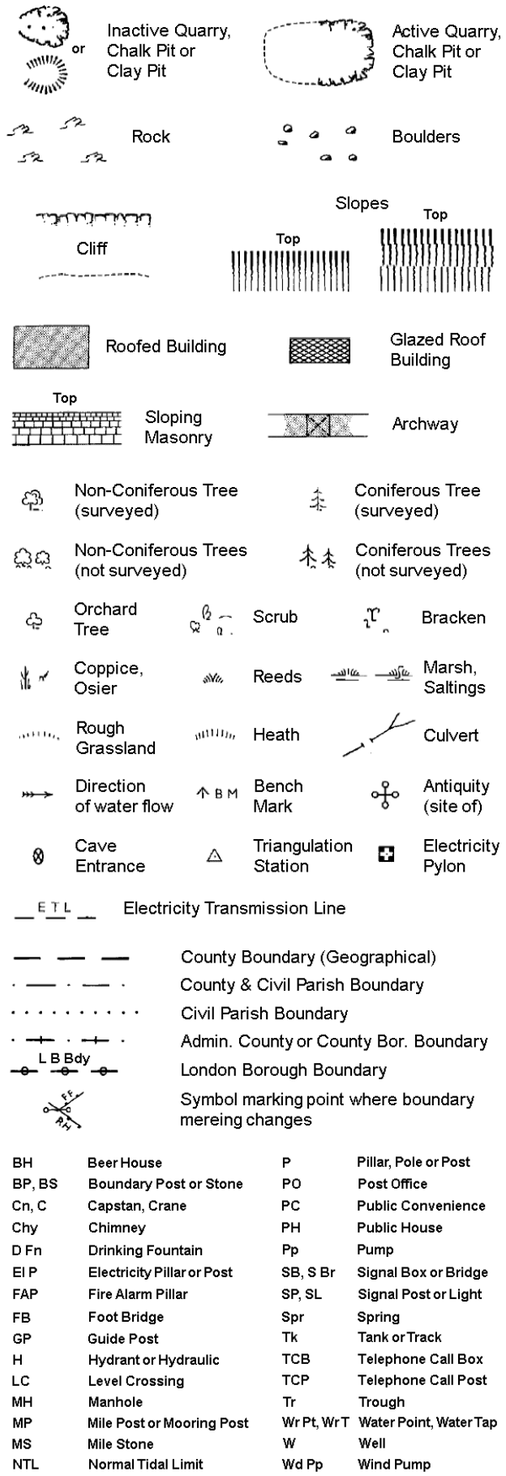
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



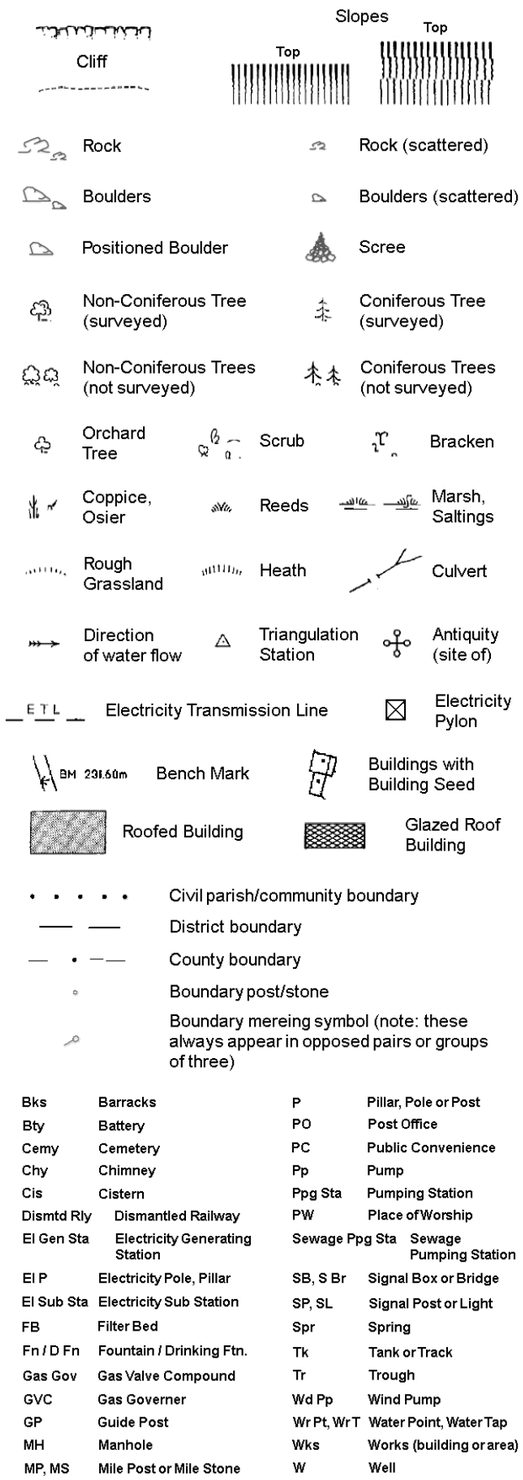
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



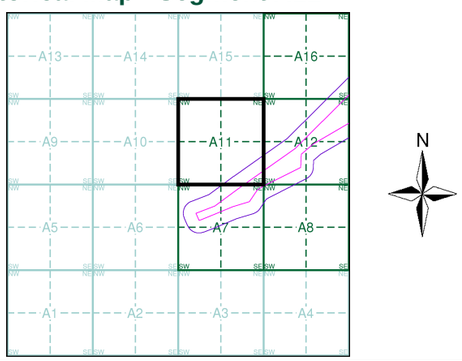
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1966	5
Ordnance Survey Plan	1:2,500	1992	6
Large-Scale National Grid Data	1:2,500	1995	7
Historical Aerial Photography	1:2,500	2000	8

Historical Map - Segment A11

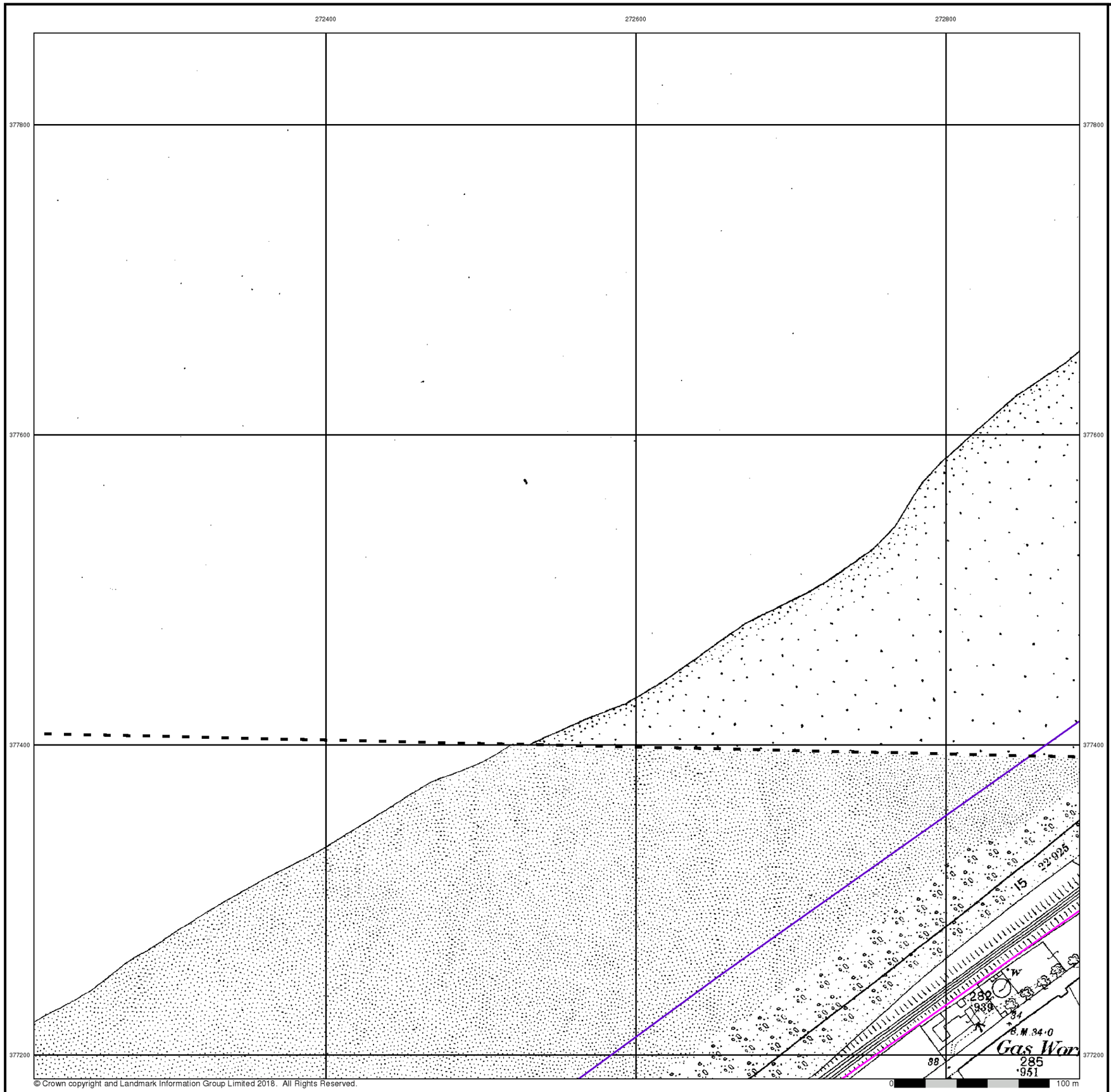


Order Details

Order Number:	175417398_1_1
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Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy



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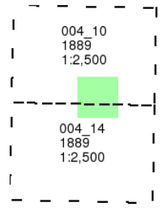
Caernarvonshire

Published 1889

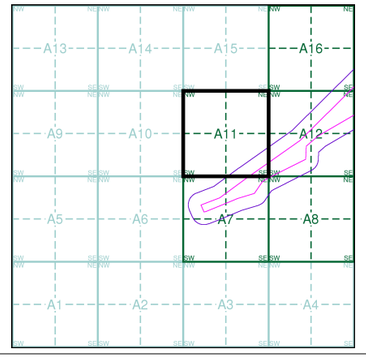
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A11



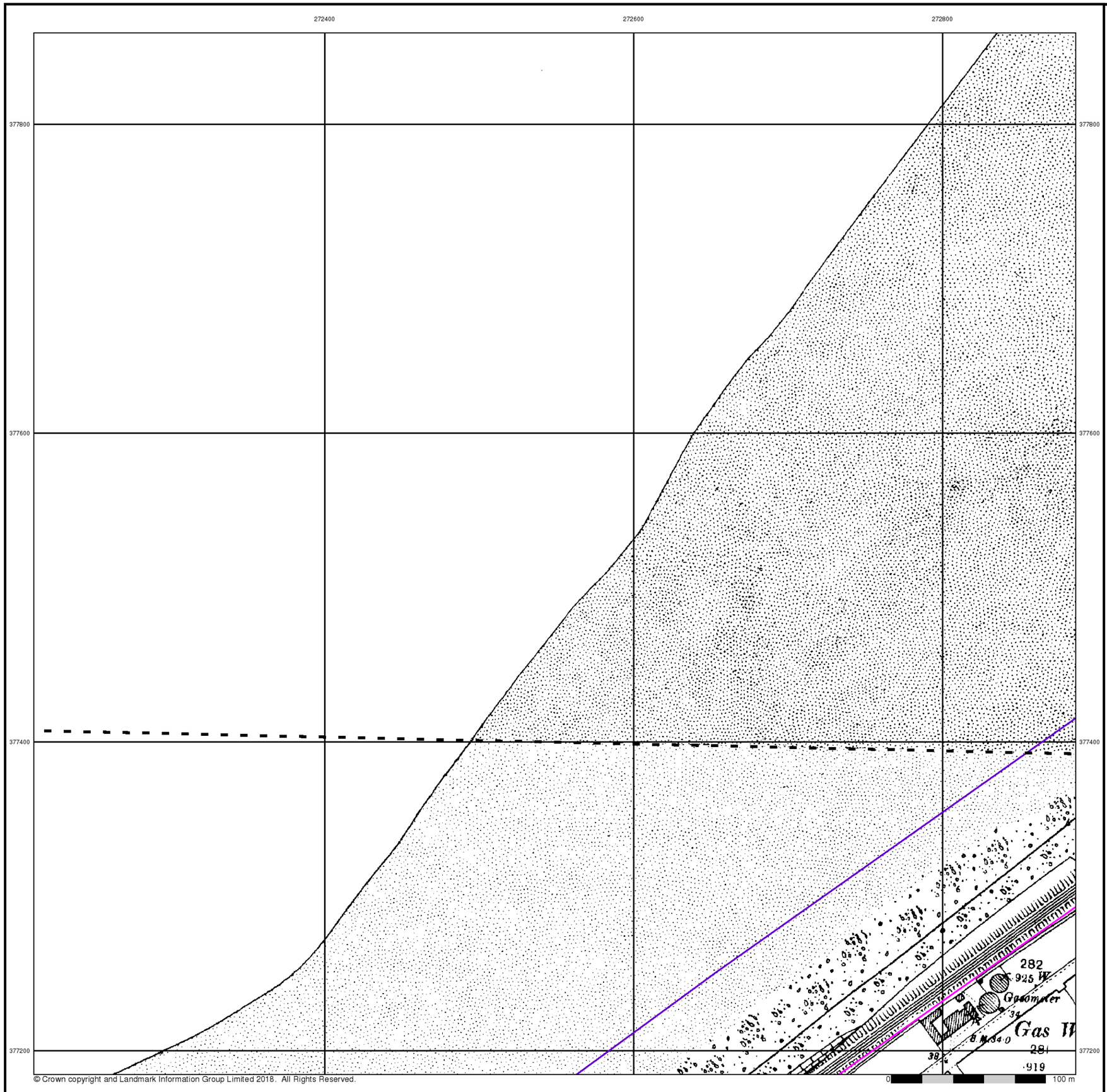
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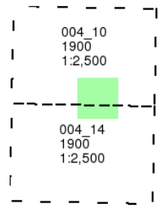
Caernarvonshire

Published 1900

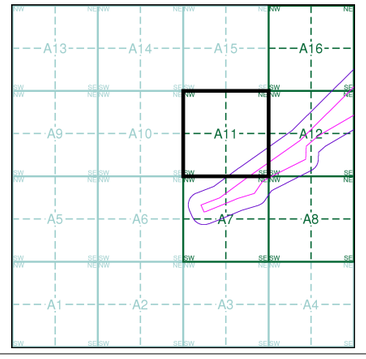
Source map scale - 1:2,500

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Historical Map - Segment A11



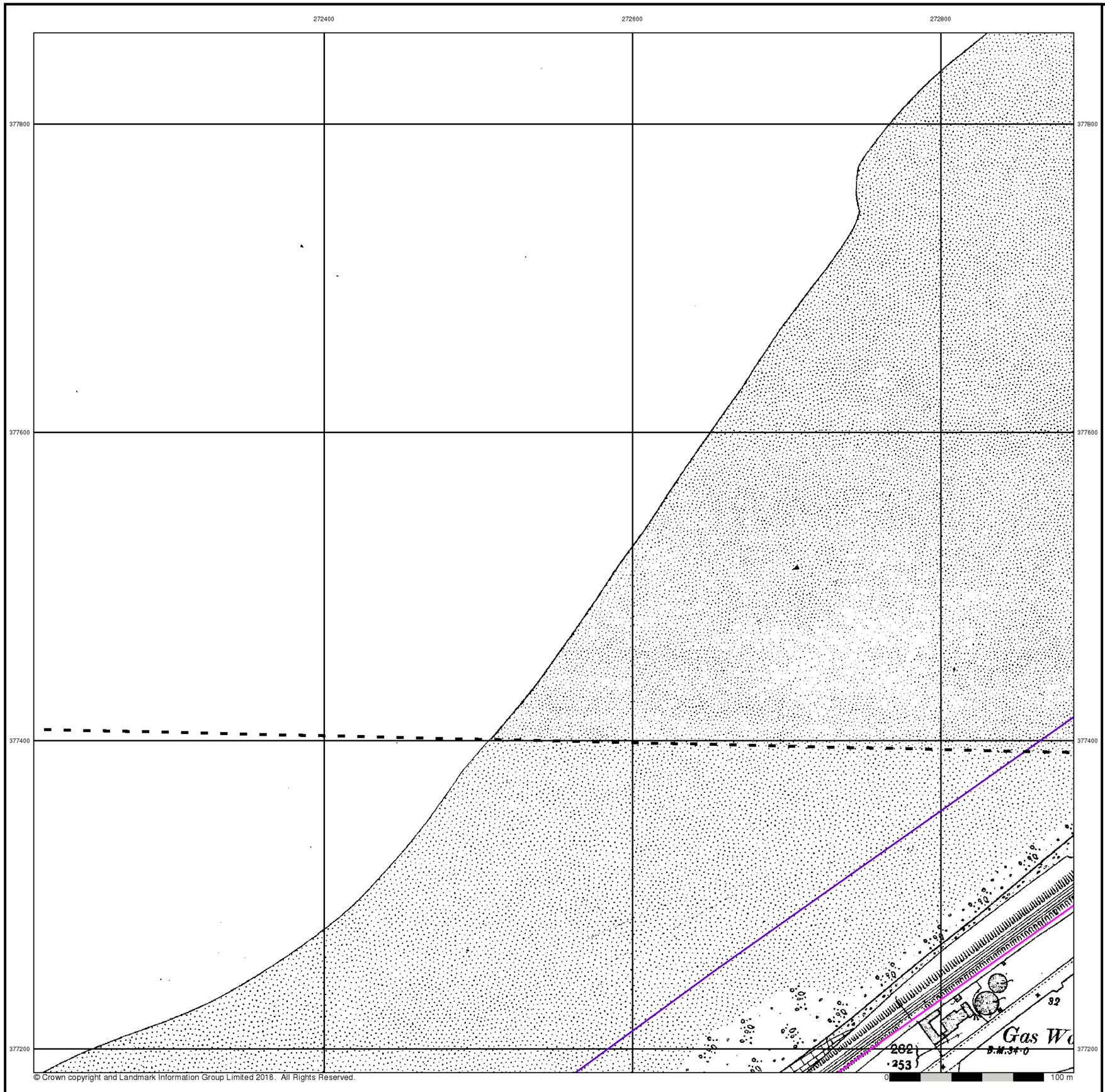
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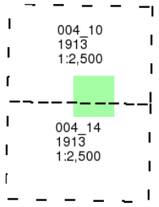
Caernarvonshire

Published 1913

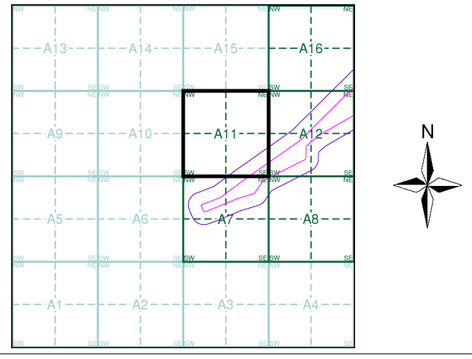
Source map scale - 1:2,500

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Historical Map - Segment A11



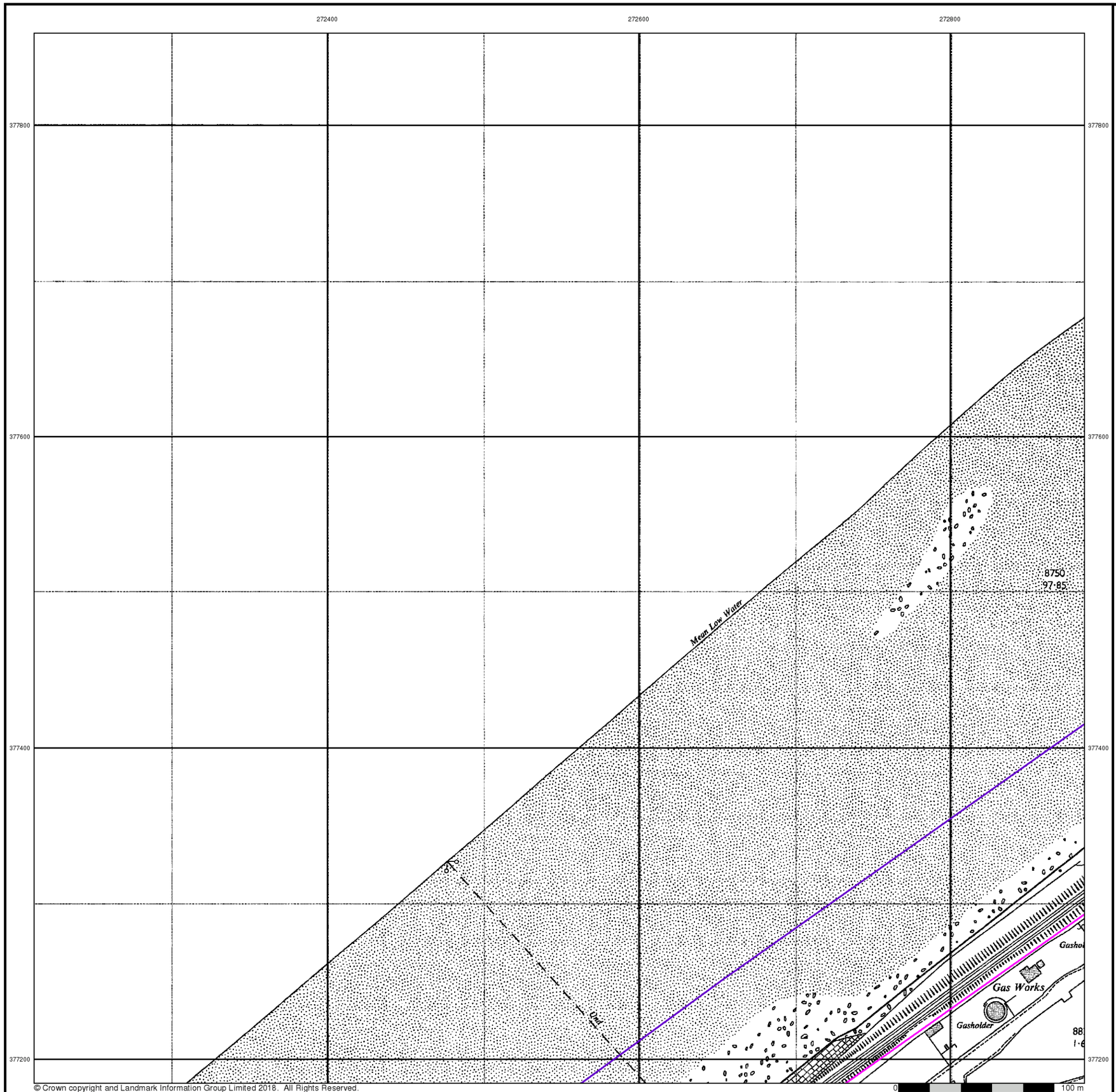
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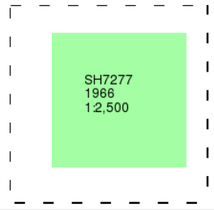
Ordnance Survey Plan

Published 1966

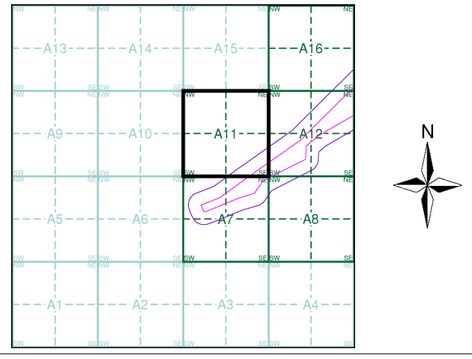
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

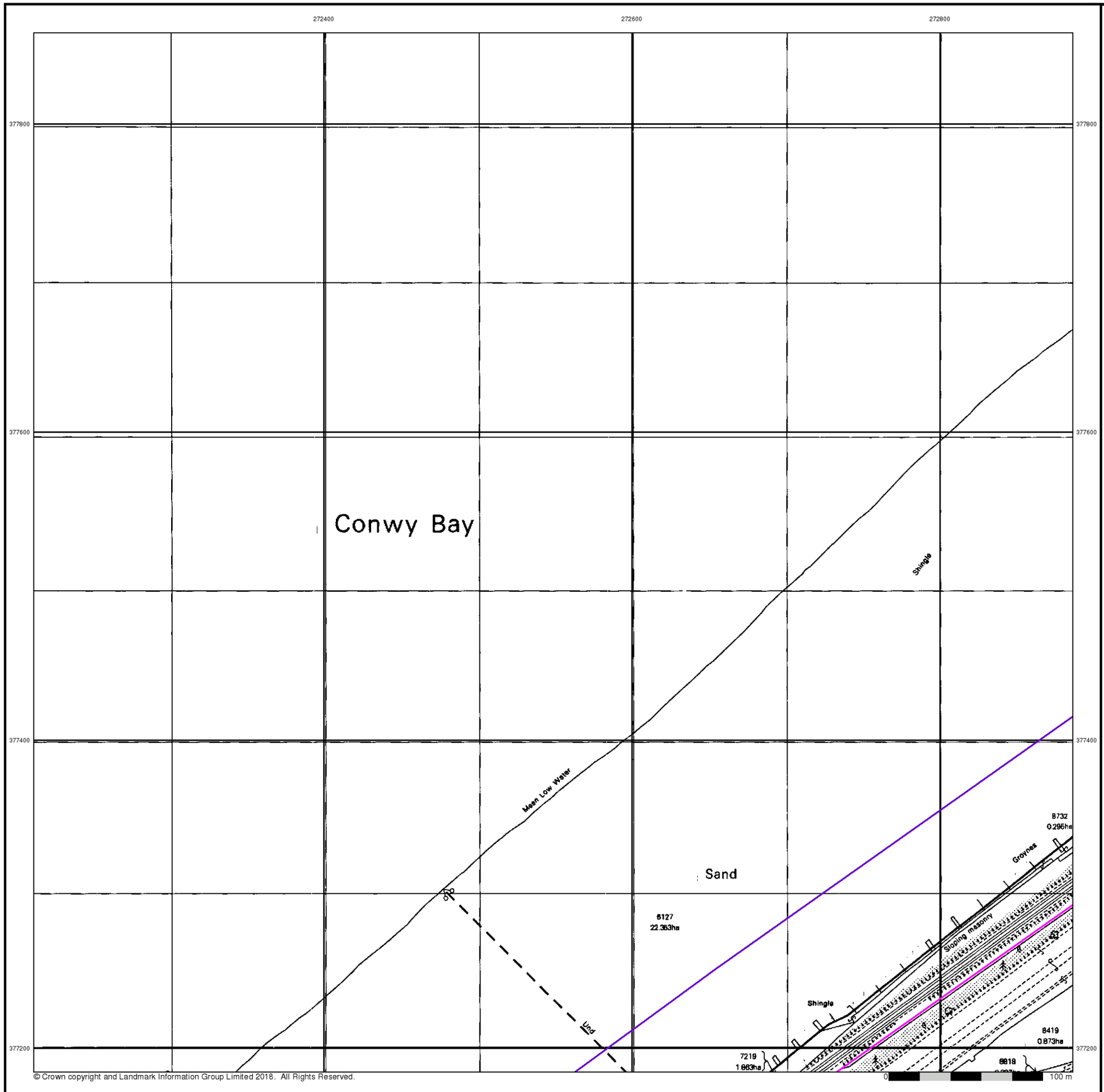
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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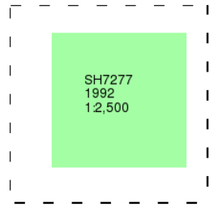
Ordnance Survey Plan

Published 1992

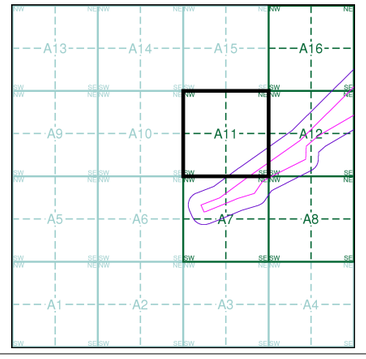
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A11



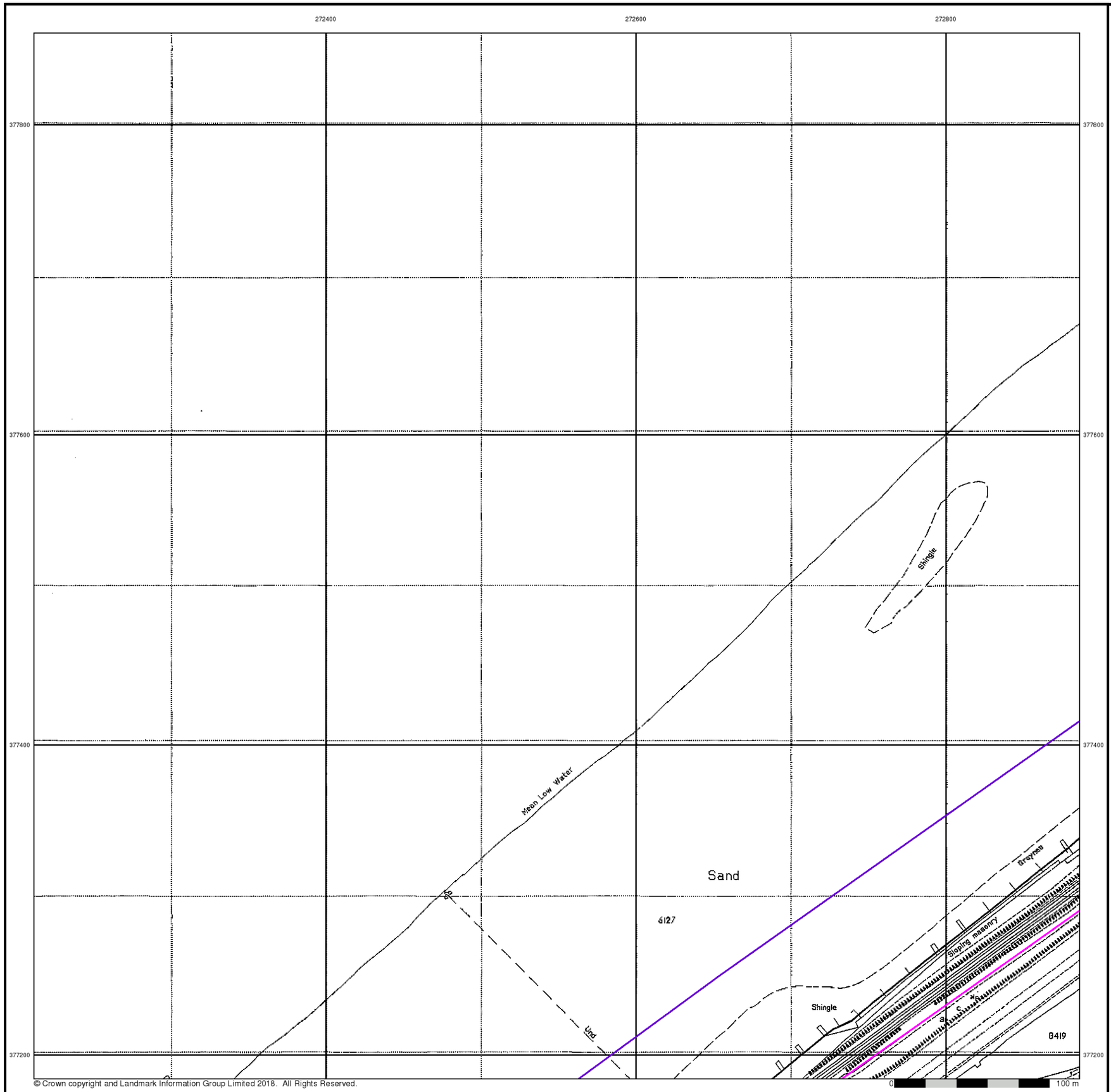
Order Details

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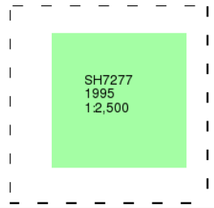
Large-Scale National Grid Data

Published 1995

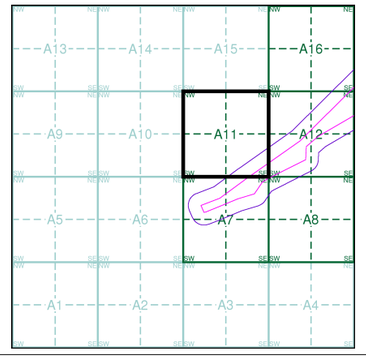
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A11



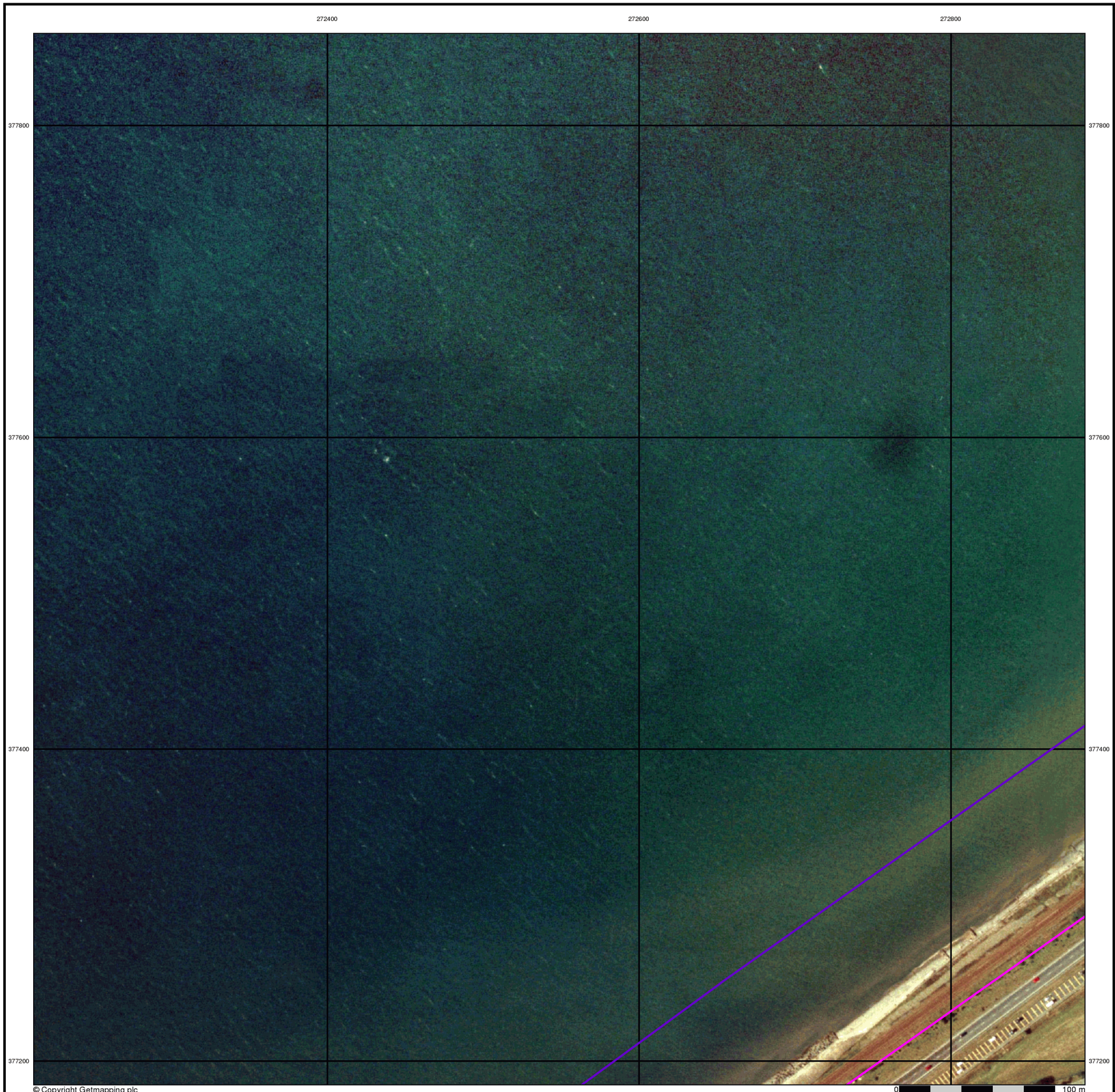
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
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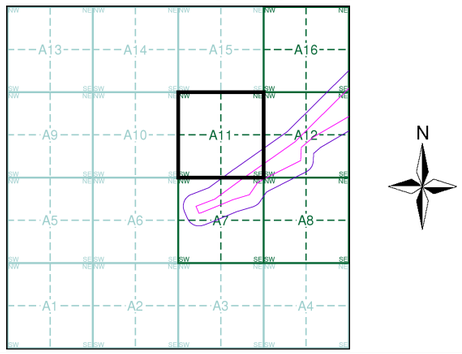


Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A11



Order Details

Order Number:	175417398_1_1
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National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

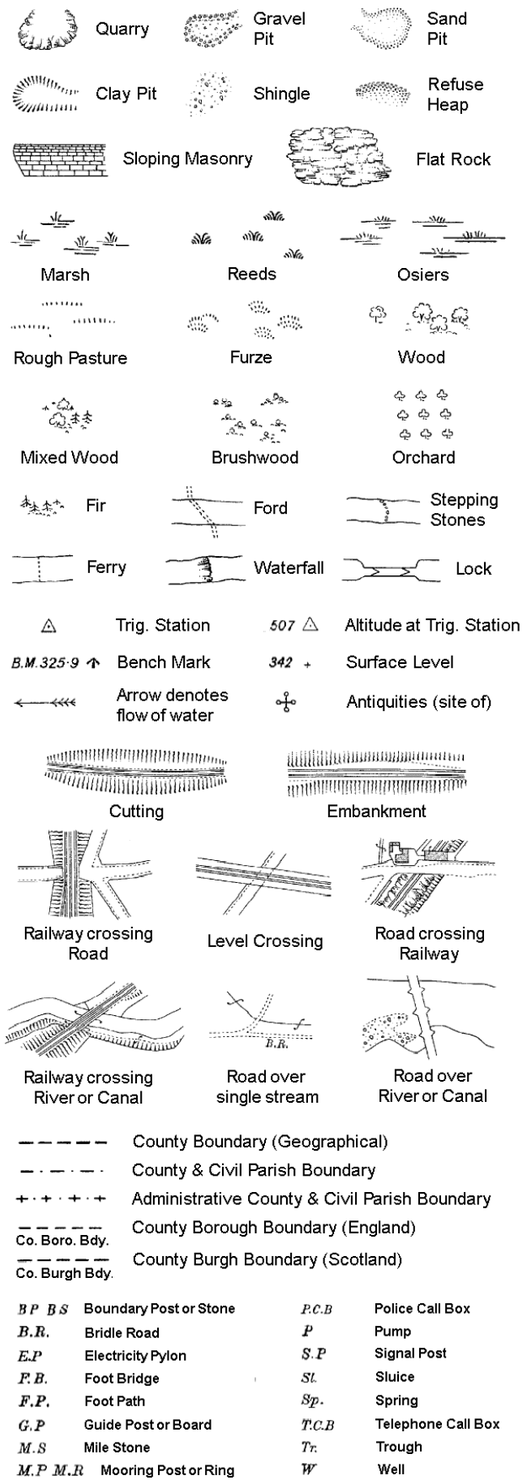
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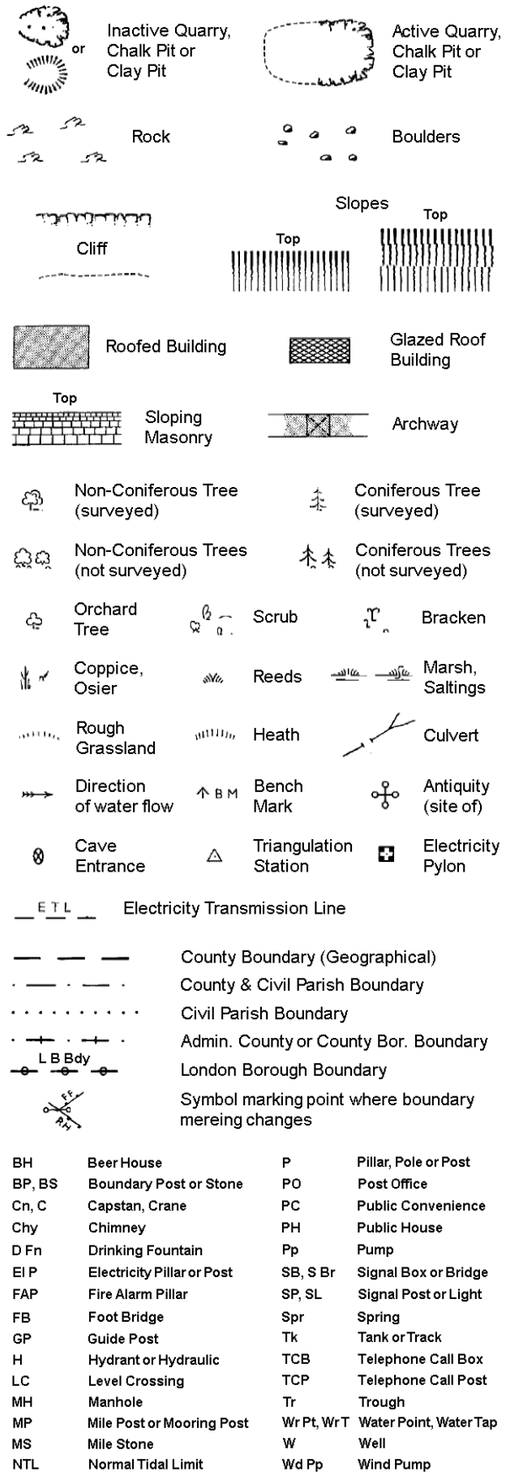
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



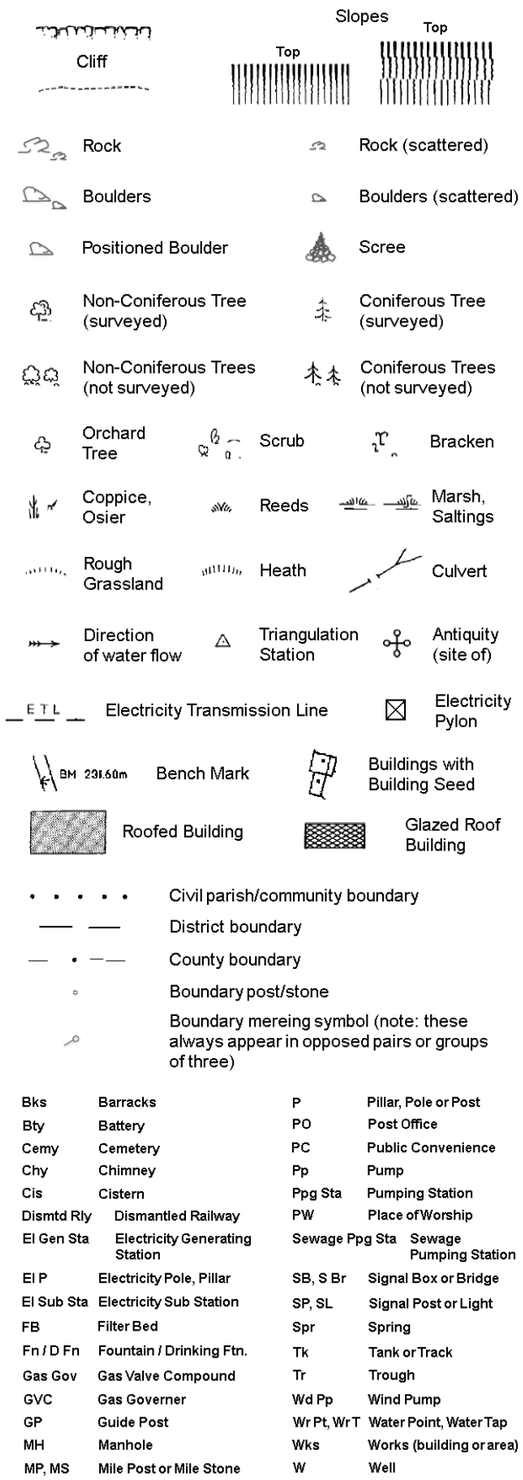
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



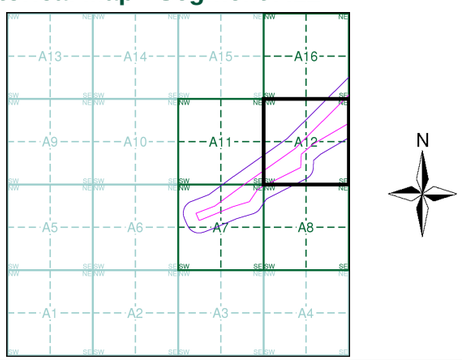
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1966	5
Supply of Unpublished Survey Information	1:2,500	1973	6
Additional SIMs	1:2,500	1977	7
Ordnance Survey Plan	1:2,500	1992	8
Large-Scale National Grid Data	1:2,500	1995	9
Historical Aerial Photography	1:2,500	2000	10

Historical Map - Segment A12



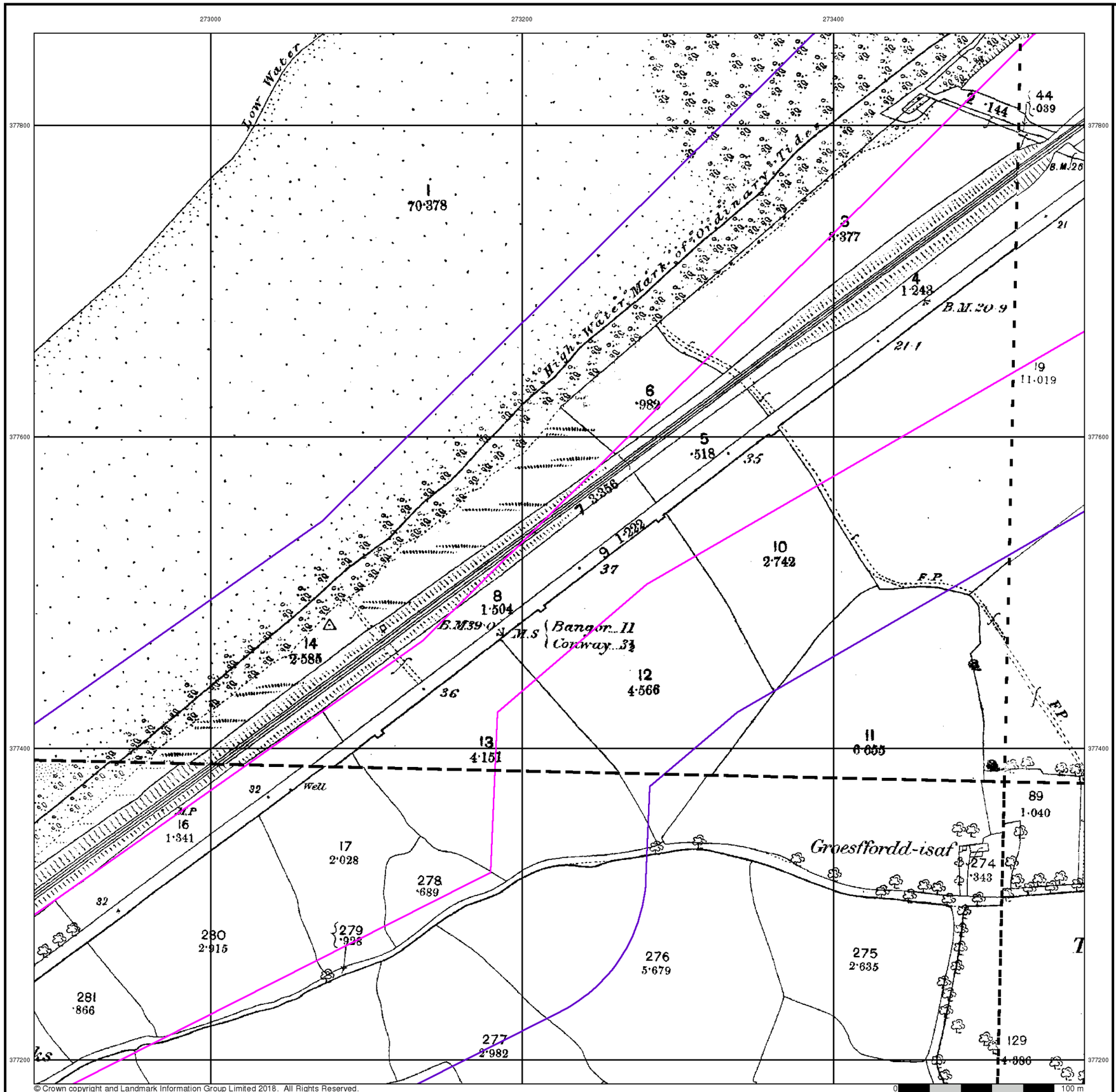
Order Details

Order Number: 175417398_1_1
Customer Ref: 1620004796 - J16
National Grid Reference: 272580, 377150
Slice: A
Site Area (Ha): 28.4
Search Buffer (m): 100

Site Details

Site at, Penmaenmawr, Conwy

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Web: www.envirocheck.co.uk



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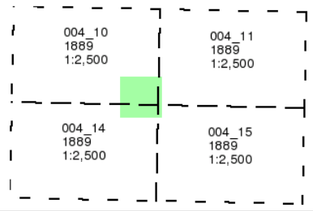
Caernarvonshire

Published 1889

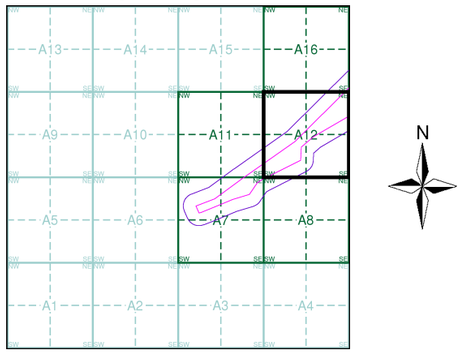
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A12



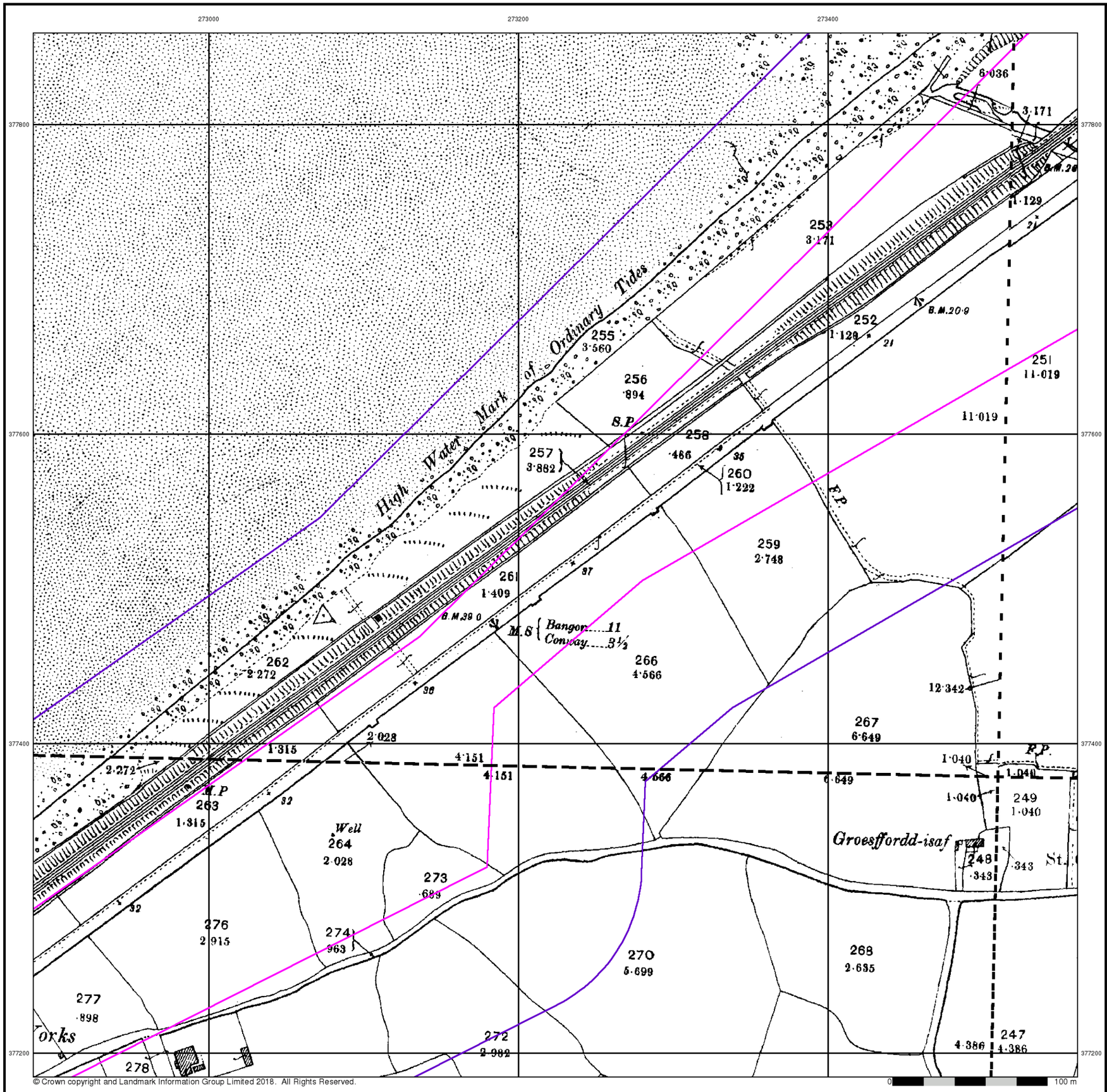
Order Details

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Customer Ref:	1620004796 - J16
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Slice:	A
Site Area (Ha):	28.4
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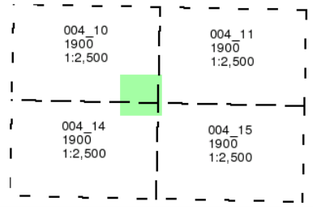
Caernarvonshire

Published 1900

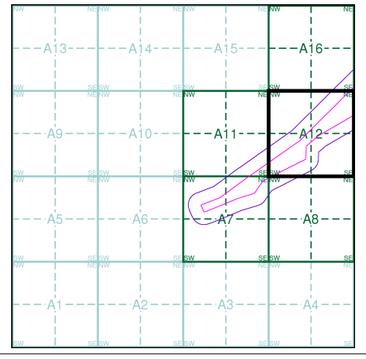
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A12



Order Details

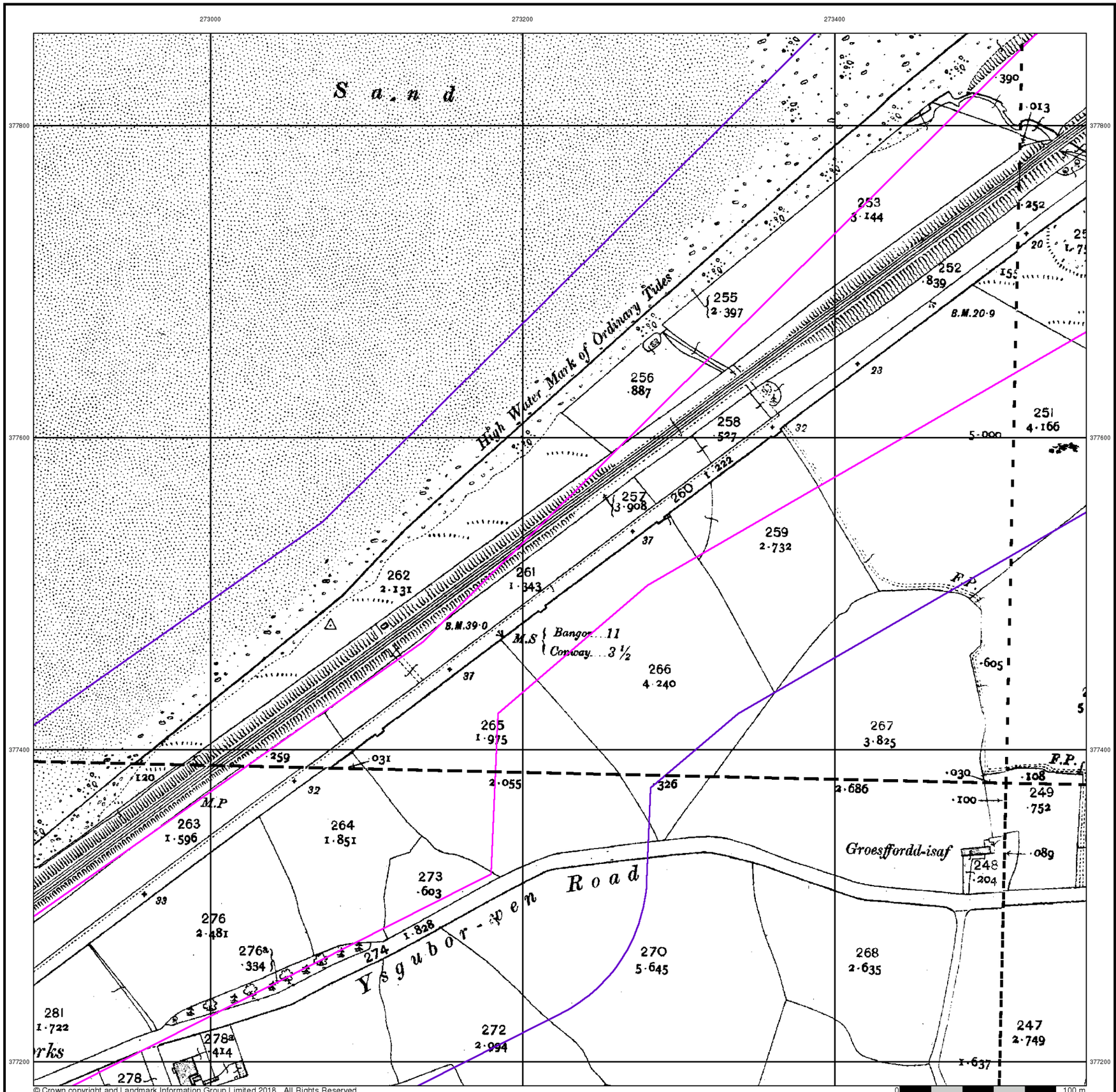
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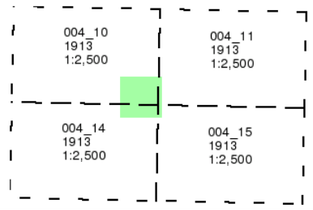
Caernarvonshire

Published 1913

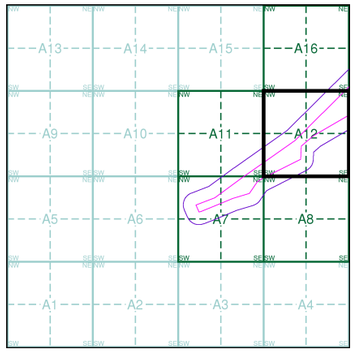
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A12



Order Details

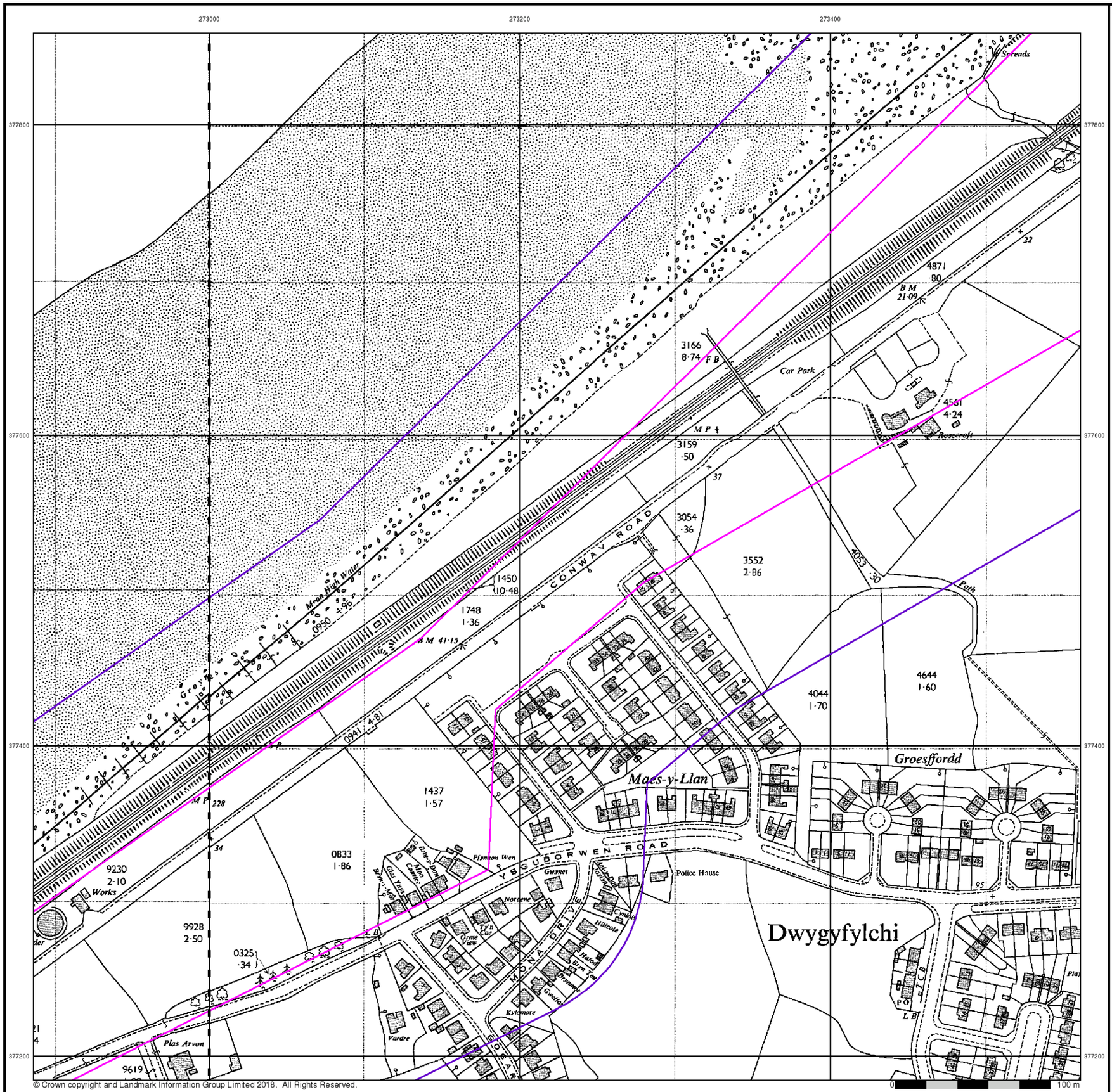
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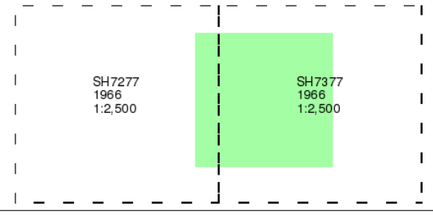
Ordnance Survey Plan

Published 1966

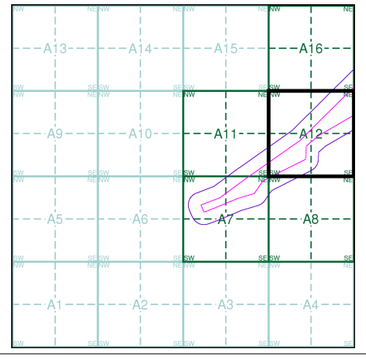
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A12



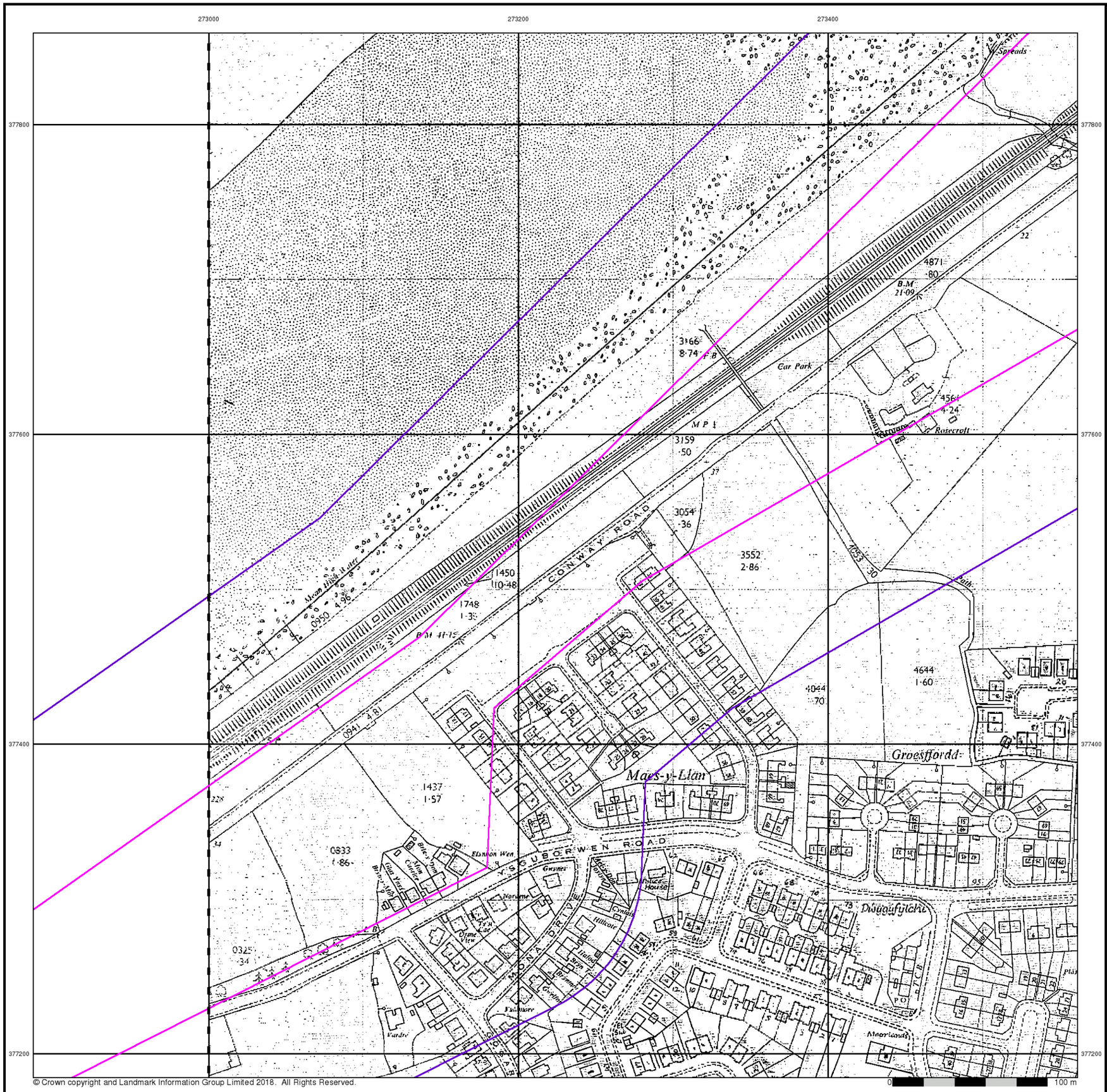
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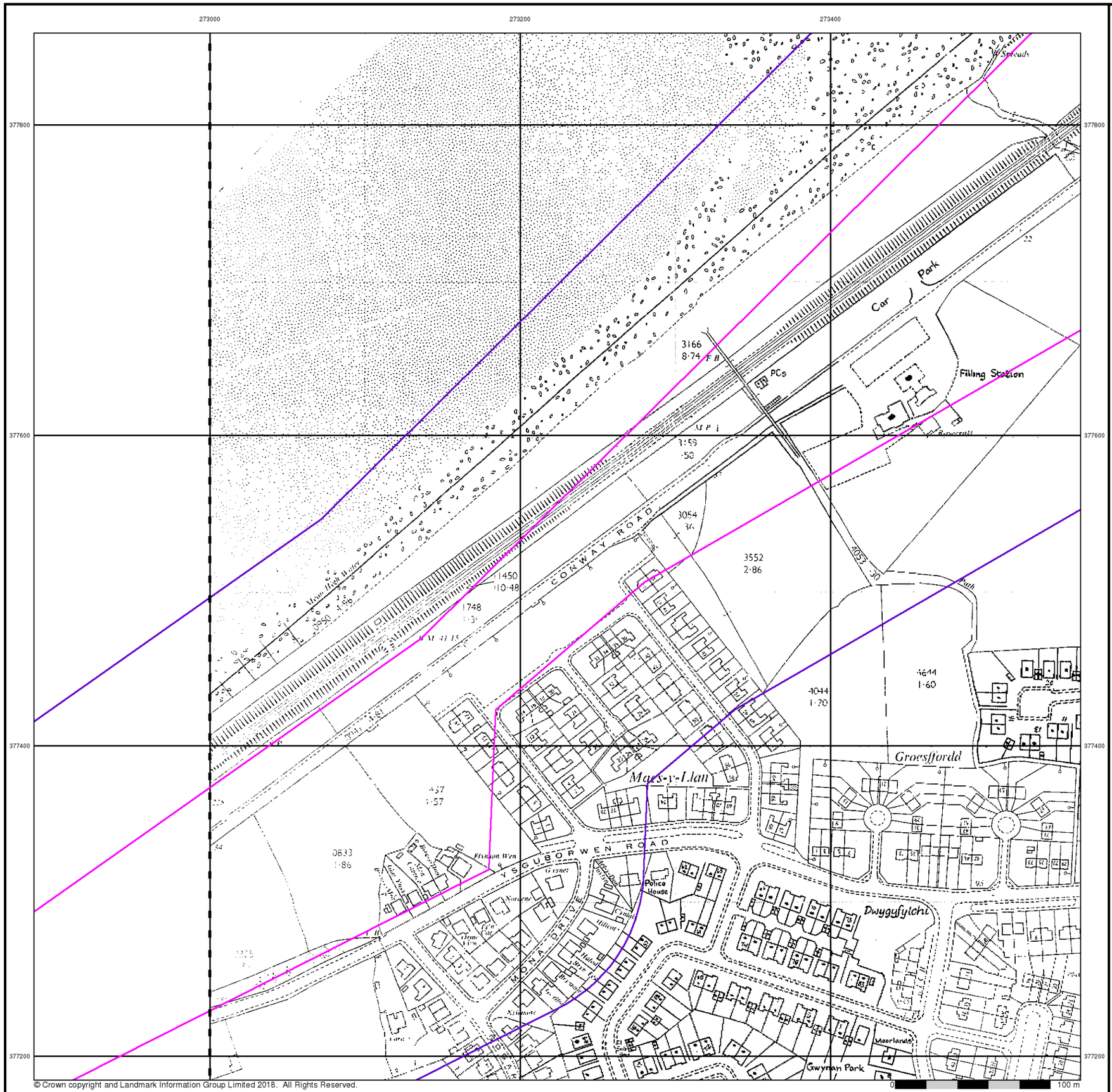
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273000
273200
273400
377800
377600
377400
377200
Spreads
Car Park
Rosecroft
Maes-y-Llan
Groesffordd
CONWAY ROAD
SUSORWEN ROAD
MONA DRIVE
Elanion Wen
Bryn Hyfryd
Glan Yr Afon
Glyn Dwr
Dyffryn Glas
Hillcote
Glyn Dene
Glan Aber
Bryn Awel
Maes Y Llan
Bryn Coch
Glan Y Don
Glan Y Mor
Glan Y Wern
Glan Y Llyn
Glan Y Nant
Glan Y Gors
Glan Y Coed
Glan Y Dwr
Glan Y Bryn
Glan Y Afon
Glan Y Mynydd
Glan Y Llwyn
Glan Y Ffynnon
Glan Y Graig
Glan Y Cwm
Glan Y Pant
Glan Y Ffordd
Glan Y Llan



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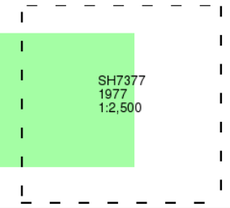
Additional SIMs

Published 1977

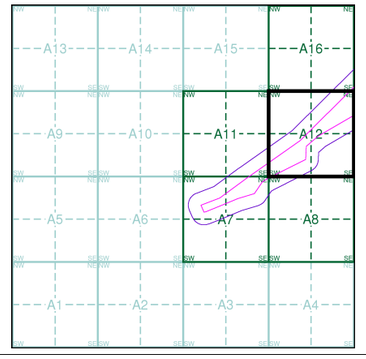
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A12



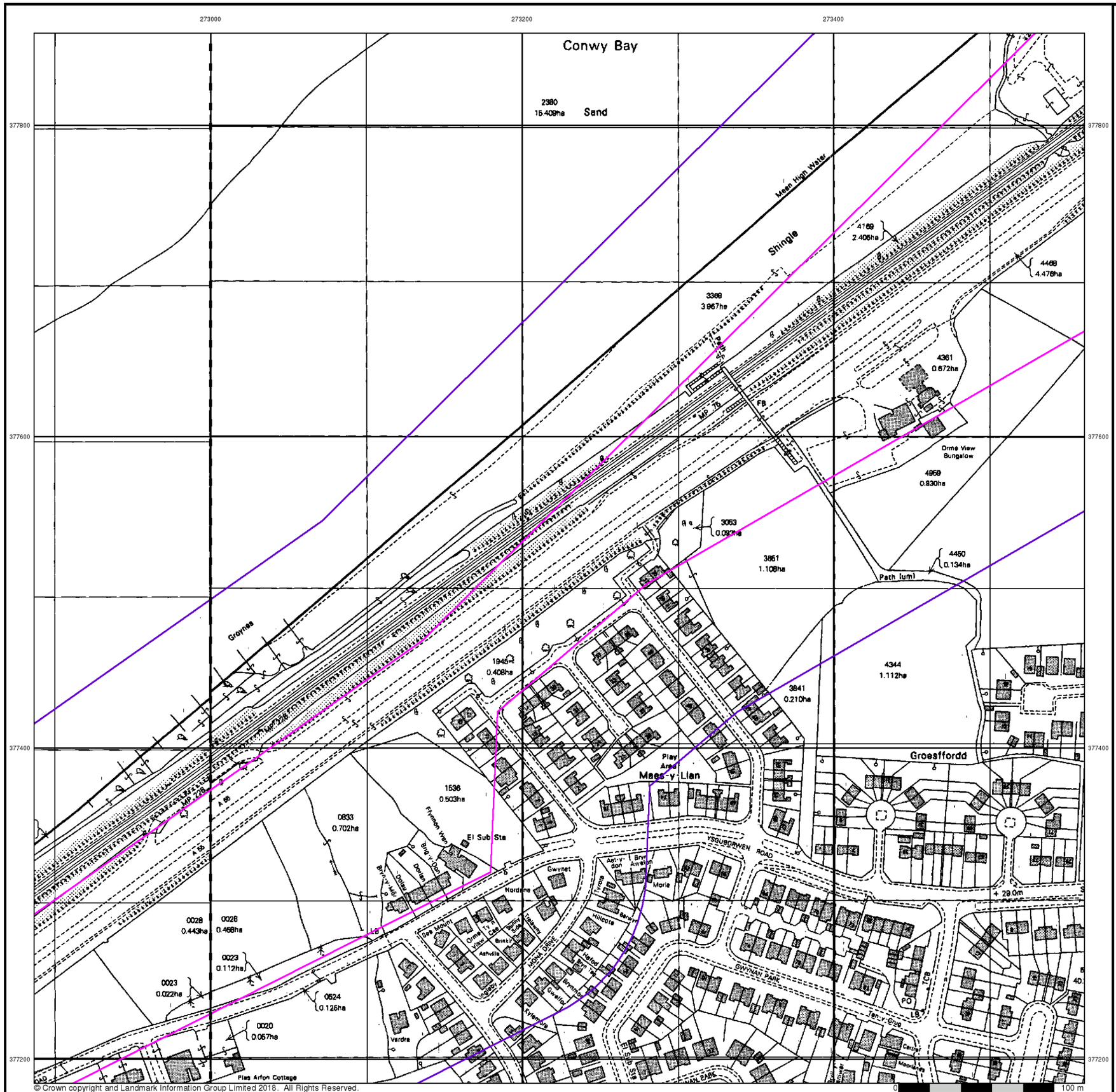
Order Details

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Slice:	A
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Search Buffer (m):	100

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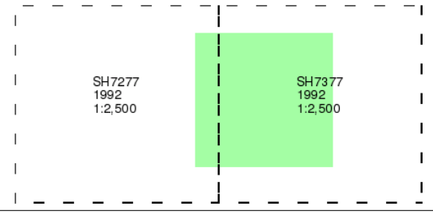
Ordnance Survey Plan

Published 1992

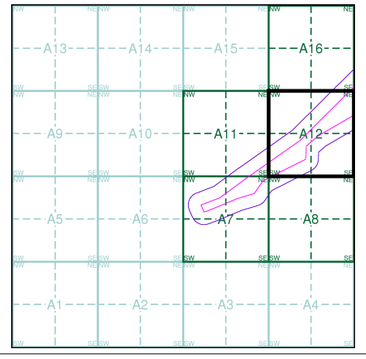
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A12



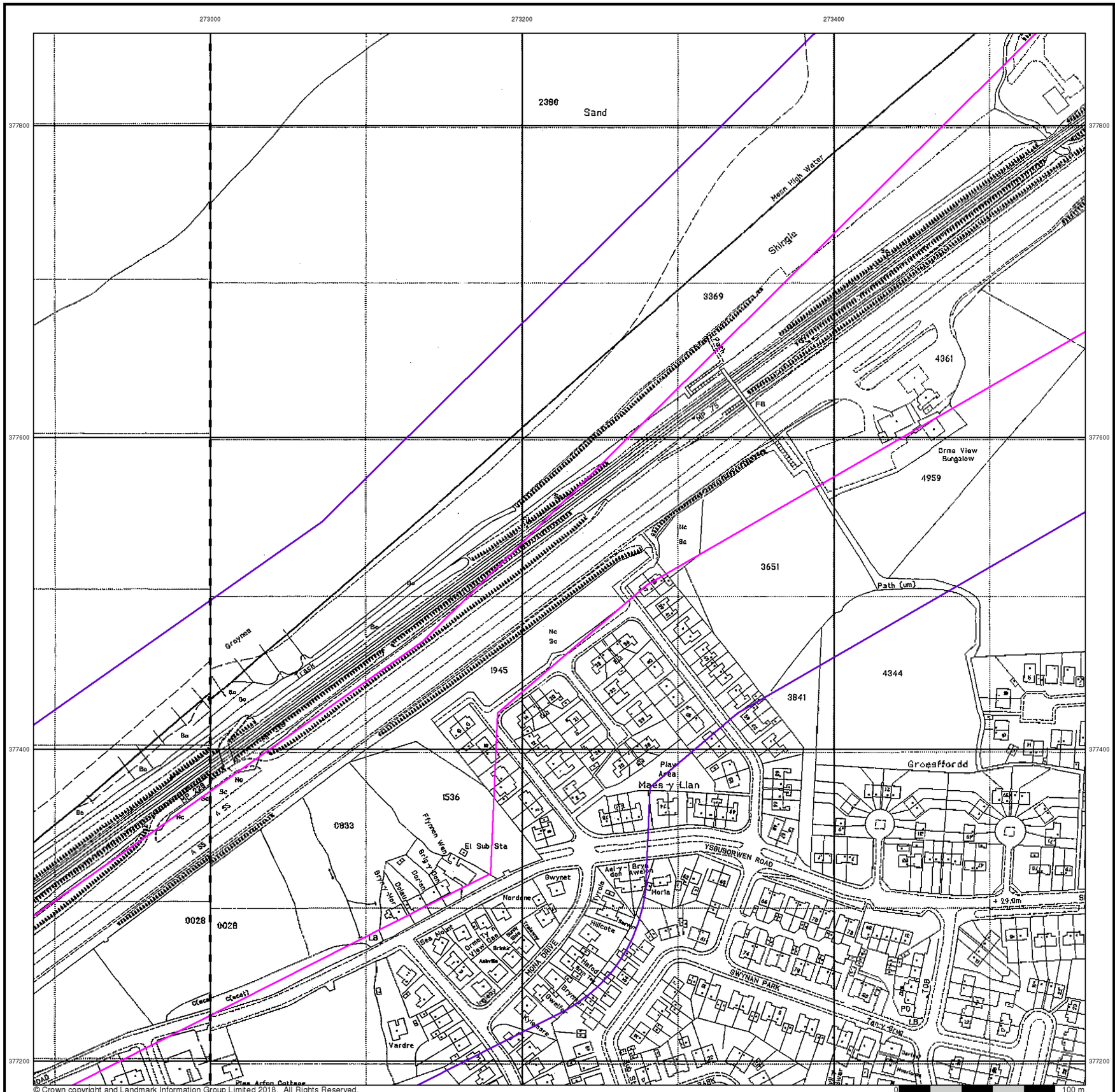
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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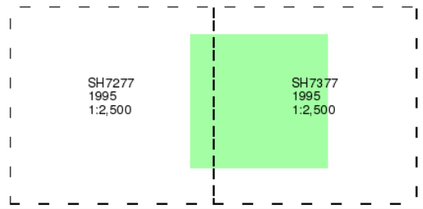
Large-Scale National Grid Data

Published 1995

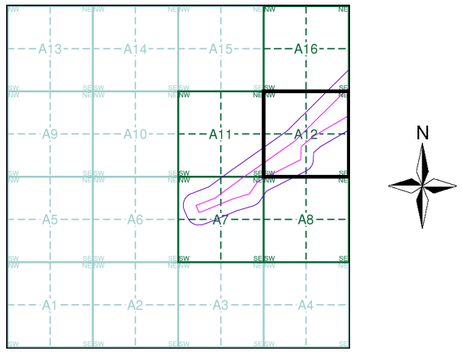
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A12



Order Details

Order Number:	175417398_1_1
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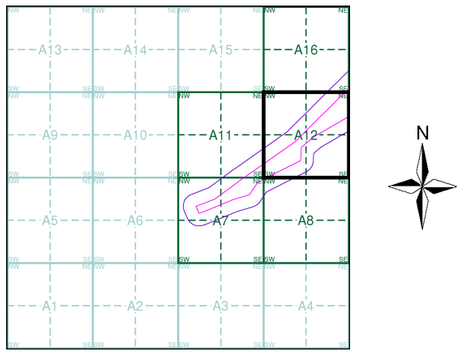
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Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A12



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

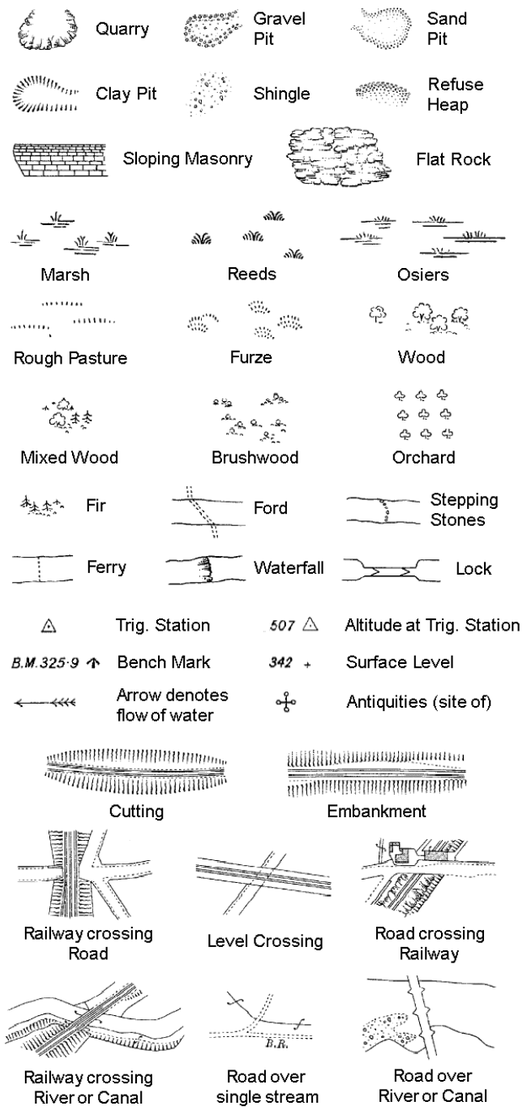
Site at, Penmaenmawr, Conwy

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

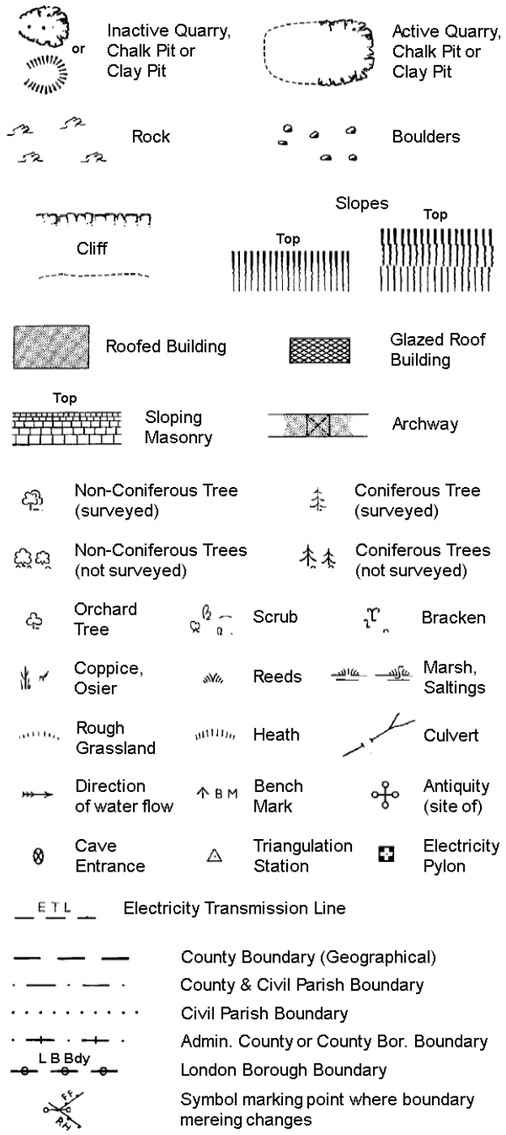
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

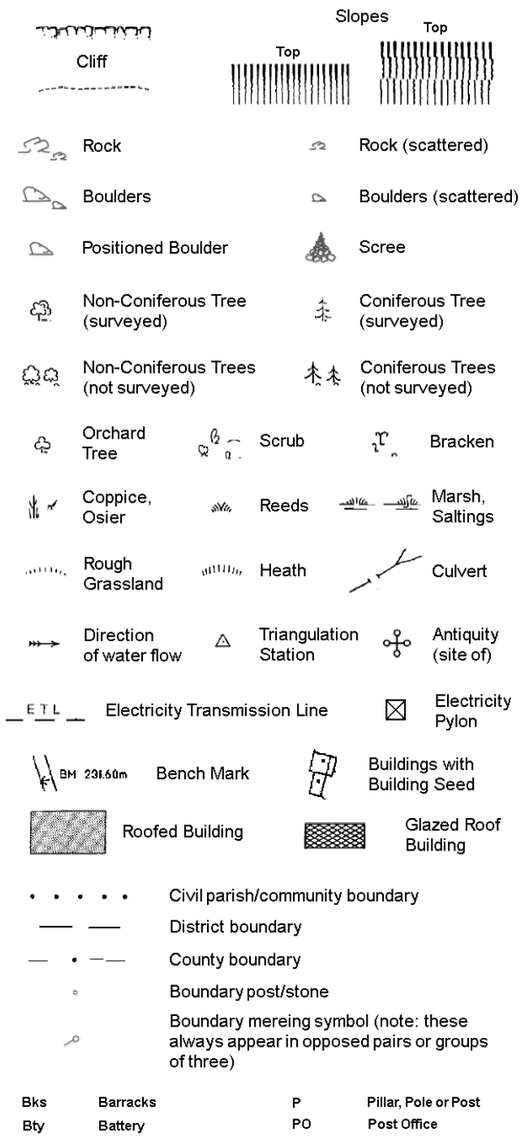
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

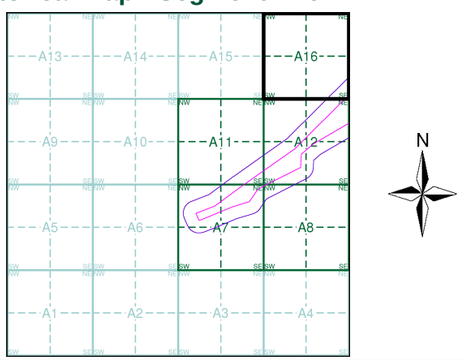
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1966	5
Supply of Unpublished Survey Information	1:2,500	1973	6
Additional SIMs	1:2,500	1977	7
Ordnance Survey Plan	1:2,500	1992	8
Large-Scale National Grid Data	1:2,500	1995	9
Large-Scale National Grid Data	1:2,500	1995	10
Historical Aerial Photography	1:2,500	2000	11

Historical Map - Segment A16



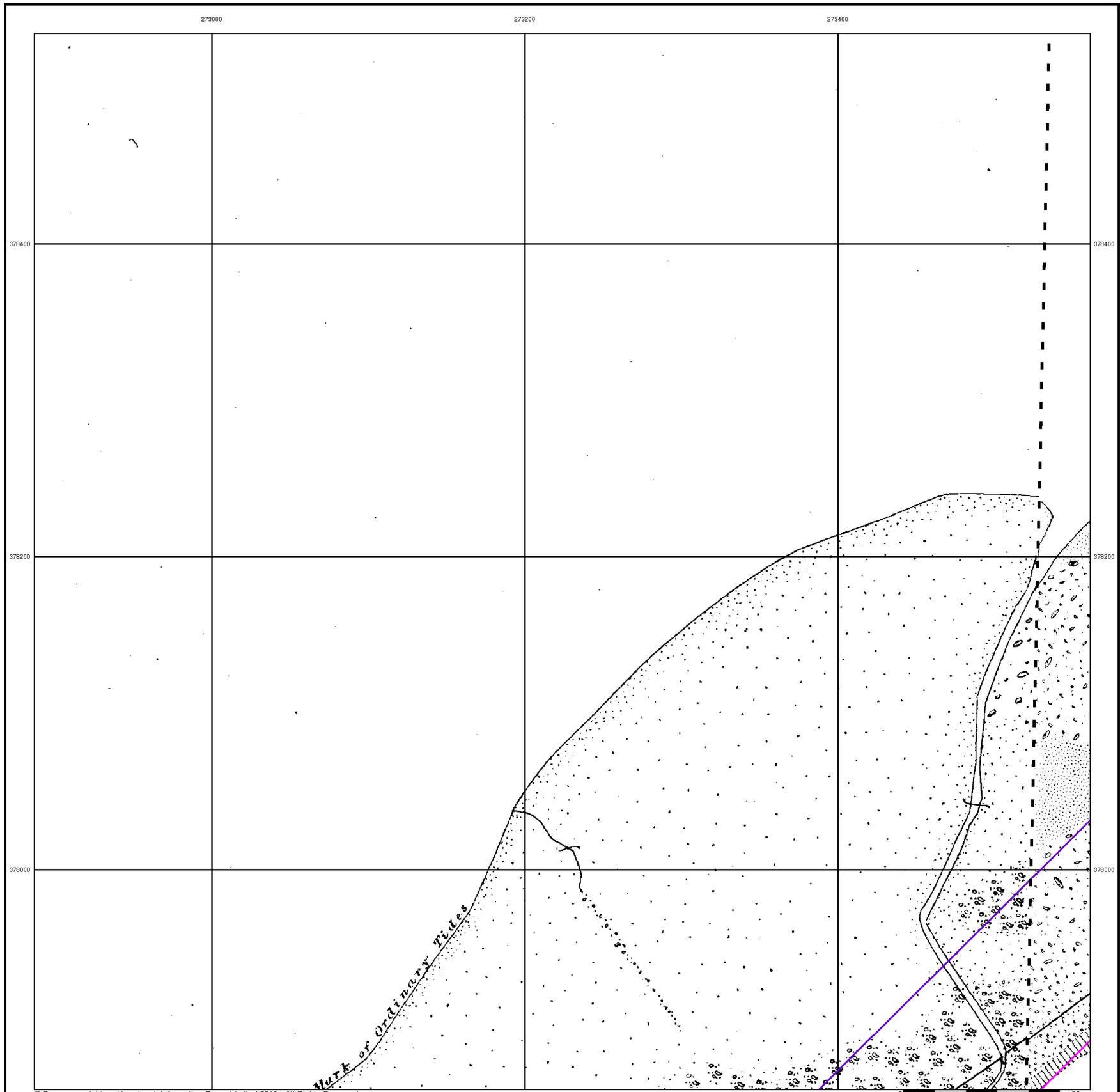
Order Details

Order Number: 175417398_1_1
Customer Ref: 1620004796 - J16
National Grid Reference: 272580, 377150
Slice: A
Site Area (Ha): 28.4
Search Buffer (m): 100

Site Details

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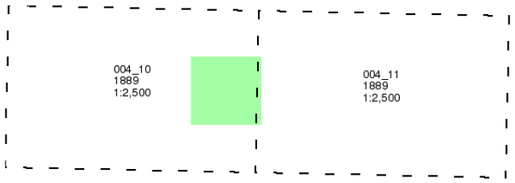
Caernarvonshire

Published 1889

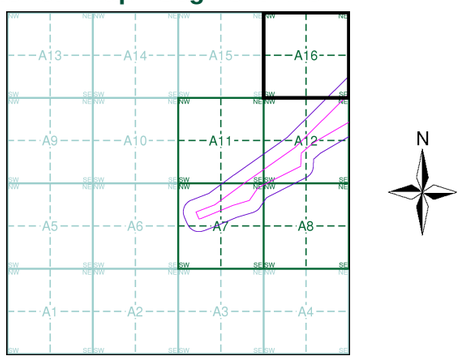
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A16



Order Details

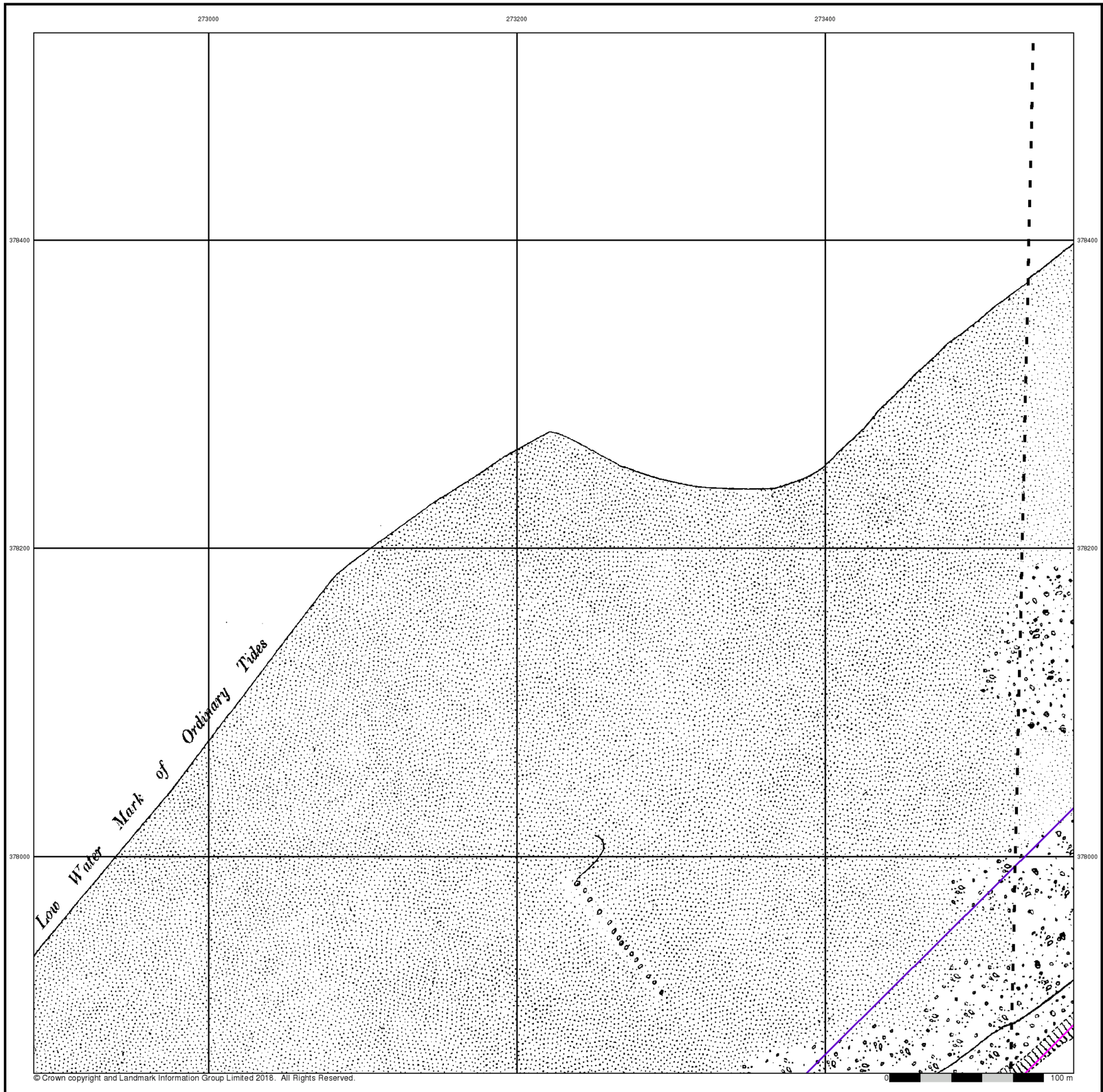
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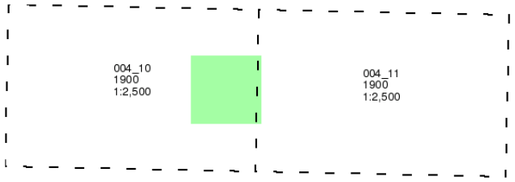
Caernarvonshire

Published 1900

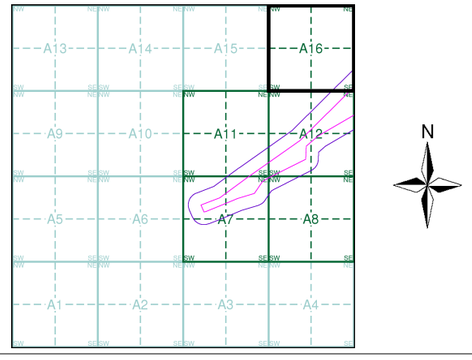
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A16



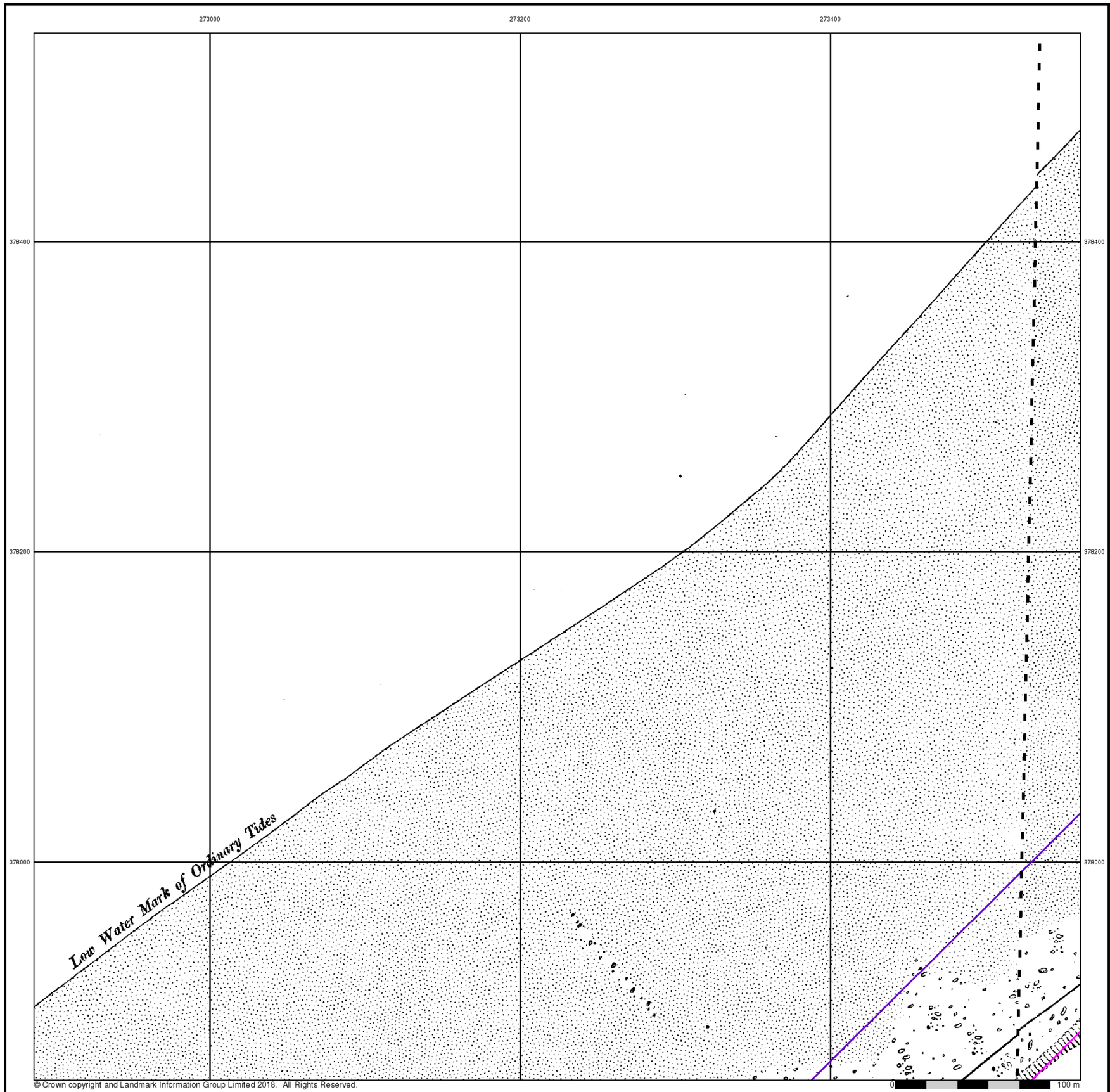
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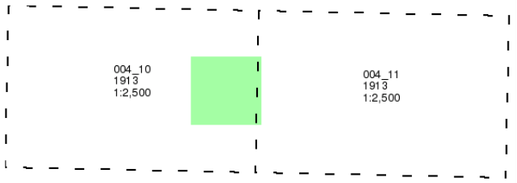
Caernarvonshire

Published 1913

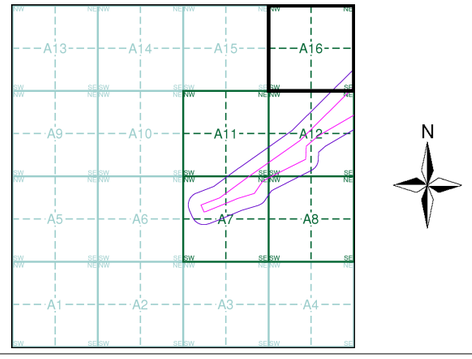
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A16



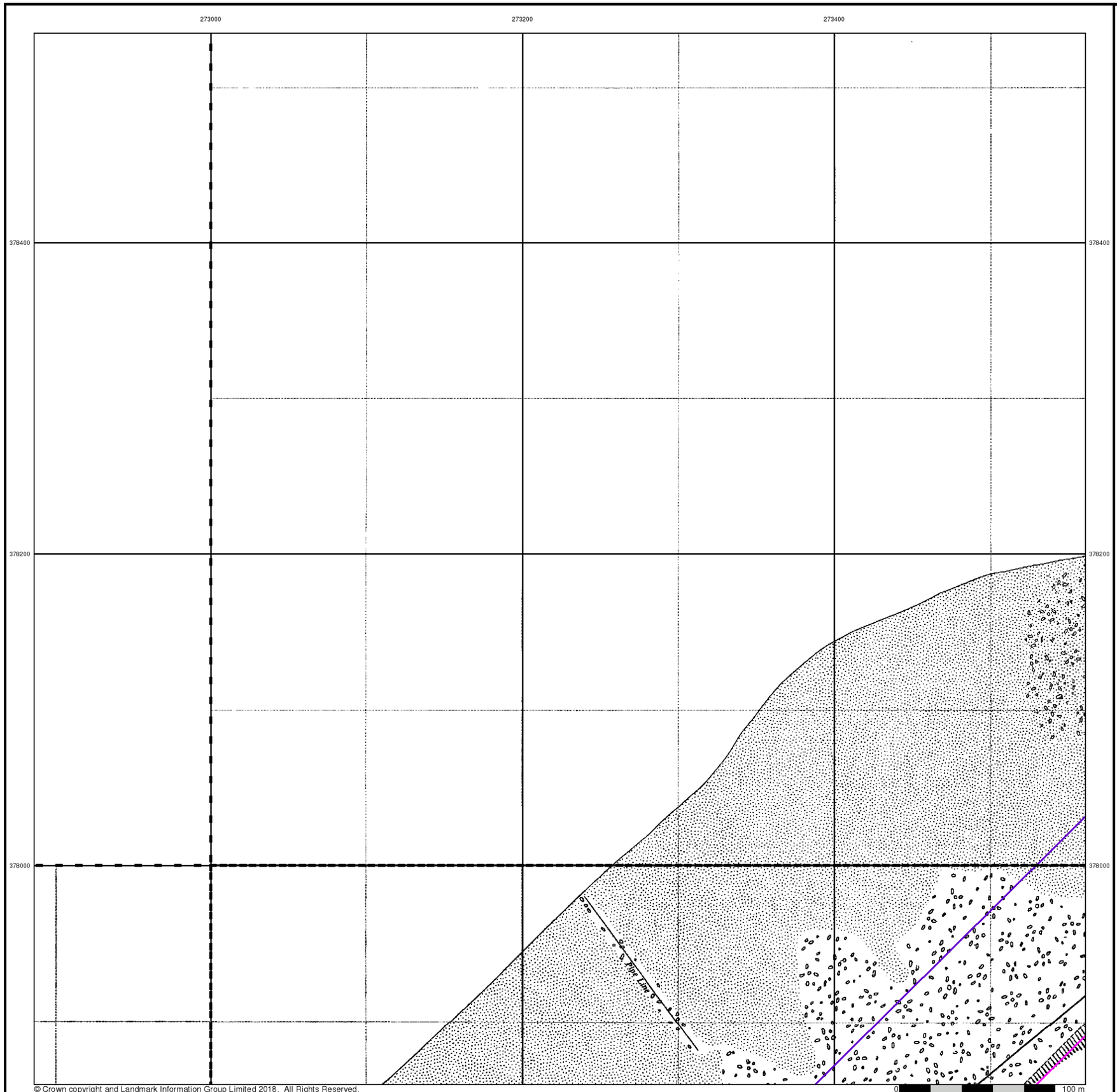
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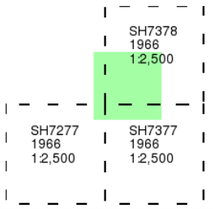
Ordnance Survey Plan

Published 1966

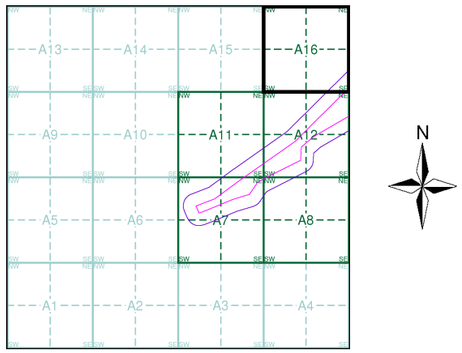
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A16



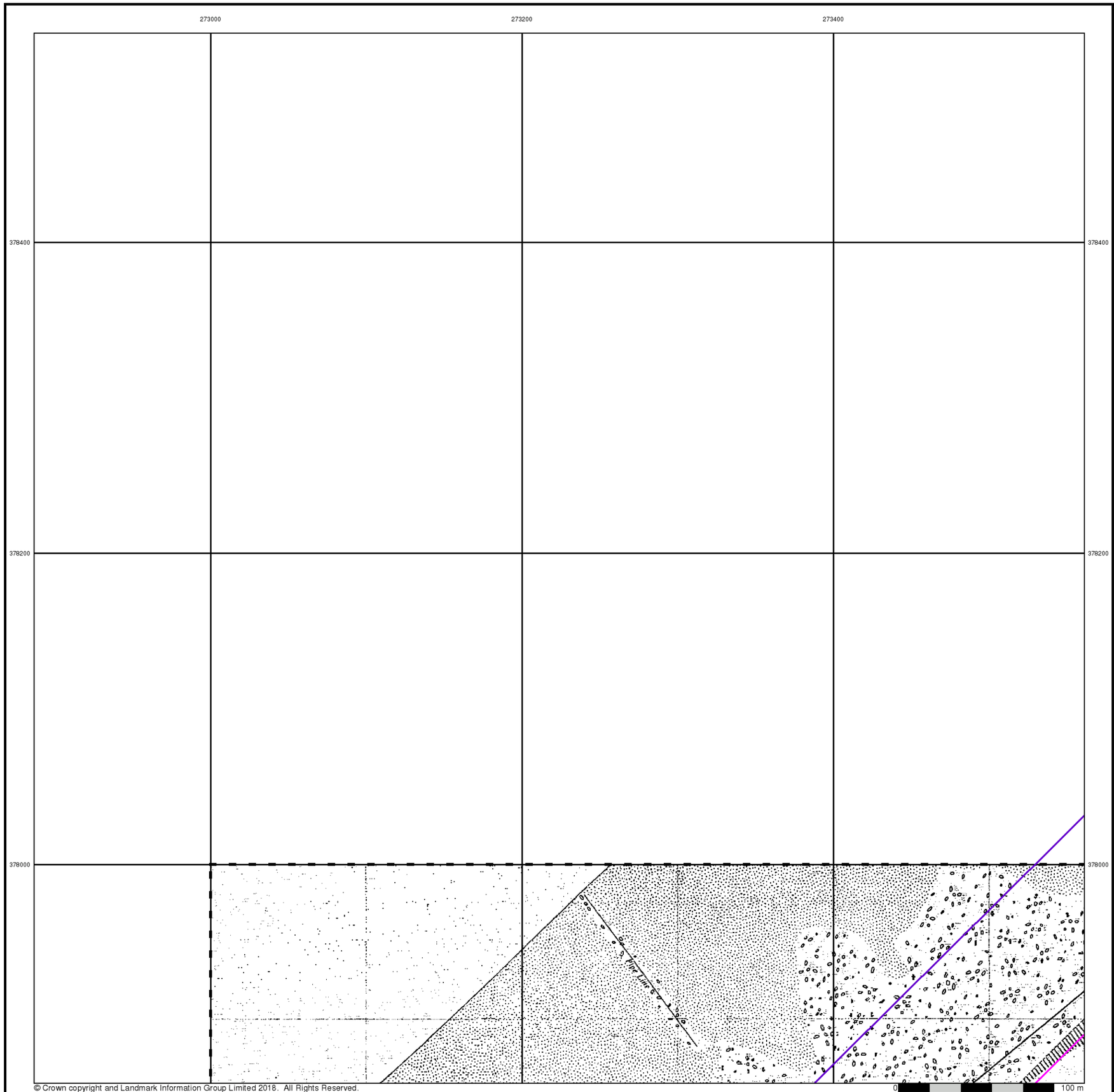
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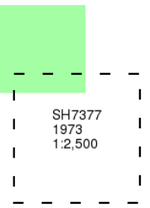
Supply of Unpublished Survey Information

Published 1973

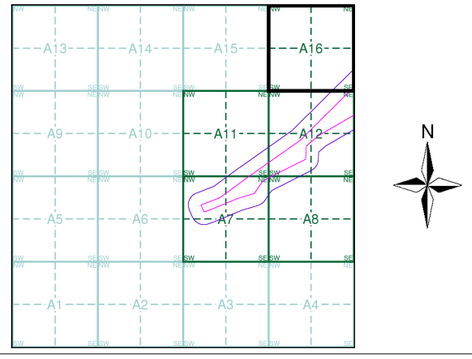
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A16



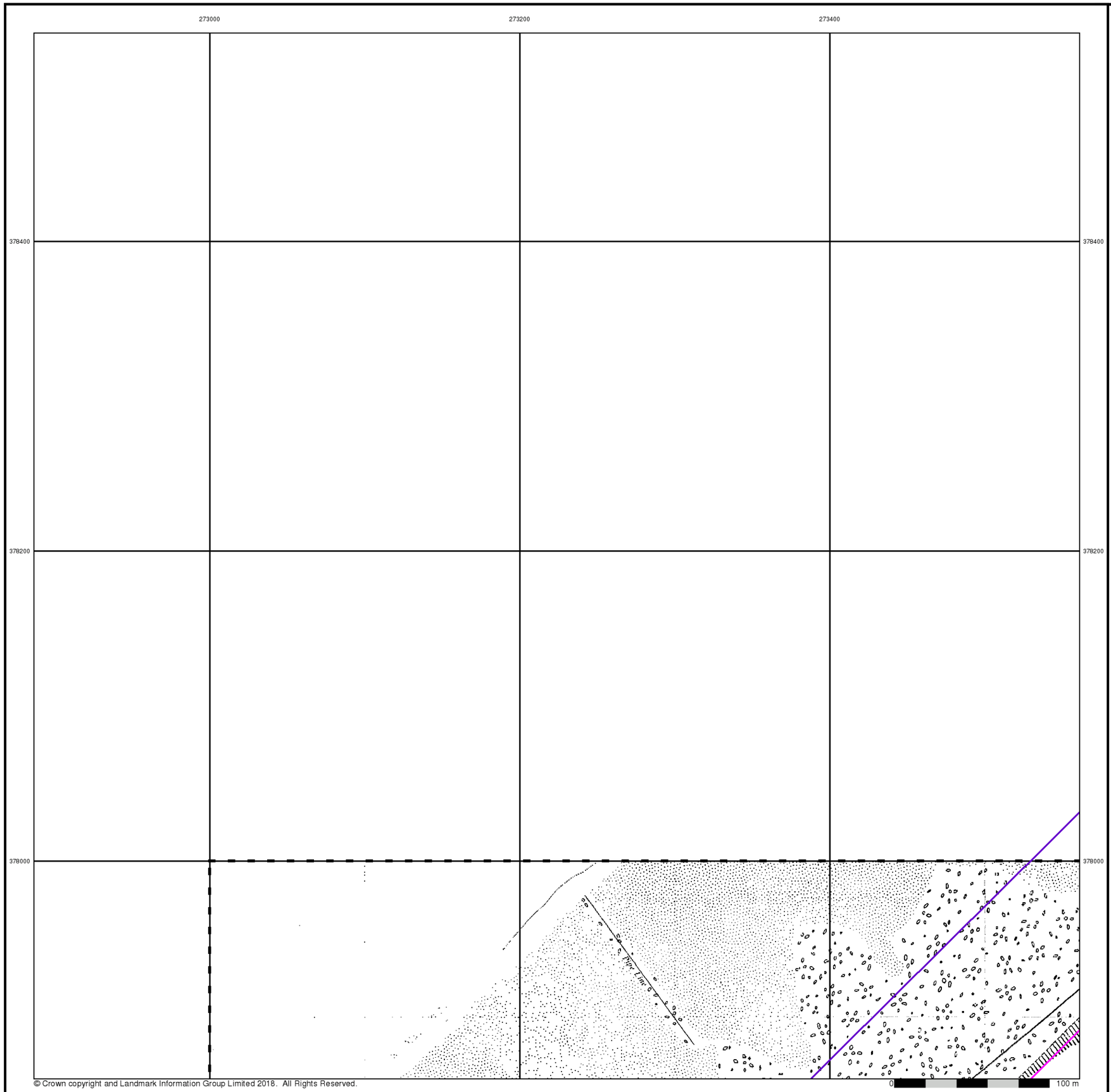
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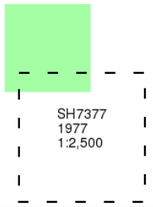
Additional SIMs

Published 1977

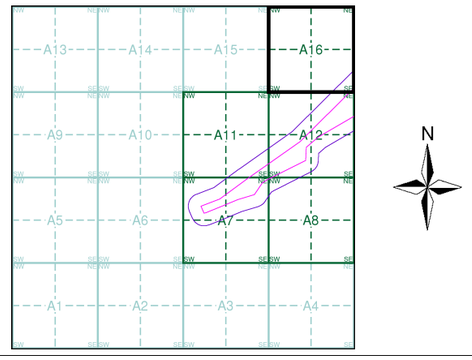
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A16



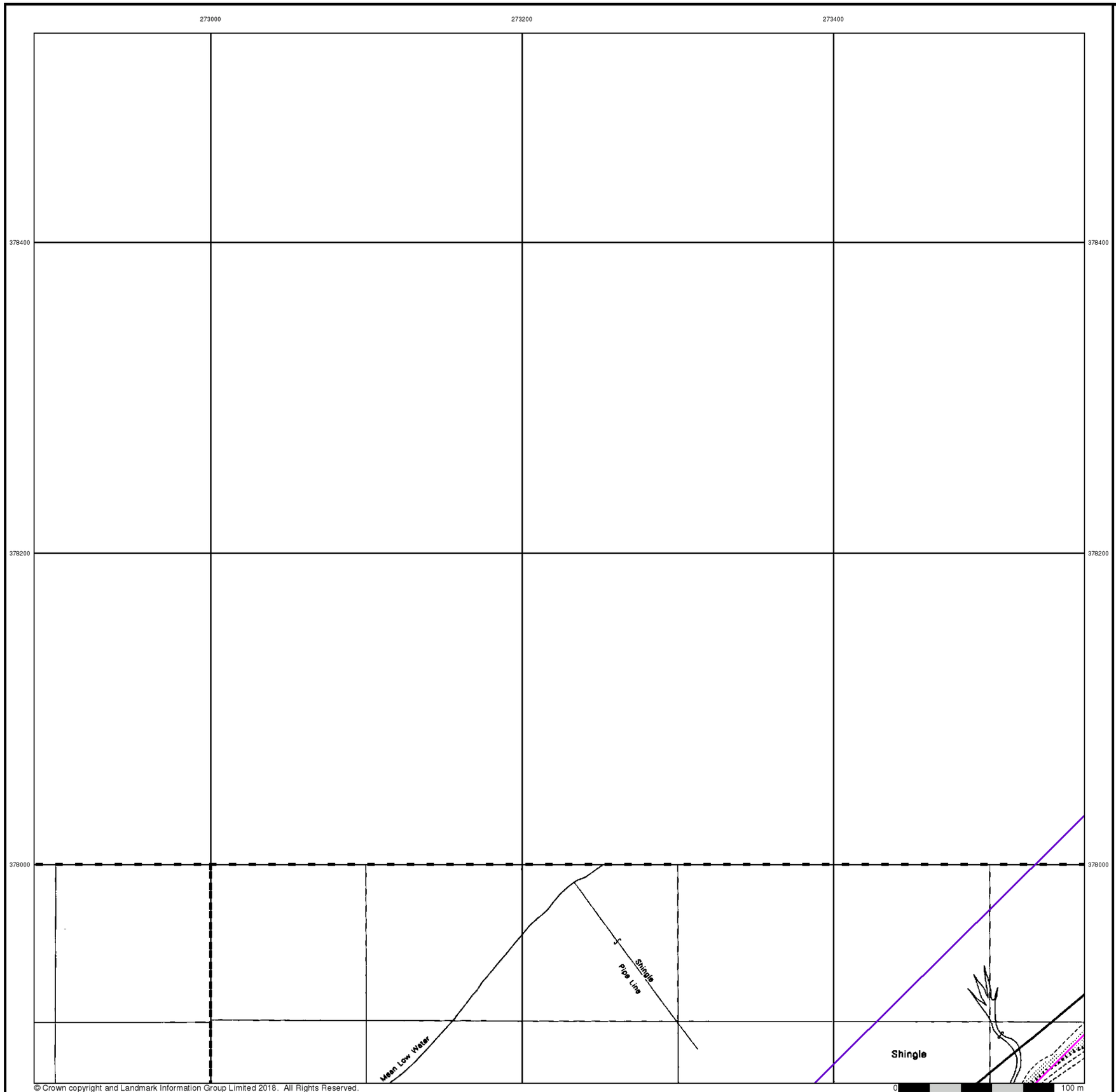
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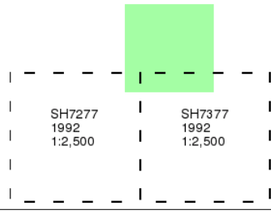
Ordnance Survey Plan

Published 1992

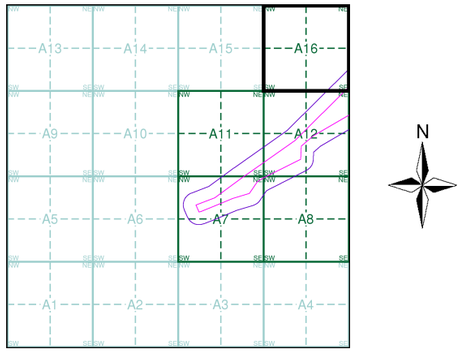
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A16



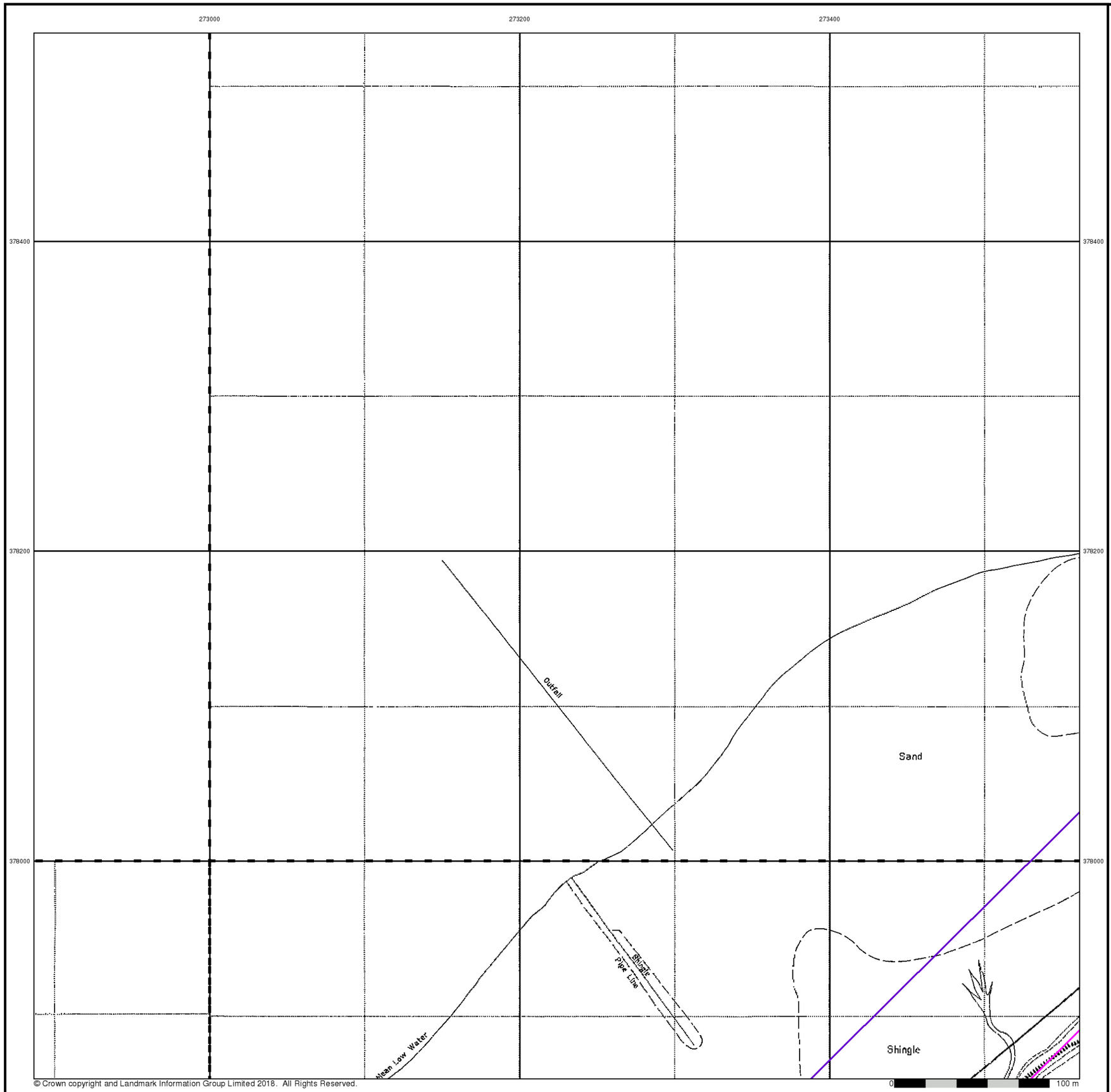
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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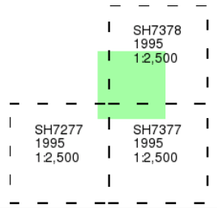
Large-Scale National Grid Data

Published 1995

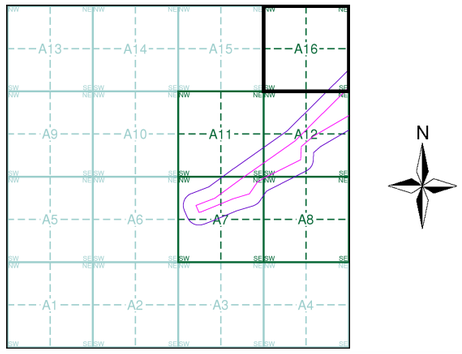
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A16



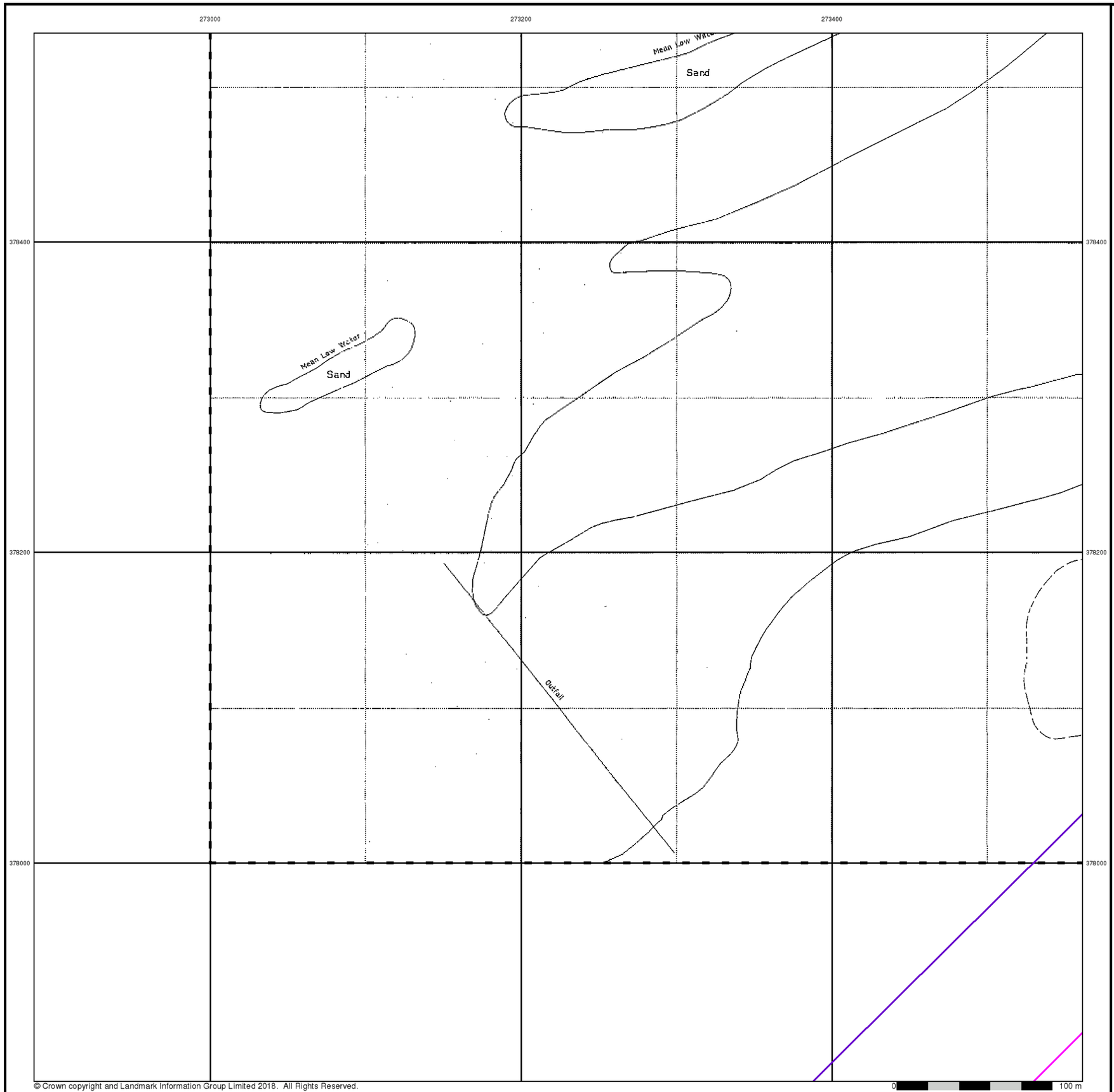
Order Details

Order Number:	175417398_1_1
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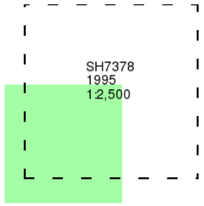
Large-Scale National Grid Data

Published 1995

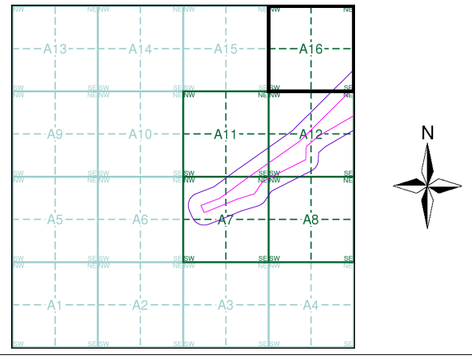
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A16



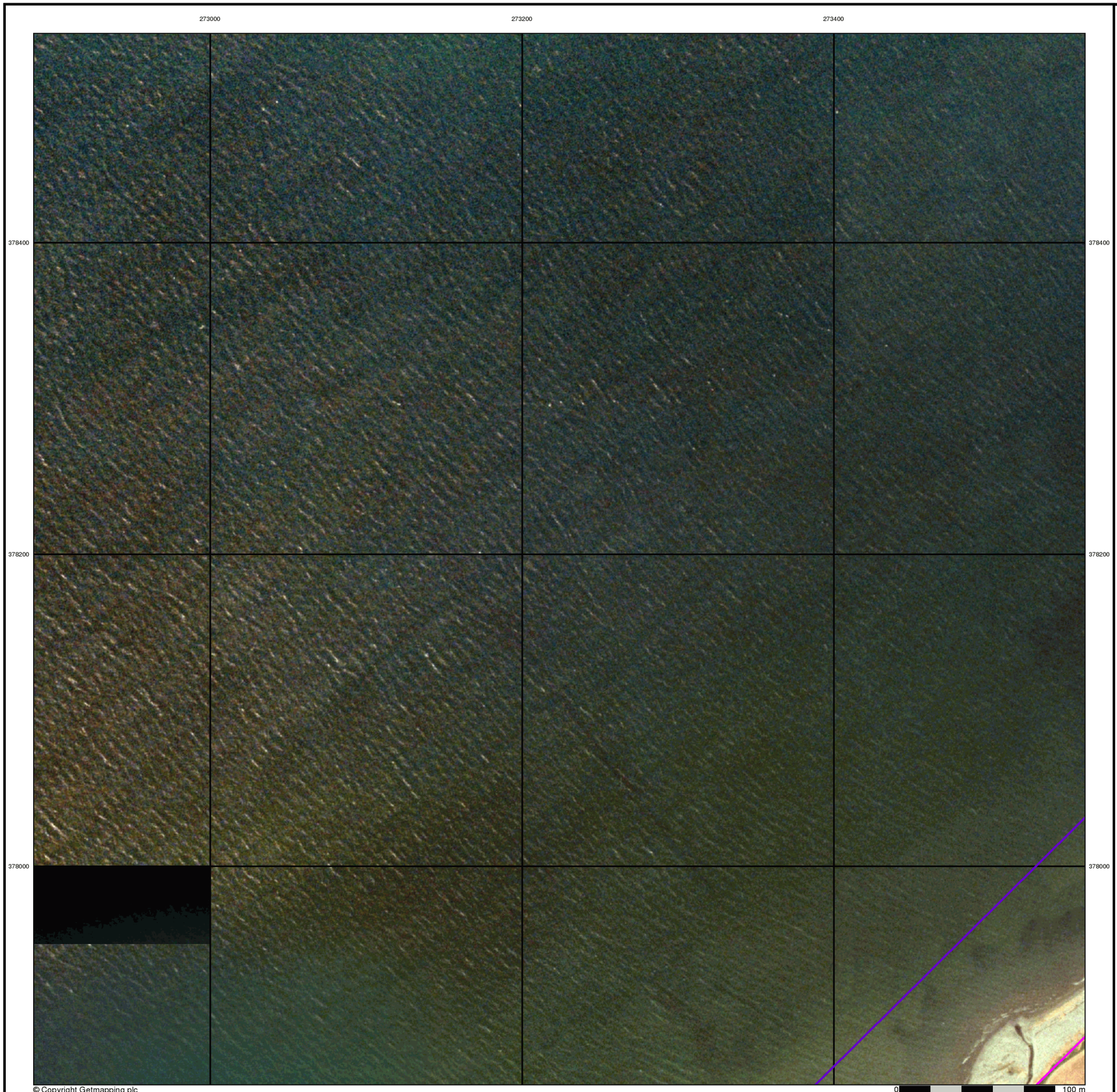
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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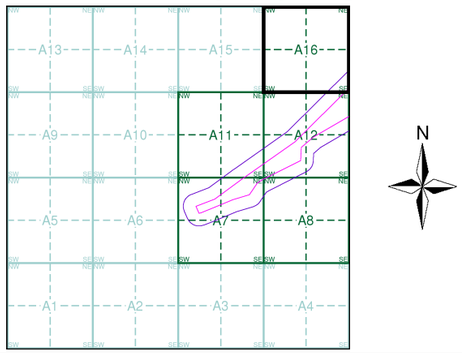
RAMBOLL

Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A16



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	272580, 377150
Slice:	A
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP

Tel: 0844 844 9952
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Web: www.envirocheck.co.uk

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
274210, 377710

Slice:
B

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section	Page Number
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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Contents

Report Version v53.0

RAMBOLL

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BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
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Discharge Consents					
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
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Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 3	Yes			
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River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points	pg 4			1	
Substantiated Pollution Incident Register	pg 5	1			
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Bedrock Aquifer Designations	pg 5	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 5	Yes	n/a	n/a	n/a
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Extreme Flooding from Rivers or Sea without Defences	pg 5	Yes		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 5	Yes		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
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OS Water Network Lines	pg 6	1	5	6	24

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
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Licensed Waste Management Facilities (Locations)					
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Summary

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BGS Recorded Mineral Sites	pg 14	1			2
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
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Potential for Compressible Ground Stability Hazards	pg 15	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 15	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 15	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 15	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 16	Yes	n/a	n/a	n/a
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Contemporary Trade Directory Entries					
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Summary

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	1	273150 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	1	273750 377850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273550 377650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273550 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	1	273000 377150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	272950 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273100 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	B9NE (SW)	0	1	274200 377700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (NW)	0	1	274150 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	272950 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	1	273050 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	1	273750 377709
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (W)	0	1	273900 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SW (SW)	0	1	273650 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273200 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	1	273550 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	1	273200 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	1	273700 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	1	273750 377750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NW (W)	0	1	273850 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273000 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273250 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	1	273300 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	4	1	273000 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13SE (N)	19	1	274100 378150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	54	1	273650 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13NE (N)	93	1	274200 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	97	1	273650 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13SE (N)	104	1	274214 378050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	116	1	273050 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	126	1	272900 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (W)	131	1	274100 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	132	1	272950 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SW (SW)	140	1	273700 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	147	1	273800 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	161	1	272950 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	174	1	273000 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (W)	190	1	273700 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	258	1	273750 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	326	1	272950 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	345	1	273800 377350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	349	1	273550 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	349	1	273450 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (S)	354	1	274200 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	363	1	273400 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	372	1	272950 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NE (S)	381	1	274214 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	383	1	273500 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	389	1	273450 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NE (S)	397	1	274200 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	415	1	274150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	420	1	272950 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (SW)	420	1	274000 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	420	1	273500 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NW (SW)	431	1	273600 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	452	1	273400 376900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	453	1	272900 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	458	1	274150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	467	1	272950 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NW (SW)	475	1	273700 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	475	1	273750 377200
	Nearest Surface Water Feature	B9NW (W)	0	-	273580 377767

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Pollution Incidents to Controlled Waters** Property Type: Land Location: Stream, Golf Course Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Not Supplied Incident Date: 31st August 1994 Incident Reference: 20802 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	B9SW (SW)	529	2	273790 377190
	River Quality Name: Gyrach GQA Grade: River Quality A Reach: Tidal Limit - Conf. By Reservoirs Estimated Distance (km): 4.6 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	B9NW (W)	0	2	273794 377611
2	**River Quality Chemistry Sampling Points** Name: Gyrach Reach: Tidal Limit To Confluence By Reservoirs Estimated Distance: 4.60 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: Not Supplied Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied	B9SW (SW)	274	2	273800 377490

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Substantiated Pollution Incident Register** Authority: Natural Resources Wales Incident Date: 10th April 2008 Incident Reference: 577777 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Inert : Other	B9NW (W)	0	3	273583 377688
	Water Abstractions Operator: Mr J John Baxter Licence Number: 23/65/19/0026 Permit Version: 1 Location: Tributary Of Afon Gyrach Authority: Environment Agency, Welsh Region Abstraction: Private Non-Industrial Amenity: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Ponds At Glyn Uchaf, Dwygyfylchi Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	B1NE (S)	1266	2	274119 376473
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	B13SE (NW)	0	2	274021 378146
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	B9NE (SE)	0	2	274214 377709
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	B9NE (SE)	0	1	274214 377709
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	B13SE (NW)	0	1	274034 378122
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	B9NE (SW)	0	1	274191 377683
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	3	274005 378125
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	B9NW (W)	0	3	273580 377760
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	B9NW (W)	0	3	273855 377595
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	3	274005 378125
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	B9NW (SW)	0	3	273835 377530
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	3	274005 378125

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	B9NW (W)	0	3	273580 377760
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
4	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 677.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B9NW (W)	0	4	273788 377569
5	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B13SE (N)	12	4	274104 378086
6	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B13SE (N)	20	4	274107 378082
7	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 132.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B13SE (N)	25	4	274182 377975
8	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 100.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B14NW (N)	213	4	274316 378198
9	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B14NW (N)	217	4	274273 378245
10	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 54.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B14NW (NE)	407	4	274471 378309

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 78.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B9SW (SW)	429	4	273804 377313
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 84.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B9SW (SW)	429	4	273855 377282
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 30.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 2	B5NW (SW)	481	4	273575 377045
14	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 2	B5NW (SW)	495	4	273570 377017
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 2	B5NW (SW)	498	4	273598 377009
16	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B9SW (SW)	503	4	273860 377260
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 135.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B9SW (SW)	504	4	273820 377236
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 99.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B9SW (SW)	505	4	273859 377257
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B9SE (SW)	588	4	273901 377185

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 395.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B5NE (SW)	591	4	273904 377183
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	658	4	273867 377079
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	686	4	273888 377065
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	686	4	273888 377065
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	699	4	273889 377050
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	701	4	273888 377047
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	721	4	273880 377019
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	723	4	273879 377017
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	744	4	273871 376988

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	746	4	273870 376985
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	753	4	273852 376958
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 20.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	759	4	273865 376967
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	759	4	273865 376967
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	760	4	273854 376959
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	769	4	273859 376944
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	774	4	273860 376948
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	775	4	273860 376945
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 47.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NW (SW)	776	4	273859 376944

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1209.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Ogwen Ddu Primacy: 1	B5NE (S)	941	4	274178 376938
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 121.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gyrach Catchment Name: Ogwen Ddu Primacy: 1	B5NE (S)	941	4	274208 376941

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Conwy County Borough Council - Has supplied landfill data		0	5	274214 377709
40	**Potentially Infilled Land (Non-Water)** Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	B13SW (NW)	0	-	273793 378007
41	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	B5SW (SW)	724	-	273603 376734
42	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	B5SW (SW)	876	-	273619 376563
43	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	B14NW (N)	260	-	274333 378220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Unnamed Igneous Intrusion, Ordovician To Silurian	B9NE (SE)	0	1	274214 377709
	BGS 1:625,000 Solid Geology Description: Unnamed Extrusive Rocks, Ordovician	B9NE (W)	0	1	274134 377689
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B14SW (NE)	0	1	274338 377916
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	B9NE (W)	0	1	274000 377709
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B13SE (N)	0	1	274139 378025
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B9NE (SW)	0	1	274172 377674
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 60 - 120 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B13NE (NW)	23	1	273977 378204

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B13SE (N)	54	1	274022 378186
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: 100 - 200 mg/kg Nickel Concentration: no data	B13NW (NW)	132	1	273843 378307
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B9NE (SE)	207	1	274214 377709
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	B5SW (SW)	221	1	273598 376822
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B10NW (SE)	349	1	274261 377623
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	B5SW (S)	747	1	273807 376651

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B15NW (NE)	916	1	274977 378372
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B6NW (S)	953	1	274461 377088
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	B6NE (SE)	977	1	274625 377177
44	**BGS Recorded Mineral Sites** Site Name: Brickfield Cottage Beickfield Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 245889 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Quaternary Geology: Till, Devensian Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	B13SW (NW)	0	1	273750 378004
45	**BGS Recorded Mineral Sites** Site Name: Pant-Y-Ffynnon Gravel Pit Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 177939 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Quaternary Geology: Till, Devensian Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	B5SW (SW)	715	1	273606 376747
46	**BGS Recorded Mineral Sites** Site Name: Pant-Y-Ffynnon Location: Not Supplied Source: British Geological Survey, National Geoscience Information Service Reference: 177940 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Ordovician Geology: Conwy Rhyolite Formation Commodity: Igneous and Metamorphic Rock Positional Accuracy: Located by supplier to within 10m	B5SW (SW)	873	1	273623 376569
	BGS Measured Urban Soil Chemistry No data available				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B13SE (NW)	0	1	274034 378122
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B13SE (N)	0	1	274139 378025
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	B9NW (W)	0	1	273673 377713
	Potential for Compressible Ground Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	B13SE (N)	0	1	274139 378025
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	B9NE (SW)	223	1	274191 377683
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	B10NW (N)	243	1	274246 377810
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B13SW (NW)	0	1	273730 378053
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	B9NE (SW)	0	1	274191 377683
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	B13SE (NW)	0	1	273953 378139
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	B9NE (SW)	0	1	274191 377683
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B13SE (N)	0	1	274139 378025
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	B9NE (SE)	0	1	274214 377709
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	B13SE (N)	12	1	274022 378186

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	B9NE (W)	0	1	274100 377676
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	B14SW (N)	0	1	274250 377876
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	B13SE (NW)	0	1	274025 378026
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	B9NE (W)	0	1	274100 377676
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	B14SW (N)	0	1	274250 377876
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	B13SE (NW)	0	1	274025 378026

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**Points of Interest - Manufacturing and Production** Name: Tank Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	B13SW (NW)	0	6	273728 377987
47	**Points of Interest - Manufacturing and Production** Name: Tank Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	B13SW (NW)	0	6	273733 377980
47	**Points of Interest - Manufacturing and Production** Name: Tank Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	B13SW (NW)	0	6	273739 377973
47	**Points of Interest - Manufacturing and Production** Name: Tank Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	B13SW (NW)	0	6	273773 378013
47	**Points of Interest - Manufacturing and Production** Name: Tanks Location: LL34 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	B13SW (NW)	0	6	273711 377988
48	**Points of Interest - Public Infrastructure** Name: Filter Bed Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	B13SW (NW)	0	6	273768 377993
48	**Points of Interest - Public Infrastructure** Name: Sewage Works Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	B13SW (NW)	0	6	273783 378027
48	**Points of Interest - Public Infrastructure** Name: Sewage Works Location: LL34 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	B13SW (NW)	0	6	273784 378026
49	**Points of Interest - Public Infrastructure** Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	B9SW (SW)	311	6	273745 377415
49	**Points of Interest - Public Infrastructure** Name: Cemetery Location: LL34 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	B9SW (SW)	313	6	273745 377413

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Ancient Woodland** Name: Not Supplied Reference: 37449 Area(m²): 83872.31 Type: Restored Ancient Woodland Site	B9NE (SE)	220	3	274214 377709
51	**Ancient Woodland** Name: Not Supplied Reference: 35987 Area(m²): 6343.61 Type: Ancient and Semi-Natural Woodland	B14SW (N)	227	3	274350 378100
52	**Ancient Woodland** Name: Not Supplied Reference: 49774 Area(m²): 838.65 Type: Ancient Woodland Site of Unknown Category	B14NW (NE)	347	3	274429 378228
53	**National Parks** Name: Snowdonia Multiple Area: N Area (m2): 2139330937.98 Source: Natural Resources Wales **Status: Fully Designated - designated as a National Park** Designation Date: 31st December 1951	B9NE (SE)	0	3	274214 377709
54	**Sites of Special Scientific Interest** Name: Sychnant Pass Multiple Areas: Y Total Area (m2): 1081930.79 Source: Natural Resources Wales Reference: 91931way Designation Details: Biological Designation Date: 1st January 1957 Date Type: Notified	B10NW (E)	235	3	274363 377758
55	**Sites of Special Scientific Interest** Name: Aber Afon Conwy Multiple Areas: N Total Area (m2): 13007686.27 Source: Natural Resources Wales Reference: 254531wlz Designation Details: Biological Designation Date: 11th December 2003 Date Type: Notified	B14NE (NE)	661	3	274627 378515
56	**Special Areas of Conservation** Name: Y Fenai A Bae Conwy / Menai Strait And Conwy Bay Multiple Areas: N Total Area (m2): 265017352.03 Source: Natural Resources Wales Reference: Uk0030202 **Status: Designated**	B13NE (N)	184	3	273969 378377
57	**Special Protection Areas** Name: Liverpool Bay / Bae Lerpwl (Wales) Multiple Areas: N Total Area (m2): 786840845.92 Source: Natural Resources Wales Reference: UK9020294 Designation Date: 31st October 2017	B13NE (N)	184	3	273969 378377
58	**Special Protection Areas** Name: Liverpool Bay Multiple Areas: N Total Area (m2): 1696797358.7 Source: Natural England Reference: UK9020294 Designation Date: Not Supplied	B13NE (N)	186	7	273969 378379

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Conwy County Borough Council - Environmental Health Department	August 2013	Annual Rolling Update
Discharge Consents		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	August 2014	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Welsh Region	October 2008	Variable
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Local Authority Pollution Prevention and Controls		
Conwy County Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Nearest Surface Water Feature		
Ordnance Survey	September 2017	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Registered Radioactive Substances		
Natural Resources Wales	January 2015	As notified
Environment Agency - Welsh Region	January 2015	
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Industry Act Referrals		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	October 2017	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified

Agency & Hydrological	Version	Update Cycle
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	August 2015	As notified
Source Protection Zones Natural Resources Wales	November 2016	As notified
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Natural Resources Wales	April 2018	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	January 2018	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Landfill Coverage		
Conwy County Borough Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Conwy County Borough Council - Environmental Health Department	July 2003	Not Applicable
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Conwy County Borough Council - Planning Department	February 2016	Variable
Snowdonia National Park	February 2016	Variable
Planning Hazardous Substance Consents		
Conwy County Borough Council - Planning Department	February 2016	Variable
Snowdonia National Park	February 2016	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2018	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	May 2018	Quarterly
Fuel Station Entries Catalist Ltd - Experian	April 2018	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Points of Interest - Commercial Services PointX	June 2018	Quarterly
Points of Interest - Education and Health PointX	June 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	June 2018	Quarterly
Points of Interest - Public Infrastructure PointX	June 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	June 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural Resources Wales	 October 2017	 Bi-Annually
Areas of Outstanding Natural Beauty Natural Resources Wales	 February 2018	 Bi-Annually
Environmentally Sensitive Areas The National Assembly for Wales - GI Services (Department of Planning & Countryside)	 January 2017	
Forest Parks Forestry Commission	 April 1997	 Not Applicable
Local Nature Reserves Conwy County Borough Council	 February 2018	 Bi-Annually
Marine Nature Reserves Natural Resources Wales	 October 2017	 Bi-Annually
National Nature Reserves Natural Resources Wales	 February 2018	 Bi-Annually
National Parks Natural Resources Wales	 February 2018	 Annually
Nitrate Vulnerable Zones Natural Resources Wales The National Assembly for Wales - GI Services (Department of Planning & Countryside)	 July 2017 October 2005	 Bi-Annually
Ramsar Sites Natural Resources Wales	 February 2018	 Bi-Annually
Sites of Special Scientific Interest Natural Resources Wales	 February 2018	 Bi-Annually
Special Areas of Conservation Natural Resources Wales	 February 2018	 Bi-Annually
Special Protection Areas Natural England Natural Resources Wales	 February 2018 February 2018	 Bi-Annually Bi-Annually

Data Suppliers

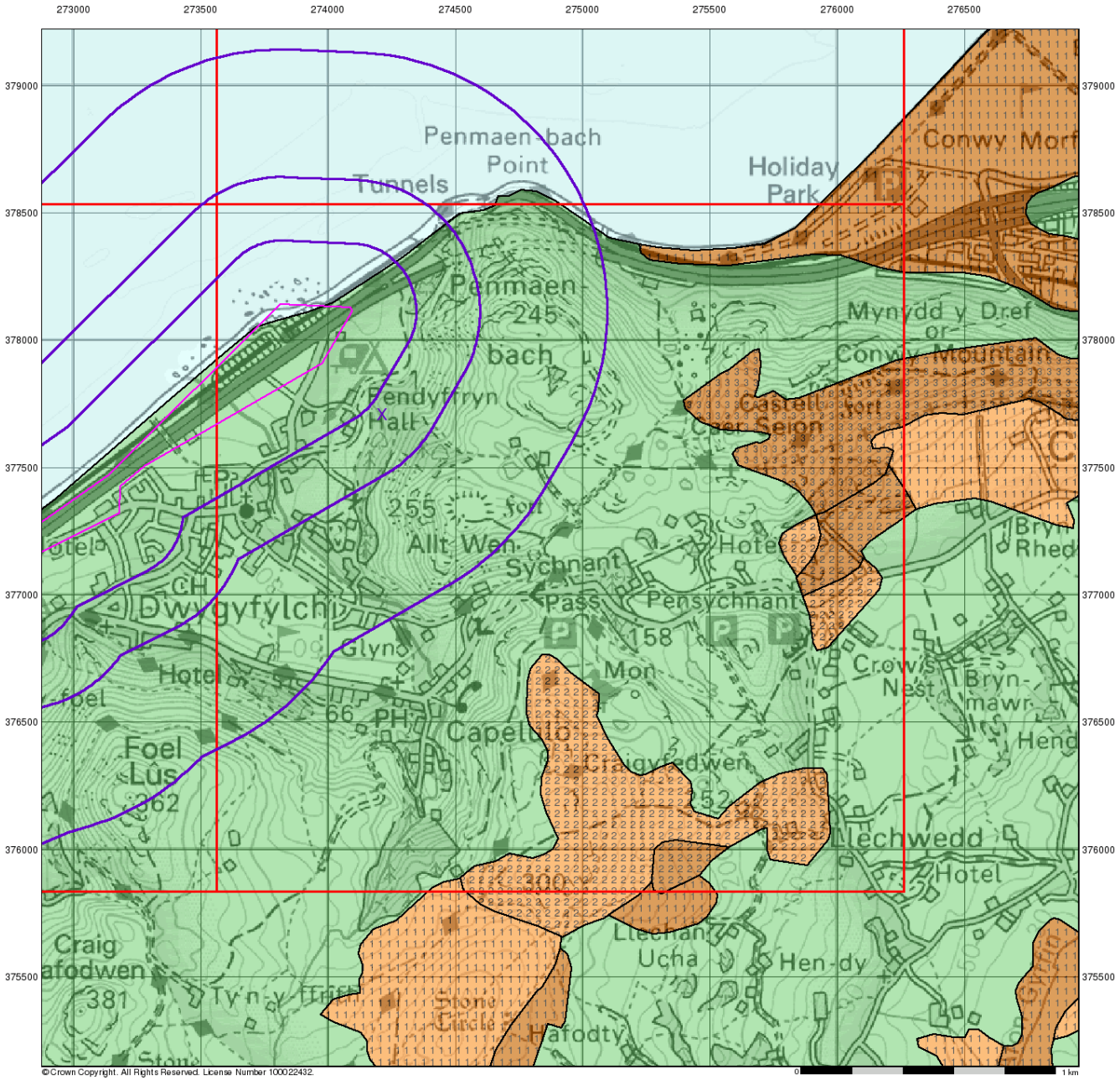
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
5	**Conwy County Borough Council - Environmental Health Department** Civic Offices, Colwyn Bay, Gwynedd, LL29 8AR	Telephone: 01492 575187 Fax: 01492 575204 Website: www.conwy.gov.uk
6	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
7	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



RAMBOLL

Groundwater Vulnerability

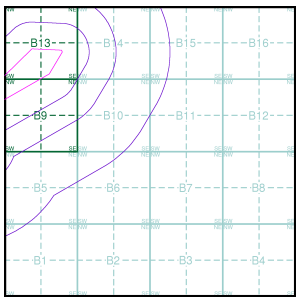
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice B



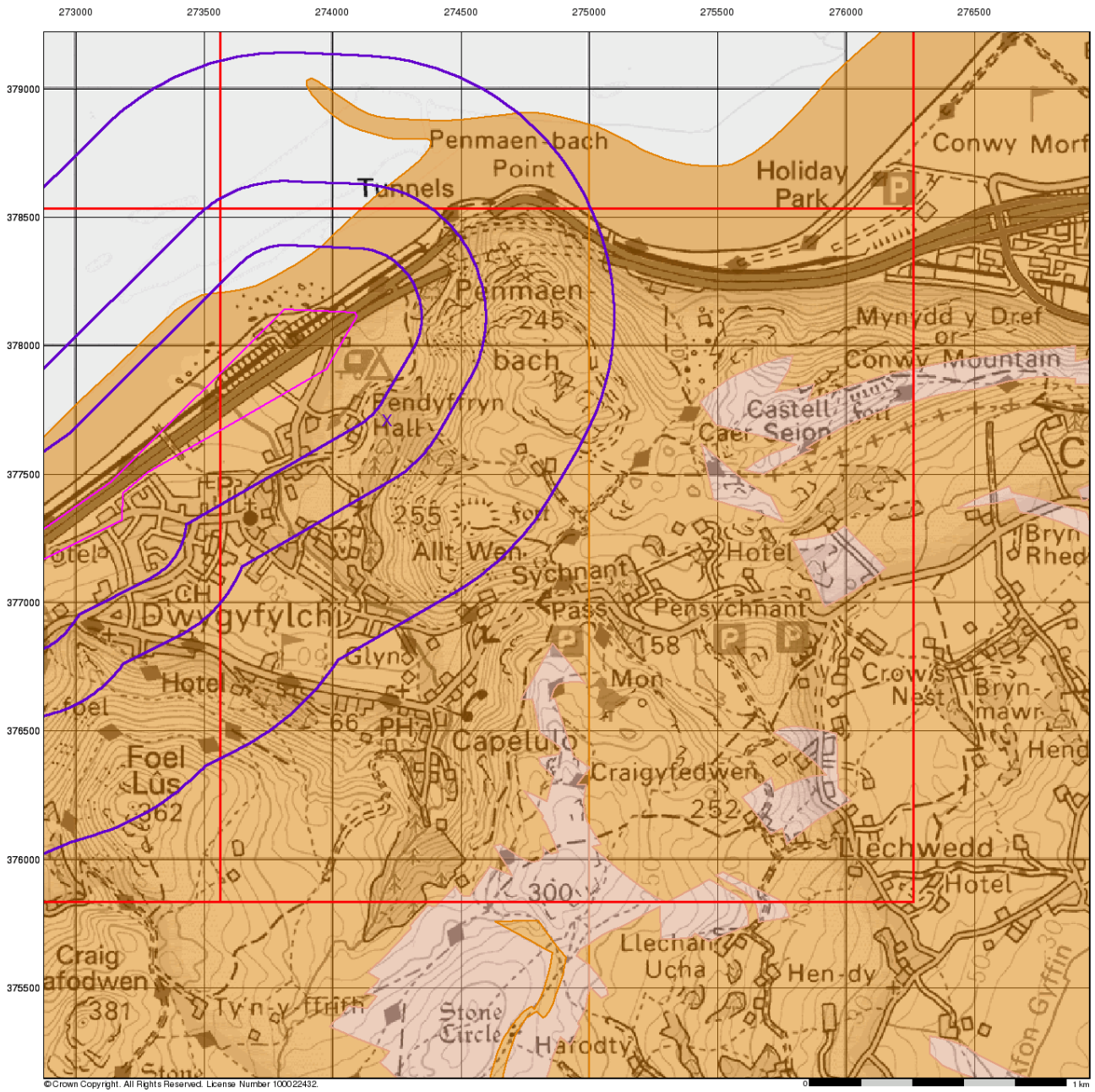
Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

Bedrock Aquifer Designation

General

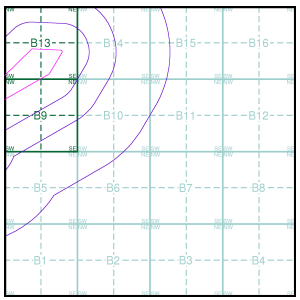
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice B

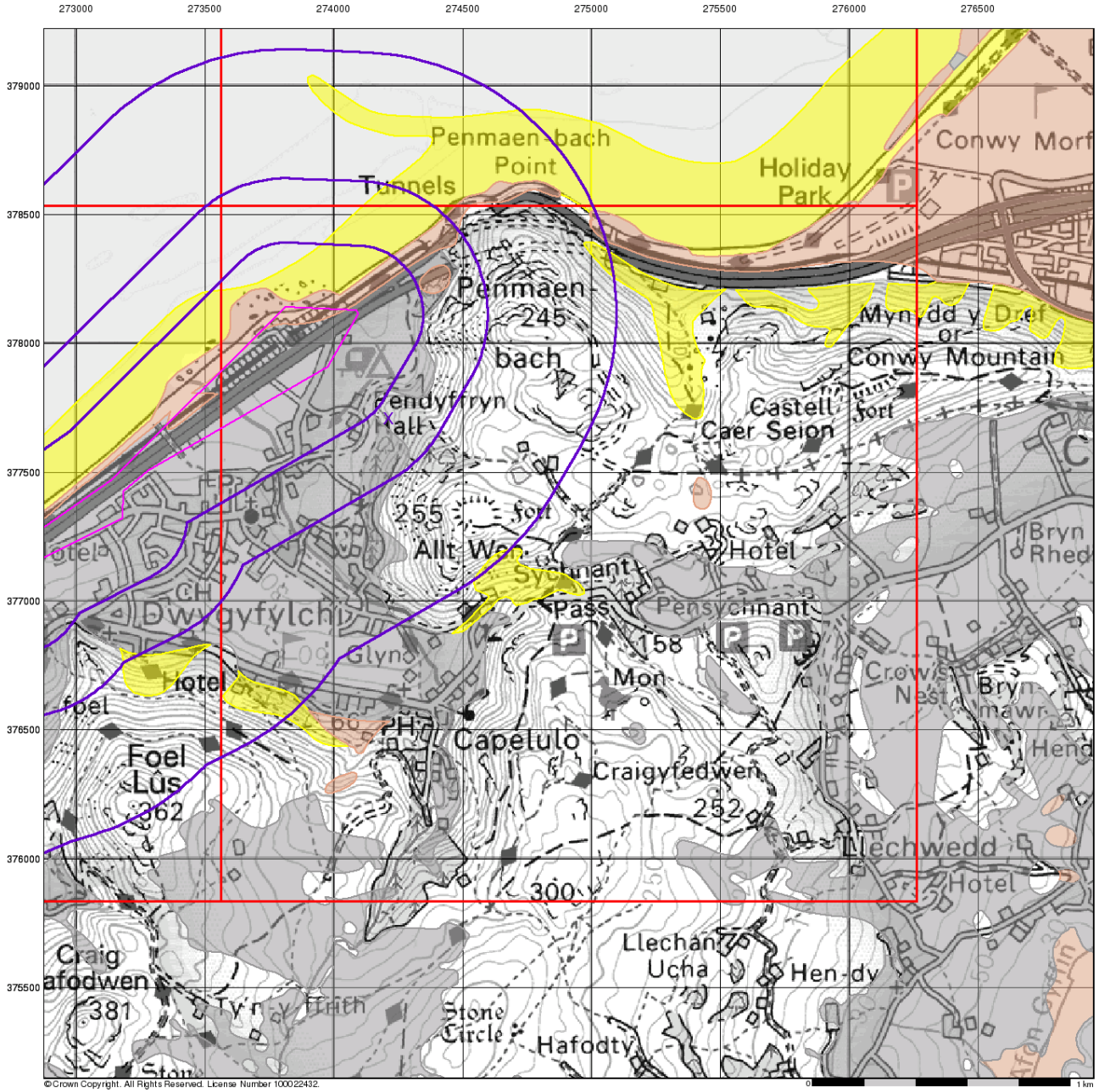


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Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy



RAMBOLL

Superficial Aquifer Designation

General

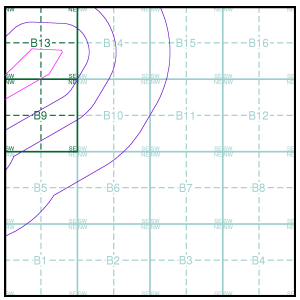
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice B



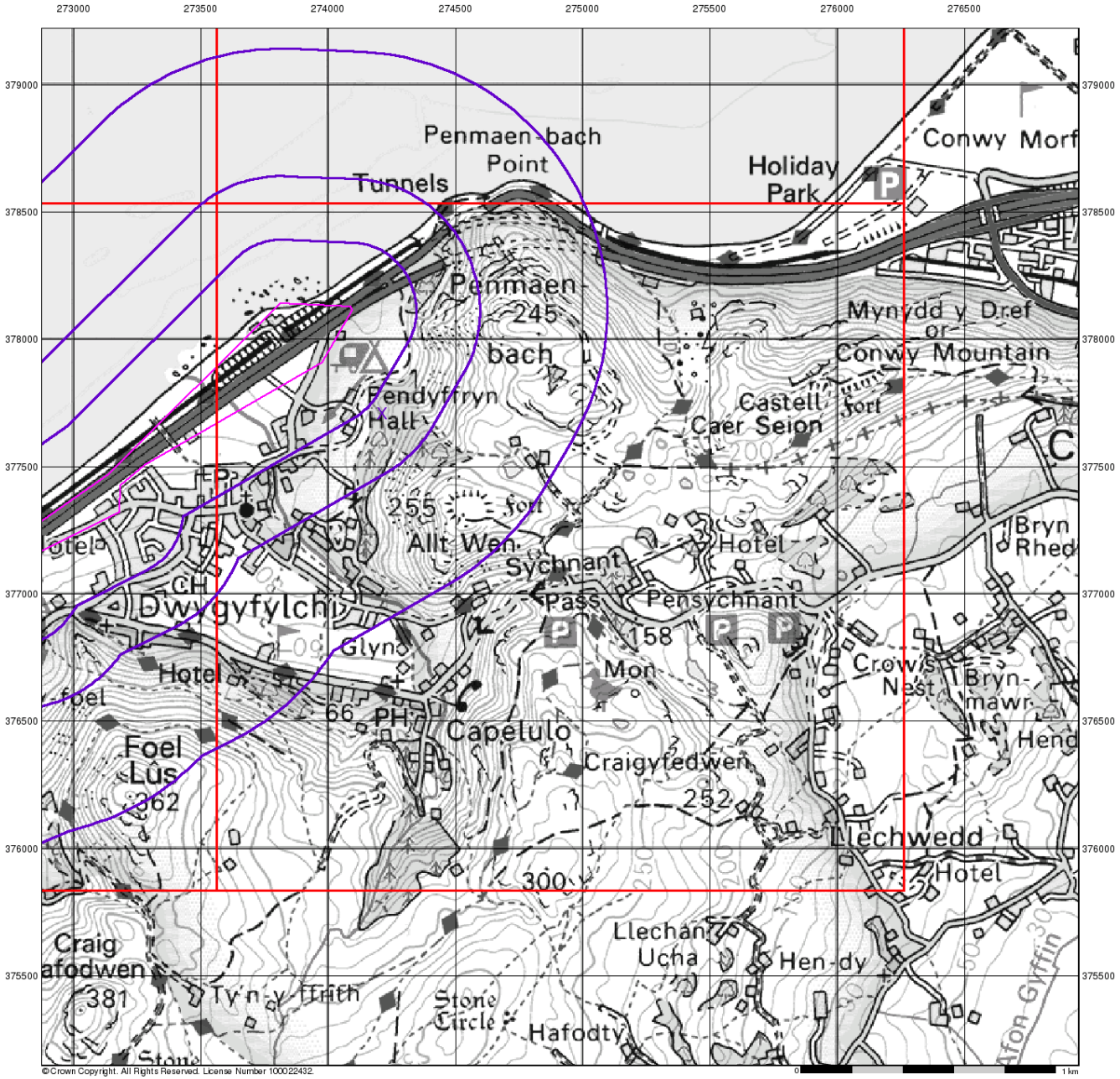
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Site Area (Ha):	28.4
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Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Source Protection Zones

General

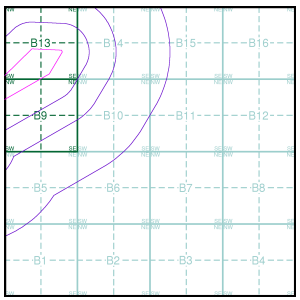
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice B



Order Details

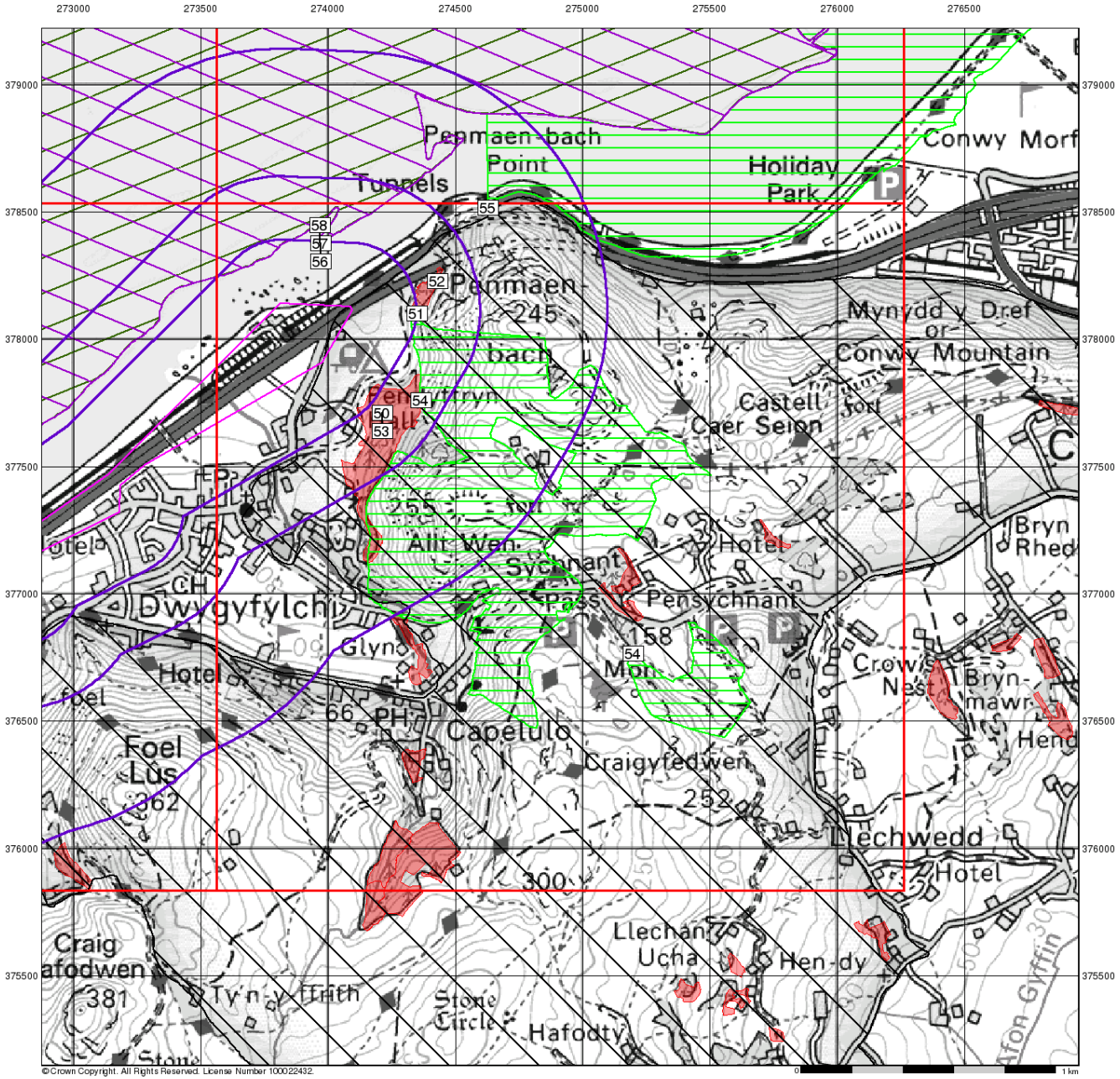
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Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP

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Web: www.envirocheck.co.uk



RAMBOLL

Sensitive Land Uses

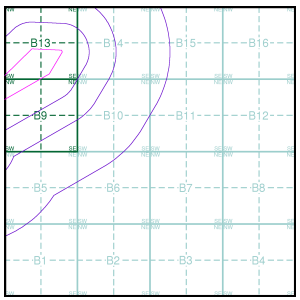
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice B

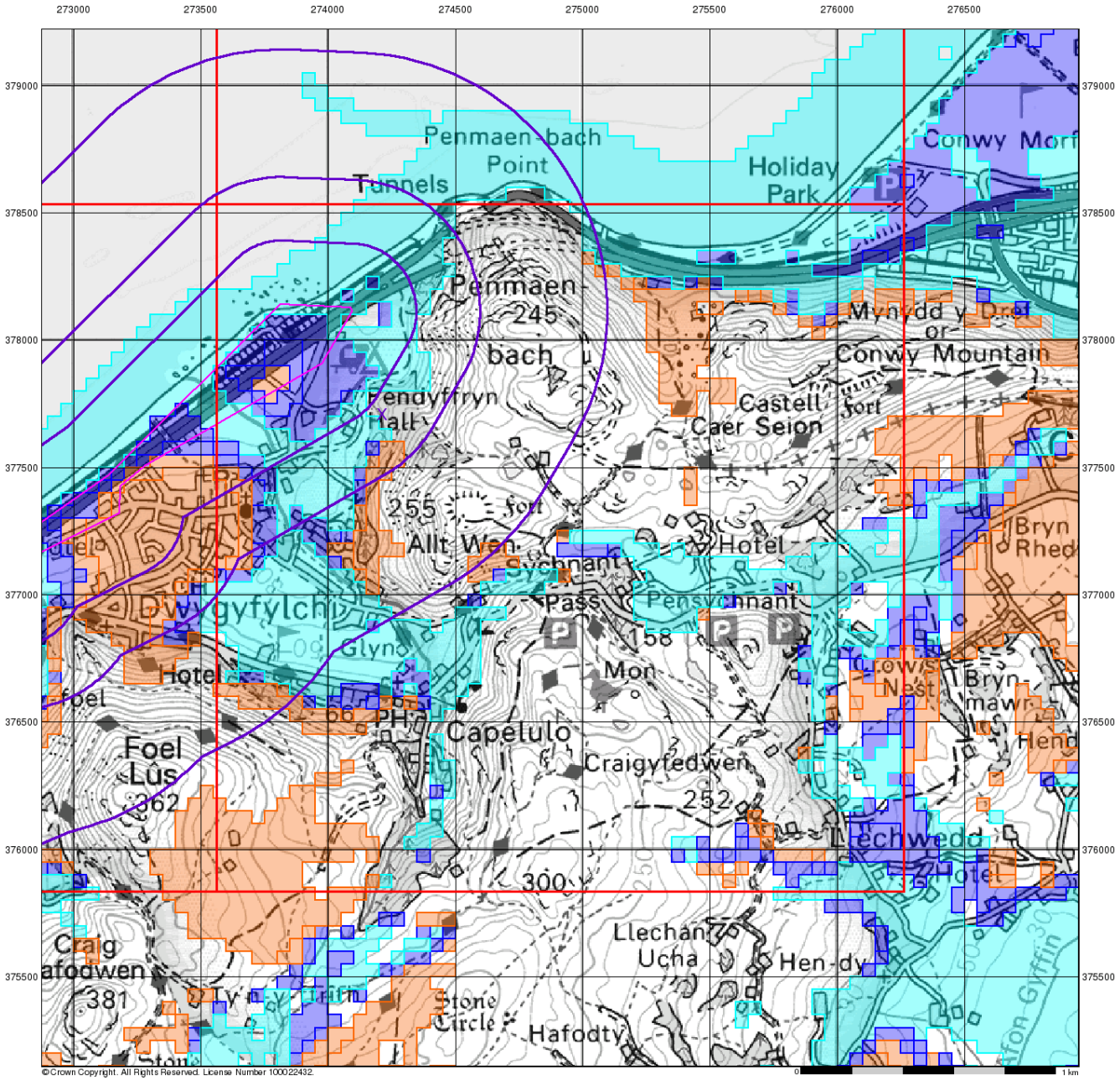


Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy



RAMBOLL

BGS Flood GFS Data

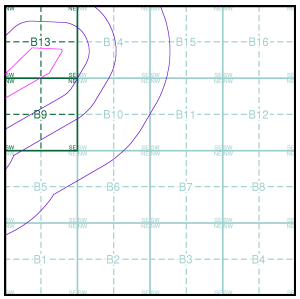
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice B



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Envirocheck® Report:

Flood Screening Report Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
274210, 377710

Slice:
B

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer(s) selected. For ease of reference, the report is broken down into seven sections of data.	
EA / NRW / CEH Flood Data	1
This section details data from the Environment Agency/Natural Resources Wales and the Centre for Ecology and Hydrology. The EA/NRW data is reported to a distance of 250m from the edge of the site polygon and details both Zone 2 (extreme) and Zone 3 flood extents, as well as flood defences, flood water storage areas and areas benefiting from flood defences. The CEH data is reported to a distance of 250m from the edge of the site polygon and covers flood data for Scotland, divided into levels based on the frequency and magnitude of a predicted 100 year term. All data sets within this section are plotted and feature on the EA / NRW / CEH Flood Data (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
JBA Flood Data	2
This section contains the Comprehensive Flood Map ("CFM") data from JBA Risk Management Limited. The data is based upon the likelihood of a flood occurrence for up to 4 flood return periods depending on the type of flooding; these being 75 years, 100 years, 200 years and 1000 years. Each layer being modelled at a 5m cell resolution. Each return period is depicted on a separate 1:10,000 scale map and reports features to a distance of 250m in the datasheet from the edge of the site polygon. For each return period the following three sources of flooding are identified, surface water or pluvial flooding, undefended river flooding or fluvial flooding and undefended coastal flooding. In each case the extent of the flooding source is displayed with the associated depth range. In addition, a 1:10,000 scale map depicting flooding from a Canal Failure and a coverage check for this dataset is included. Where coverage exists, information is reported in the datasheet where the site could be affected by flooding that results from a dam breach. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
BGS Flood Data	46
This section contains two BGS data sets; namely Geological Indicators of Flooding and Groundwater Flooding Susceptibility, both of which report features out to a possible 1000m, with coverage in England, Wales and Scotland. Each data set is plotted on a seperate BGS Flood Data (1:50,000) map.	
GeoSmart Information Groundwater Flood Data	51
This section contains data provided by GeoSmart Information who, building on their expertise, have developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in Great Britain. The resulting map, classifies groundwater flood risk for each 5m x 5m into four categories, negligible, low, moderate and high. These classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 200 years.	
OS Water Network Data	55
This section details the MasterMap Water Network data sourced from the Ordnance Survey. The OS MasterMap Water Network data details a network representing the watercourse within Great Britain. The OS Water Network Lines data set details the approximate central alignment of a watercourse, including rivers, lakes and canals. The OS Water Network Nodes data set details features that represent a river's source, end, a junction where three of more links meet, and places where the real world related attribution changes; for example a watercourse becoming tidal. The data sets within this section are plotted and feature on the OS Water Network Map (1:10,000) . For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	

Contents

EA/NRW Historic Flood Events Data	**61**

This section details Historic Flood data sourced from the Environment Agency/Natural Resources Wales and from data held by Landmark. The EA/NRW Historic Flood Events data is reported to a distance of 1000m from the edge of the site polygon and details recorded historic flood events from 1703 to October 2008. The data also contains information on the source and cause of the flood, and how the flood outline was established.

Also included in this section is Landmark's Historical Flood Liabilities data set, which identifies areas that are liable to flood based on systematic analysis of historical mapping dating back to the mid 19th century.

Both data sets within this section are plotted and feature on the EA/NRW Historical Flood (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.

EA/NRW RoFRS Data	**62**

This section details the Risk of Flooding from Rivers and Sea (RoFRS) data sourced from the Environment Agency/Natural Resources Wales and is reported to a distance of 1000m from the edge of the site polygon. The RoFRS data provides an indication of areas of land at risk of flooding from rivers and the sea. These areas of land, called impacted cells, are represented as 50 metre squares, or smaller areas where a square is intersected by a river or coastline.

The average height information of the impacted cell, modelled river and sea levels and information about over 200,000 flood defences are used as inputs to a computer flood model run by the Environment Agency/Natural Resources Wales. The model compares the probability that the flood defences will overtop or breach and the distance of the impact cell from the river or the sea for 40 scenarios for probabilities of between 100% to 0.1%.

The results are then consolidated to calculate a single probability category for each impacted cell. These results have been validated by local staff using their local knowledge and expertise. RoFRS is a national flood risk assessment and does not contain information about property thresholds. Due to variations in the input data and the performance of the computer flood model at particular locations, the resulting category of an impacted cell should only be used at a specific study scale. In certain areas it would only be appropriate to compare risks between towns and counties whereas in other areas they would be more suitable for understanding risk at a street level. The level of suitability for a particular cell is indicated by the cell's suitability scale.

The data within this section is plotted and feature on the EA/NRW RoFRS Data (1:50,000) map. This dataset is not available in Scotland.

Flood Insurance Risk Data	**70**

This section contains flood risk data from Crawford and Company. This dataset is not plotted on any of the associated Flood maps.

Crawford & Co have generated an Insurance Claims rating for Flood Risk. The risk is determined by comparing the number of flood insurance claims made to the number of properties in the postcode sector. The data will also include flood claims from domestic accidents or blocked drains, as well as flooding from river or tidal events. Flood insurance claim ratings are reported for the site only.

Data Currency	**71**
Data Suppliers	**74**
Useful Contacts	**75**

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
EA / NRW / CEH Flood Data					
Extreme Flooding from Rivers or Sea without Defences	pg 1	3		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 1	4		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
JBA Flood Data					
JBA 75 Year Return (undefended) - Pluvial	pg 2	41	122	n/a	n/a
JBA 75 Year Return (undefended) - Fluvial				n/a	n/a
JBA 75 Year Return (undefended) - Coastal	pg 9	33	43	n/a	n/a
JBA 100 Year Return (undefended) - Fluvial				n/a	n/a
JBA 100 Year Return (undefended) - Coastal	pg 12	32	41	n/a	n/a
JBA 200 Year Return (undefended) - Pluvial	pg 16	65	159	n/a	n/a
JBA 200 Year Return (undefended) - Fluvial				n/a	n/a
JBA 200 Year Return (undefended) - Coastal	pg 26	29	41	n/a	n/a
JBA 1000 Year Return (undefended) - Pluvial	pg 29	68	193	n/a	n/a
JBA 1000 Year Return (undefended) - Fluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Coastal	pg 41	30	41	n/a	n/a
JBA Canal Failure					
JBA Dam Break					
BGS Flood Data					
BGS Geological Indicators of Flooding	pg 46	5	1	2	4
BGS Groundwater Flooding Susceptibility	pg 46	26	15	23	18
GeoSmart Information Groundwater Flood					
GeoSmart Information Groundwater Flood Risk	pg 51	15	4	15	16
OS Water Network Data					
OS Water Network Lines	pg 55	1	5	6	24
OS Water Network Nodes	pg 58		6	8	26
EA/NRW Historic Flood Events Data					
Historic Flood Events	pg 61				1
Historical Flood Liabilities					
EA/NRW RoFRS Data					
RoFRS - Risk of Flooding from Rivers and Sea	pg 62	15	30	14	40
Flood Insurance Risk Data					
Postcode Sector Flood Insurance Claim Ratings	pg 70	1	n/a	n/a	n/a

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	1	274005 378125
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	B9NW (W)	0	1	273580 377760
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	B9NW (W)	0	1	273855 377595
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	1	274005 378125
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	B9NW (SW)	0	1	273835 377530
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	B13SE (NW)	0	1	274005 378125
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	B9NW (W)	0	1	273580 377760
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273805 377975
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273750 377940
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273570 377795
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273565 377790
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	0	2	274130 378040
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274035 378045
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274155 378015
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274085 378030
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274035 378025
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274015 378015
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273815 377985
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273805 377985
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273810 377985
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273805 377980
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273810 377980
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274095 378120
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274070 378115
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274090 378100
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274070 378110
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274075 378110
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274060 378100
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273655 377665

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273565 377775
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273600 377775
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273575 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273575 377770
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273610 377770
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273585 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273620 377765
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273565 377755
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273640 377755
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273645 377750
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273655 377745
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273665 377740
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273665 377715
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273675 377730
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273585 377730
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273670 377709
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273640 377710
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273635 377709
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273780 377660
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	3	2	273680 377725
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	3	2	273645 377709
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	4	2	274100 378125

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	5	2	273640 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	10	2	273685 377720
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	10	2	273650 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	11	2	273670 377710
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	12	2	273695 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	13	2	273655 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	14	2	274110 378095
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	15	2	273660 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	16	2	274115 378100
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	17	2	273695 377709
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	17	2	273655 377700
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	18	2	273675 377709
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	19	2	273660 377700
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	20	2	273670 377705
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	22	2	273665 377700
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274125 378105
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	24	2	273660 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	26	2	273665 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	29	2	274130 378110
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	29	2	273670 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	31	2	273575 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	31	2	273675 377685

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	34	2	273680 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	35	2	273715 377700
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	35	2	273640 377670
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	36	2	274095 378025
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	36	2	273650 377675
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	36	2	273675 377690
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	40	2	274140 378115
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	42	2	273680 377685
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	43	2	274105 378020
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	43	2	273590 377630
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	43	2	273715 377685
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	45	2	274145 378120
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	47	2	273685 377680
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	54	2	274155 378010
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	54	2	273685 377675
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	54	2	273600 377625
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	54	2	273725 377695
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	56	2	273710 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	60	2	273680 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	62	2	274160 378085
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	63	2	274155 378075
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	63	2	273735 377690

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	64	2	274150 378060
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	64	2	274165 378100
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	66	2	274135 378035
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	66	2	273615 377620
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	67	2	274170 378120
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	71	2	273745 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	73	2	274140 378030
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	76	2	274150 378035
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	77	2	273715 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	79	2	273745 377680
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	80	2	274145 378025
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	82	2	273725 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	82	2	273720 377660
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	85	2	273745 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	86	2	274155 378025
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	89	2	273760 377675
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	91	2	273740 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	95	2	274160 378015
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	98	2	273730 377650
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	99	2	273750 377660
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	100	2	274160 378010
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	100	2	273770 377670

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	103	2	274160 378005
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	104	2	274165 378010
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	107	2	274165 378000
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	108	2	273840 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	110	2	273745 377645
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	110	2	273780 377665
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	114	2	274170 378000
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	114	2	273745 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	116	2	274170 377995
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	116	2	273750 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	119	2	274175 377985
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	121	2	273750 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	123	2	273760 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	128	2	273765 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	129	2	273775 377610
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	130	2	273760 377630
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	133	2	273765 377630
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	134	2	273785 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	135	2	273780 377625
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	141	2	273790 377635
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	149	2	273820 377640
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	157	2	273780 377610

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	161	2	273795 377565
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	161	2	273935 377690
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	162	2	273780 377605
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	164	2	273825 377625
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	166	2	273780 377600
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	173	2	273785 377595
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	182	2	273785 377585
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	183	2	273780 377580
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	185	2	273765 377570
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	189	2	273825 377600
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	195	2	273790 377560
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	196	2	273770 377560
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	208	2	273795 377560
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	213	2	273805 377545
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	214	2	274255 377955
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	214	2	274290 378205
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	221	2	274260 377950
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	221	2	273795 377545
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	227	2	274305 378200
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	228	2	274275 377925
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	231	2	274310 378200
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (SW)	232	2	273800 377535

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	234	2	274275 377950
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	235	2	274270 377940
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	235	2	274315 378195
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (SW)	235	2	273805 377535
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	236	2	274280 377955
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (SW)	237	2	273810 377535
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9SW (SW)	244	2	273810 377520
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (SW)	246	2	273810 377525
	JBA 75 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	247	2	274290 377950
	JBA 75 Year Return (undefended) - Fluvial None				
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273995 378130
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273990 378125
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273985 378120
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273980 378115
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273970 378110
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273975 378110
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273955 378105
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273960 378105
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SE (NW)	0	2	273965 378105
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273940 378100
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273945 378100
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273930 378095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273935 378095
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273905 378090
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273910 378090
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273870 378085
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SW (NW)	0	2	273880 378085
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273890 378085
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273820 378080
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273825 378080
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273710 378030
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273705 378025
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273660 377985
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273655 377980
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273650 377975
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273630 377955
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273625 377950
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273620 377940
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273615 377935
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273605 377930
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SW (W)	0	2	273610 377930
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273600 377925
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	B13SE (NW)	0	2	273975 378115
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273595 377925

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273590 377920
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273585 377915
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	1	2	273580 377910
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	4	2	273570 377905
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	4	2	273565 377900
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	19	2	274040 378150
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	19	2	274045 378150
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274050 378155
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	29	2	274055 378160
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	30	2	274060 378160
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	35	2	274065 378165
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	40	2	274070 378170
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	40	2	274075 378170
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	45	2	274080 378175
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	46	2	274085 378175
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	51	2	274095 378180
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	56	2	274100 378185
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	57	2	274105 378185
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	63	2	274110 378190
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	69	2	274115 378195
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	77	2	274125 378200
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	84	2	274130 378205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	86	2	274135 378205
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	93	2	274140 378210
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13NE (N)	95	2	274145 378210
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	102	2	274150 378215
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	109	2	274155 378220
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	116	2	274160 378225
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	123	2	274165 378230
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13NE (N)	133	2	274175 378235
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	140	2	274180 378240
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	150	2	274190 378245
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	157	2	274195 378250
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	167	2	274205 378255
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	178	2	274214 378260
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	188	2	274220 378265
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	195	2	274225 378270
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	202	2	274230 378275
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13NE (N)	210	2	274235 378280
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	217	2	274240 378285
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	227	2	274250 378290
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	238	2	274260 378295
	JBA 100 Year Return (undefended) - Fluvial None				
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	B13SE (NW)	0	2	273975 378115

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273995 378130
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273990 378125
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273985 378120
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273980 378115
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273970 378110
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273975 378110
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273955 378105
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273965 378105
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273940 378100
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273945 378100
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273930 378095
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273935 378095
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273905 378090
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273910 378090
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273870 378085
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SW (NW)	0	2	273880 378085
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273890 378085
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273820 378080
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273825 378080
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SW (NW)	0	2	273830 378080
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273710 378030
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273705 378025

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273655 377980
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273650 377975
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273630 377955
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273625 377950
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273620 377940
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273615 377935
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273605 377930
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273610 377930
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273600 377925
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273590 377920
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273585 377915
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	1	2	273580 377910
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	4	2	273570 377905
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	4	2	273565 377900
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	19	2	274040 378150
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	19	2	274045 378150
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274050 378155
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	29	2	274055 378160
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	30	2	274060 378160
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	35	2	274065 378165
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	40	2	274075 378170
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	45	2	274080 378175

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	46	2	274085 378175
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	51	2	274095 378180
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	56	2	274100 378185
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	57	2	274105 378185
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	63	2	274110 378190
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	69	2	274115 378195
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SE (N)	71	2	274120 378195
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	77	2	274125 378200
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	84	2	274130 378205
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	86	2	274135 378205
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	93	2	274140 378210
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13NE (N)	95	2	274145 378210
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	102	2	274150 378215
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	109	2	274155 378220
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	116	2	274160 378225
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	123	2	274165 378230
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13NE (N)	133	2	274175 378235
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	140	2	274180 378240
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	150	2	274190 378245
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	167	2	274205 378255
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	178	2	274214 378260
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	188	2	274220 378265

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	195	2	274225 378270
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	202	2	274230 378275
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13NE (N)	210	2	274235 378280
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	217	2	274240 378285
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	227	2	274250 378290
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	238	2	274260 378295
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273650 377715
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273635 377710
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273640 377710
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273980 377935
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273765 377950
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273785 377835
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273790 377830
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273800 377825
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273805 377820
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273810 377815
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273570 377755
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273585 377765
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273625 377765
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273575 377755
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273635 377760
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273570 377750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273645 377755
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273650 377750
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273660 377745
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273670 377740
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273675 377735
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273680 377730
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273570 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273575 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273565 377790
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273570 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273605 377775
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273575 377765
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273575 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273615 377770
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273820 377810
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273860 378020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274145 378010
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273640 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273855 378015
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273805 377985
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273750 377975
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273790 377975

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273805 377975
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274005 377975
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273740 377970
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273815 377985
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273790 377965
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273770 377960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273775 377960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273780 377960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273770 377955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273775 377955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274085 378105
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274070 378105
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274050 378095
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274055 378100
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274060 378100
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	0	2	274140 378030
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274040 378050
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274030 378040
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274025 378035
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273865 378025
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274075 378120
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274085 378125

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274095 378120
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274090 378115
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274065 378115
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273680 377709
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273785 377660
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	3	2	273645 377709
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	6	2	273660 377710
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	6	2	273685 377725
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	7	2	273825 377805
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	8	2	273655 377709
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	8	2	273705 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	9	2	273650 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	9	2	274105 378125
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	9	2	273580 377660
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	10	2	273650 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	11	2	273660 377709
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	12	2	274115 378130
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	13	2	273670 377709
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	13	2	273655 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	13	2	273695 377710
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	14	2	273830 377800
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	14	2	274110 378095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	15	2	273660 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	16	2	274115 378100
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	17	2	273655 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	19	2	273660 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	20	2	273835 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	20	2	273670 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	21	2	274120 378135
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	22	2	273665 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	23	2	274115 378140
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	24	2	273660 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274125 378105
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	26	2	273665 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	27	2	273845 377790
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	28	2	274090 378025
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	28	2	273565 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	29	2	273670 377695
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	29	2	274130 378110
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	31	2	273710 377705
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	31	2	273665 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	31	2	274125 378135
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	33	2	273670 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	34	2	273680 377695

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	34	2	274130 378140
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	36	2	273675 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	37	2	273850 377785
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	37	2	273670 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	39	2	274100 378020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	40	2	273675 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	40	2	273580 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	41	2	273660 377675
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	42	2	273680 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	43	2	273855 377780
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	44	2	273675 377680
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	45	2	274145 378120
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	47	2	273720 377700
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	47	2	273680 377680
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	49	2	273935 377810
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	49	2	273685 377680
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	49	2	273595 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	50	2	274110 378015
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	51	2	274155 378020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	52	2	273705 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	54	2	273685 377675
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	56	2	273725 377695

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	56	2	273720 377660
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	57	2	274150 378155
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	59	2	273930 377795
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	61	2	274160 378005
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	64	2	273635 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	65	2	274165 378085
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	65	2	274160 378075
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	65	2	274155 378070
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	66	2	273735 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	66	2	274150 378045
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	67	2	274175 378125
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	68	2	274155 378160
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	69	2	273715 377675
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	69	2	274170 378105
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	72	2	273740 377685
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	73	2	273690 377655
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	75	2	274165 378165
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	75	2	273720 377670
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	76	2	273920 377780
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	79	2	273750 377680
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	80	2	274145 378025
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	82	2	273750 377660

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	83	2	274155 378030
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	83	2	273700 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	84	2	273660 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	86	2	274150 378020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	86	2	274170 378170
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	90	2	273775 377610
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	91	2	273760 377675
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	91	2	273740 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	91	2	273665 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	93	2	274155 378015
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	95	2	274160 378020
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	96	2	274160 378010
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	98	2	273695 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	100	2	273770 377670
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	102	2	274165 378010
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	106	2	273755 377655
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	107	2	274170 377995
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	110	2	273745 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	110	2	273780 377665
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	114	2	273745 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	115	2	273855 377590
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	116	2	273750 377640

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	119	2	274175 377985
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	121	2	273750 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	122	2	273770 377645
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	123	2	273760 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	124	2	273765 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	126	2	273770 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	130	2	273790 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	130	2	273760 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	132	2	273755 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	133	2	273765 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	135	2	273770 377630
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	137	2	273765 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	139	2	273770 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	142	2	273780 377625
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	143	2	273825 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	144	2	273770 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	146	2	273775 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	149	2	273840 377635
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	153	2	273840 377650
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	155	2	273840 377640
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	157	2	273780 377610
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	157	2	273795 377565

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	161	2	273935 377690
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	162	2	274210 377960
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	169	2	273790 377600
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	173	2	273785 377595
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	174	2	273845 377620
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	177	2	273785 377590
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	178	2	273840 377615
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	185	2	273765 377570
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	188	2	273835 377595
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	188	2	273790 377580
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	196	2	273790 377560
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	197	2	273855 377605
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	208	2	273795 377560
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	210	2	273860 377595
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (SW)	213	2	273810 377540
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	214	2	274255 377955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	214	2	274290 378205
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	221	2	274265 377935
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	221	2	273795 377545
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	223	2	273820 377555
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	227	2	274305 378200
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	230	2	274310 378195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (SW)	232	2	273800 377535
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	235	2	274270 377935
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	235	2	274315 378195
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (SW)	235	2	273805 377535
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	236	2	274280 377955
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	239	2	274275 378280
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	240	2	274275 377925
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9SW (SW)	245	2	273800 377520
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	246	2	274280 378285
	JBA 200 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	249	2	274350 378105
	JBA 200 Year Return (undefended) - Fluvial None				
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	B13SE (NW)	0	2	273975 378115
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273995 378130
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273990 378125
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273985 378120
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SE (NW)	0	2	273990 378120
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273980 378115
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273975 378110
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273955 378105
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273965 378105
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273945 378100
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273930 378095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273935 378095
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273910 378090
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SE (NW)	0	2	273915 378090
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273870 378085
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273890 378085
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273825 378080
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SW (NW)	0	2	273830 378080
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273710 378030
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273705 378025
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273655 377980
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273650 377975
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273630 377955
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273625 377950
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273620 377940
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273615 377935
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273605 377930
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273610 377930
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	0	2	273600 377925
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273590 377920
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273585 377915
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273580 377910
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SW (W)	1	2	273575 377905

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	4	2	273570 377905
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	4	2	273565 377900
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	19	2	274040 378150
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	19	2	274045 378150
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274050 378155
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	29	2	274060 378160
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	35	2	274065 378165
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SE (N)	35	2	274070 378165
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	40	2	274075 378170
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	45	2	274085 378175
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	51	2	274095 378180
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	56	2	274100 378185
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	57	2	274105 378185
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	63	2	274110 378190
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	69	2	274115 378195
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	71	2	274120 378195
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	77	2	274125 378200
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	84	2	274130 378205
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	86	2	274135 378205
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	93	2	274140 378210
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	95	2	274145 378210
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	102	2	274150 378215

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	109	2	274155 378220
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	116	2	274160 378225
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	123	2	274165 378230
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	133	2	274175 378235
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	140	2	274180 378240
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	150	2	274190 378245
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	167	2	274205 378255
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	178	2	274214 378260
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	188	2	274220 378265
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	195	2	274225 378270
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	202	2	274230 378275
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	210	2	274235 378280
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	217	2	274240 378285
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	227	2	274250 378290
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	238	2	274260 378295
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	274025 378130
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274070 378125
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274040 378120
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274055 378120
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274060 378120
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	274035 378115
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274055 378115

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274090 378115
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274025 378110
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274070 378105
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274085 378105
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	0	2	274065 378100
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273625 377720
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273845 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274150 378005
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274045 378095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	274050 378095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274035 378090
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	0	2	274085 378080
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	0	2	274145 378025
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274020 378030
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273870 378025
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	274030 378115
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273720 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	0	2	273685 377709
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273855 378015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273725 377975
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273730 377975
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273745 377975

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273750 377975
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273740 377970
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273745 377970
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273715 377955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273725 377955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273730 377960
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273750 377945
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273750 377935
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273815 377985
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273730 377920
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273960 377870
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273785 377835
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273790 377830
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273800 377825
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273605 377820
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273805 377820
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273565 377815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273600 377815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273810 377815
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273580 377800
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273575 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273570 377775

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273610 377775
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273575 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273580 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273590 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273595 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273620 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273635 377765
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273650 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273825 377805
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273650 377690
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273595 377810
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273585 377805
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	0	2	273575 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273655 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273670 377745
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273675 377740
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	0	2	273680 377735
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	1	2	274095 378130
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	1	2	273640 377709
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	2	2	274100 378120
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	2	2	273625 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	2	2	273685 377730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	6	2	274080 378135
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	8	2	273665 377709
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	10	2	274075 378140
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	10	2	273620 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	12	2	274105 378135
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	13	2	274110 378125
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	14	2	274110 378095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	14	2	273830 377800
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	15	2	273695 377720
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	16	2	274115 378100
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	17	2	273655 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	19	2	273650 377695
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	20	2	273670 377705
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	20	2	273835 377795
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	22	2	273700 377715
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	22	2	273665 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	22	2	273950 377860
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	23	2	274115 378140
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (NW)	23	2	273935 377850
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	24	2	274120 378130
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	25	2	273935 377810
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	26	2	273670 377680

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	27	2	273675 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	27	2	273845 377790
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	29	2	274130 378110
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	29	2	273670 377695
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	31	2	274125 378135
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	33	2	273715 377705
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	33	2	274115 378155
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	34	2	274125 378145
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	35	2	274090 378020
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	35	2	273570 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	36	2	273675 377690
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	37	2	273850 377785
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	37	2	273670 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	40	2	274120 378160
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	40	2	273675 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	41	2	273685 377690
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	41	2	273660 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	42	2	273680 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	43	2	273855 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	44	2	273585 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	44	2	273675 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	45	2	274145 378120

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	45	2	274135 378150
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	46	2	274100 378015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	47	2	274125 378165
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	47	2	273685 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	48	2	274140 378145
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	49	2	273720 377700
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	50	2	274140 378150
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	50	2	273700 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	50	2	273670 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	52	2	273690 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	54	2	274160 378015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	54	2	273685 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	55	2	274145 378150
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	56	2	273605 377620
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	56	2	273695 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	57	2	274115 378010
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	59	2	273730 377695
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	59	2	273705 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NE (W)	59	2	273930 377805
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	60	2	273690 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	61	2	273700 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	62	2	274160 378130

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	63	2	273695 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	64	2	273930 377795
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	65	2	273705 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	68	2	274125 378005
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	68	2	274165 378080
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	68	2	274155 378060
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	68	2	274160 378160
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	69	2	274170 378095
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	69	2	273690 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	69	2	273715 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	70	2	274160 378070
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	70	2	273705 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	75	2	274175 378115
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	75	2	273710 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	75	2	273745 377685
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	76	2	274155 378040
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	76	2	273625 377615
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	76	2	273695 377655
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	76	2	273920 377780
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	77	2	273715 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	78	2	274180 378130
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	79	2	274160 378000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	80	2	273725 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	82	2	273915 377770
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	82	2	273755 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	84	2	273720 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	84	2	273910 377765
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	85	2	273705 377650
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	86	2	274150 378020
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NE (W)	88	2	273910 377760
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	89	2	274185 378140
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	89	2	273895 377750
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	90	2	274160 378025
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	90	2	273770 377615
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	90	2	273910 377755
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	91	2	273740 377650
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	92	2	273745 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	93	2	274155 378015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	94	2	273765 377675
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	96	2	273665 377615
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B13SE (N)	100	2	274160 378010
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	100	2	273770 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	102	2	274165 378015
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	103	2	274170 377990

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	103	2	273750 377655
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	103	2	273775 377670
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	105	2	273675 377610
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	110	2	273745 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	111	2	274170 378005
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	111	2	273745 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	112	2	273790 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	112	2	274165 377995
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	114	2	273745 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	116	2	273765 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	117	2	273760 377645
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	121	2	274170 377980
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	121	2	274275 377920
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	122	2	273845 377655
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	125	2	273755 377630
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	126	2	274175 377985
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	129	2	273755 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	130	2	273820 377665
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	131	2	273780 377640
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	134	2	273820 377660
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	137	2	273765 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	138	2	273775 377630

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	139	2	273770 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	142	2	273780 377625
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	144	2	273770 377620
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	146	2	273775 377620
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	146	2	274205 378230
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	147	2	273830 377575
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	151	2	274190 377960
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	152	2	273790 377575
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	153	2	273840 377650
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	154	2	274190 377955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	157	2	273780 377610
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	157	2	274214 378235
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	158	2	273755 377595
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	159	2	273775 377605
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NE (W)	161	2	273940 377680
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	167	2	274205 377955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	168	2	273850 377635
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	173	2	273785 377595
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13NE (N)	174	2	274220 378245
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	175	2	273815 377610
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	177	2	273865 377600
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	177	2	273785 377590

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	192	2	274270 378195
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	197	2	273790 377570
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	198	2	274275 378200
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	198	2	273780 377555
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	199	2	273855 377605
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	199	2	274240 378260
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	199	2	273785 377565
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	201	2	273795 377565
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (W)	208	2	273795 377560
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	208	2	273785 377555
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	208	2	273855 377595
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	210	2	273795 377545
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	210	2	273820 377570
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9NW (W)	210	2	273860 377595
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	214	2	274290 378205
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	215	2	273860 377590
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	219	2	274275 378245
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	221	2	274260 378270
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B14NW (N)	224	2	274300 378205
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	225	2	274315 378200
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (W)	227	2	273825 377550
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	227	2	274310 378195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	228	2	274265 378275
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14SW (N)	231	2	274275 377955
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	232	2	274270 377935
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9NW (SW)	235	2	273805 377535
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	239	2	274275 378280
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9SW (SW)	239	2	273800 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (SW)	243	2	273830 377540
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B9SW (SW)	245	2	273800 377520
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 1.0m	B9SW (SW)	248	2	273810 377515
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14SW (N)	249	2	274345 378110
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B9NW (SW)	249	2	273850 377530
	JBA 1000 Year Return (undefended) - Pluvial Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	249	2	274305 378255
	JBA 1000 Year Return (undefended) - Fluvial None				
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273995 378130
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SE (NW)	0	2	273995 378125
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273990 378120
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273980 378115
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SE (NW)	0	2	273985 378115
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273975 378110
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273965 378105
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273970 378105
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273945 378100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273935 378095
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (NW)	0	2	273910 378090
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	0	2	273915 378090
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273890 378085
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273895 378085
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273825 378080
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273835 378080
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SW (NW)	0	2	273840 378080
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273725 378040
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SW (NW)	0	2	273720 378035
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273710 378030
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (NW)	0	2	273705 378025
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273700 378020
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (NW)	0	2	273640 377960
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SW (W)	0	2	273625 377945
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273620 377940
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273615 377935
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273610 377930
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	0	2	273600 377925
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SW (W)	0	2	273595 377920
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	B13SE (NW)	0	2	273970 378110
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273585 377915

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	1	2	273580 377910
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SW (W)	1	2	273575 377905
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (NW)	2	2	274005 378135
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SW (W)	4	2	273565 377900
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	13	2	274035 378145
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	19	2	274045 378150
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	24	2	274050 378155
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	24	2	274055 378155
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	30	2	274060 378160
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	35	2	274065 378165
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	35	2	274070 378165
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	40	2	274075 378170
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	46	2	274085 378175
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13SE (N)	46	2	274090 378175
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	51	2	274095 378180
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.05m and Less than or equal to 0.1m	B13SE (N)	51	2	274100 378180
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	57	2	274105 378185
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	63	2	274110 378190
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13SE (N)	69	2	274115 378195
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B13SE (N)	71	2	274120 378195
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	77	2	274125 378200
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	86	2	274135 378205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	93	2	274145 378210
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	102	2	274150 378215
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	109	2	274155 378220
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	116	2	274160 378225
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	123	2	274165 378230
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	133	2	274175 378235
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	150	2	274190 378245
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	167	2	274205 378255
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	178	2	274214 378260
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.01m and Less than or equal to 0.05m	B13NE (N)	181	2	274215 378260
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	188	2	274220 378265
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	195	2	274225 378270
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	202	2	274230 378275
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B13NE (N)	210	2	274235 378280
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	217	2	274240 378285
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	227	2	274250 378290
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.3m and Less than or equal to 1.0m	B14NW (N)	238	2	274260 378295
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 0.1m and Less than or equal to 0.3m	B14NW (N)	248	2	274270 378300
	JBA Canal Failure Coverage Coverage: This area has not been mapped for risk of flooding from canal or aqueduct failure or breach.	B9NE (SE)	0	2	274214 377709
	JBA Canal Failure None				
	JBA Dam Break Coverage Coverage: This area has been mapped for flooding from dam or reservoir embankment failure or breach.	B9NE (SE)	0	2	274214 377709
	JBA Dam Break Coverage Coverage: This area has not been mapped for flooding from dam or reservoir embankment failure or breach.	B13NE (N)	188	2	273985 378381

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA Dam Break None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	B13SE (NW)	0	3	273953 378139
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B13SW (NW)	0	3	273720 378044
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B13SW (NW)	0	3	273730 378053
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B13SE (NW)	0	3	274034 378122
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	B13SE (N)	0	3	274139 378025
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B13SW (NW)	1	3	273700 378030
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	B14SW (N)	262	3	274365 378196
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B14NW (N)	495	3	274467 378450
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B14NW (N)	515	3	274485 378460
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B15NW (NE)	975	3	275000 378486
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	B15NW (NE)	978	3	275005 378479
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	B15NW (NE)	987	3	275000 378509
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	3	273150 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	3	273750 377850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273550 377650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273550 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	3	273000 377150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	272950 377350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273100 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	B9NE (SW)	0	3	274200 377700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (NW)	0	3	274150 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	272950 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	3	273050 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	3	273750 377709
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (W)	0	3	273900 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SW (SW)	0	3	273650 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273200 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	3	273550 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273100 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(W)	0	3	273200 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	3	273700 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	0	3	273750 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NW (W)	0	3	273850 377800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273000 377400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273250 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(W)	0	3	273300 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	4	3	273000 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13SE (N)	19	3	274100 378150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	54	3	273650 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13NE (N)	93	3	274200 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NW (W)	97	3	273650 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B13SE (N)	104	3	274214 378050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	116	3	273050 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	126	3	272900 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (W)	131	3	274100 377750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	132	3	272950 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SW (SW)	140	3	273700 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	147	3	273800 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	161	3	272950 376950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	174	3	273000 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (W)	190	3	273700 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	258	3	273750 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	326	3	272950 376750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	345	3	273800 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	349	3	273550 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	349	3	273450 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9NE (S)	354	3	274200 377600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	363	3	273400 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	372	3	272950 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NE (S)	381	3	274214 377600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	383	3	273500 377050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	389	3	273450 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9NE (S)	397	3	274200 377550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	415	3	274150 377500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	420	3	272950 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (SW)	420	3	274000 377300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	420	3	273500 377000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NW (SW)	431	3	273600 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	452	3	273400 376900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	453	3	272900 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	458	3	274150 377450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	467	3	272950 376600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NW (SW)	475	3	273700 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SW (SW)	475	3	273750 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	501	3	272900 376550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NW (SW)	518	3	273750 377150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SW)	543	3	273500 376850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SE (S)	545	3	274150 377350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	582	3	274050 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B9SE (S)	607	3	274100 377250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B9SE (S)	625	3	274100 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NE (S)	668	3	274050 377150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	B5SW (SW)	750	3	273650 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B5NE (S)	762	3	274150 377100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B5SW (S)	766	3	273800 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5SW (SW)	779	3	273750 376700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B5SW (S)	914	3	273850 376650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B15NW (NE)	924	3	275000 378300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	B15NW (NE)	935	3	275000 378350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B10SE (SE)	944	3	274600 377200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	B5NE (S)	960	3	274200 376900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	B15NW (NE)	964	3	275050 378250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B13SE (NW)	0	2	274025 378115
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B13SE (NW)	0	2	273965 378100
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273490 377755
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B13SE (NW)	0	2	274030 378120
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273400 377725
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	B9NE (SE)	0	2	274214 377709
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273515 377775
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273510 377770
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273545 377800
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273475 377745
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273370 377705
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273530 377785
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273520 377780
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273500 377765
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	0	2	273495 377760
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	3	2	273390 377725

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(W)	3	2	273400 377735
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B13NE (N)	118	2	274175 378215
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B13NE (N)	125	2	274180 378220
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14SW (N)	260	2	274360 378195
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	295	2	274320 378315
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	298	2	274355 378265
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	305	2	274360 378270
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	314	2	274390 378220
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	388	2	274390 378375
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	395	2	274395 378380
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	402	2	274400 378385
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	409	2	274405 378390
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	416	2	274410 378395
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	441	2	274430 378410
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	448	2	274435 378415
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	466	2	274450 378425

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	473	2	274455 378430
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	480	2	274460 378435
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	509	2	274480 378455
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	519	2	274485 378465
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	B14NW (N)	526	2	274490 378470
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	(SW)	668	2	272453 375897
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	690	2	274380 378790
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	706	2	274175 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	707	2	274120 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	709	2	274660 378550
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	716	2	274665 378555
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	725	2	274090 378855
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	728	2	274680 378555
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	734	2	274070 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	739	2	274165 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	743	2	274695 378560

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	747	2	274135 378875
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(N)	755	2	274090 378885

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 677.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9NW (W)	0	4	273788 377569
2	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 9.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B13SE (N)	12	4	274104 378086
3	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B13SE (N)	20	4	274107 378082
4	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 132.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B13SE (N)	25	4	274182 377975
5	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 100.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B14NW (N)	213	4	274316 378198
6	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 63.7 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B14NW (N)	217	4	274273 378245
7	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 54.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B14NW (NE)	407	4	274471 378309
8	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 78.9 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SW (SW)	429	4	273804 377313
9	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 84.1 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SW (SW)	429	4	273855 377282

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 30.5 Watercourse Level: On ground surface Primacy: 2 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	481	4	273575 377045
11	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Primacy: 2 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	495	4	273570 377017
12	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 27.8 Watercourse Level: On ground surface Primacy: 2 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	498	4	273598 377009
13	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SW (SW)	503	4	273860 377260
14	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 135.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SW (SW)	504	4	273820 377236
15	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 99.5 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SW (SW)	505	4	273859 377257
16	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: Not Supplied Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B9SE (SW)	588	4	273901 377185
17	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 395.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NE (SW)	591	4	273904 377183
18	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 31.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	658	4	273867 377079

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 17.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	686	4	273888 377065
20	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 11.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	686	4	273888 377065
21	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	699	4	273889 377050
22	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 29.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	701	4	273888 377047
23	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	721	4	273880 377019
24	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 29.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	723	4	273879 377017
25	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	744	4	273871 376988
26	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 18.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	746	4	273870 376985
27	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 27.2 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	753	4	273852 376958

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 20.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	759	4	273865 376967
29	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 13.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	759	4	273865 376967
30	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 2.8 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	760	4	273854 376959
31	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 14.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	769	4	273859 376944
32	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 2.4 Watercourse Level: Underground Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	774	4	273860 376948
33	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 1.0 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	775	4	273860 376945
34	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 47.6 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NW (SW)	776	4	273859 376944
35	**OS Water Network Lines** Watercourse Name: Afon Gyrach Watercourse Form: Inland river Watercourse Length: 121.4 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NE (S)	941	4	274208 376941
36	**OS Water Network Lines** Watercourse Name: Not Supplied Watercourse Form: Inland river Watercourse Length: 1209.8 Watercourse Level: On ground surface Primacy: 1 Permanent: True Catchment Name: Ogwen Ddu	B5NE (S)	941	4	274178 376938
37	**OS Water Network Nodes** Hydronode Category: Outlet	B13SE (N)	12	4	274099 378094

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**OS Water Network Nodes** Hydronode Category: Pseudo	B13SE (N)	20	4	274104 378086
39	**OS Water Network Nodes** Hydronode Category: Pseudo	B13SE (N)	25	4	274107 378082
40	**OS Water Network Nodes** Hydronode Category: Source	B13SE (N)	143	4	274182 377975
41	**OS Water Network Nodes** Hydronode Category: Source	B14NW (N)	213	4	274289 378205
42	**OS Water Network Nodes** Hydronode Category: Source	B14NW (N)	217	4	274273 378245
43	**OS Water Network Nodes** Hydronode Category: Outlet	B14NW (N)	280	4	274331 378270
44	**OS Water Network Nodes** Hydronode Category: Outlet	B14NW (N)	302	4	274377 378224
45	**OS Water Network Nodes** Hydronode Category: Source	B14NW (N)	407	4	274437 378342
46	**OS Water Network Nodes** Hydronode Category: Outlet	B14NW (NE)	422	4	274471 378309
47	**OS Water Network Nodes** Hydronode Category: Junction	B9SW (SW)	429	4	273804 377313
48	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	495	4	273570 377017
49	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	498	4	273572 377014
50	**OS Water Network Nodes** Hydronode Category: Pseudo	B9SW (SW)	503	4	273860 377260
51	**OS Water Network Nodes** Hydronode Category: Pseudo	B9SW (SW)	504	4	273820 377236
52	**OS Water Network Nodes** Hydronode Category: Pseudo	B9SW (SW)	505	4	273859 377257
53	**OS Water Network Nodes** Hydronode Category: Pseudo	B9SE (SW)	588	4	273901 377185
54	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NE (SW)	591	4	273904 377183
55	**OS Water Network Nodes** Hydronode Category: Source	B5NW (SW)	616	4	273822 377107
56	**OS Water Network Nodes** Hydronode Category: Outlet	B5NW (SW)	658	4	273861 377082
57	**OS Water Network Nodes** Hydronode Category: Junction	B5NW (SW)	686	4	273888 377065

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	**OS Water Network Nodes** Hydronode Category: Source	B5NW (SW)	693	4	273883 377054
59	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	699	4	273889 377050
60	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	701	4	273888 377047
61	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	721	4	273880 377019
62	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	723	4	273879 377017
63	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	744	4	273871 376988
64	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	746	4	273870 376985
65	**OS Water Network Nodes** Hydronode Category: Source	B5NW (SW)	753	4	273830 376942
66	**OS Water Network Nodes** Hydronode Category: Junction	B5NW (SW)	759	4	273865 376967
67	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	760	4	273854 376959
68	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	761	4	273852 376958
69	**OS Water Network Nodes** Hydronode Category: Source	B5NW (SW)	769	4	273846 376938
70	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	774	4	273860 376948
71	**OS Water Network Nodes** Hydronode Category: Pseudo	B5NW (SW)	775	4	273860 376945
72	**OS Water Network Nodes** Hydronode Category: Junction	B5NW (SW)	776	4	273859 376944
73	**OS Water Network Nodes** Hydronode Category: Source	B5NW (SW)	785	4	273843 376900
74	**OS Water Network Nodes** Hydronode Category: Junction	B5NE (S)	941	4	274178 376938
	OS Water Network Nodes Hydronode Category: Not Supplied	B5NW (SW)	482	4	273575 377045
	OS Water Network Nodes Hydronode Category: Not Supplied	B5NW (SW)	522	4	273598 377009

EA/NRW Historic Flood Events Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	**Historic Flood Events** Flood Event Type: Historic Flood Event - Fluvial Flooding Cause: Channel Capacity Exceeded (no raised defences) Source: Natural Resources Wales Flood Event Start Date: 26th December 2015 Flood Event End Date: 26th December 2015	B5NE (S)	724	1	273960 377060

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	0	1	273400 377709
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SW (NW)	0	1	273870 378080
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	0	1	273560 377800
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SE (NW)	0	1	273920 378091
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SE (NW)	0	1	273940 378097
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SE (NW)	0	1	274001 378125
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	0	1	273793 377559
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SW (NW)	0	1	273670 377995
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SW (NW)	0	1	273665 377989
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	0	1	273650 377696
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	0	1	273695 377705
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	0	1	273445 377736
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	0	1	273635 377750
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	0	1	273550 377770

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	0	1	273550 377789
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	5	1	273560 377895
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	10	1	273395 377740
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273375 377721
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273380 377726
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273385 377731
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273390 377735
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273400 377745
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	11	1	273350 377700
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	14	1	273295 377650
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	18	1	273240 377600
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	19	1	273700 377700
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	21	1	273700 377659
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	27	1	273175 377550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	36	1	273040 377450
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	36	1	273110 377500
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	37	1	273025 377439
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	38	1	273005 377423
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(W)	38	1	273010 377427
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13SE (N)	67	1	274108 378195
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	68	1	273700 377650
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	93	1	273770 377660
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	110	1	273800 377650
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13NE (N)	113	1	274153 378225
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	114	1	273785 377660
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	122	1	273855 377595
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	130	1	273772 377600
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (W)	134	1	273788 377557

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B13NE (N)	145	1	274181 378245
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (SW)	168	1	273850 377550
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	233	1	274253 378295
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9NW (SW)	251	1	273860 377545
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	287	1	274300 378325
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	296	1	274307 378330
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	305	1	274315 378335
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	315	1	274323 378340
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	325	1	274332 378345
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	354	1	274358 378360
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	405	1	274400 378390
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9SW (SW)	436	1	273800 377300
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	469	1	274450 378430
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	477	1	274456 378435

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	487	1	274464 378440
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9SW (SW)	489	1	273860 377275
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B9SW (SW)	499	1	273865 377265
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	509	1	274481 378455
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	553	1	274513 378485
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (N)	561	1	274519 378490
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NW (NE)	604	1	274562 378505
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	616	1	273900 377150
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	635	1	273955 377160
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	643	1	273965 377150
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	664	1	273955 377129
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	670	1	273955 377122
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B14NE (NE)	677	1	274635 378530
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (SW)	678	1	273960 377116

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	685	1	273965 377110
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	694	1	274010 377120
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	705	1	274000 377100
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	733	1	274685 378560
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	739	1	274690 378560
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	744	1	274010 377067
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	750	1	274700 378565
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	763	1	274025 377055
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	769	1	274050 377050
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	804	1	274755 378581
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	832	1	274795 378570
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	853	1	274150 377000
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	868	1	274850 378547
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	878	1	274155 376995

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(NE)	882	1	274870 378540
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	907	1	274135 376950
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	914	1	274150 376950
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B15NW (NE)	917	1	274930 378495
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	917	1	274145 376946
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	921	1	274150 376945
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	938	1	274214 376950
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B15NW (NE)	949	1	274990 378438
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	950	1	274200 376933
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B15NW (NE)	958	1	275000 378427
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B6NW (S)	979	1	274250 376935
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B5NE (S)	980	1	274200 376900
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B15NW (NE)	991	1	275045 378396
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B6NW (S)	997	1	274250 376915

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	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	B15NW (NE)	997	1	275050 378400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Postcode Sector Flood Insurance Claim Ratings Insurance Rating: Low Flood Insurance Claim Rating Postcode Sector: LL34 6	B9NE (SE)	0	2	274214 377709

EA / NRW / CEH Flood Data	Version	Update Cycle
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
EA / NRW Surface Water Flood Data	**Version**	**Update Cycle**
Surface Water 1 in 30 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified

JBA Flood Data	Version	Update Cycle
JBA 75 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA Canal Failure JBA Risk Management Limited	October 2017	Annually
JBA Dam Break JBA Risk Management Limited	October 2017	Annually
BGS Flood Data	**Version**	**Update Cycle**
BGS Geological Indicators of Flooding British Geological Survey - National Geoscience Information Service	February 2011	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
GeoSmart Information Groundwater Flooding Data	**Version**	**Update Cycle**
GeoSmart Information Groundwater Flood Risk GeoSmart Information Ltd	November 2017	Bi-Annually
OS Water Network Data	**Version**	**Update Cycle**
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
OS Water Network Nodes Ordnance Survey	May 2018	Quarterly
EA/NRW Historic Flood Events Data	**Version**	**Update Cycle**
Historic Flood Events Environment Agency - Head Office Natural Resources Wales	May 2018 September 2017	Quarterly Quarterly
Historical Flood Liabilities Landmark Information Group Limited	December 1999	Not Applicable

EA/NRW Risk of Flooding from Rivers and Sea (RoFRS)	Version	Update Cycle
RoFRS - Risk of Flooding from Rivers and Sea Natural Resources Wales	May 2015	Not Applicable
Flood Insurance Risk Data	**Version**	**Update Cycle**
Postcode Sector Flood Insurance Claim Ratings Crawford and Company	July 2018	Quarterly

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Natural Resources Wales	
Centre for Ecology and Hydrology	
British Geological Survey	
GeoSmart Information	
JBA Risk Management	

Useful Contacts

Contact	Name and Address	Contact Details
1	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
2	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9966 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk
3	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk

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RAMBOLL

EA/NRW Flood Data Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Flood Data

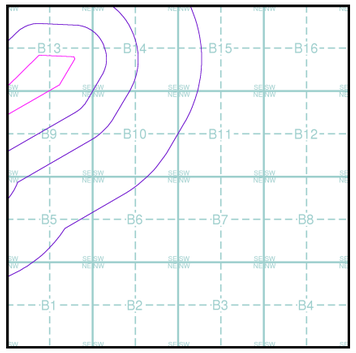
- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height 167.8

MLW Mean Low Water
MHW Mean High Water

EA/NRW Flood Data Map - Slice B



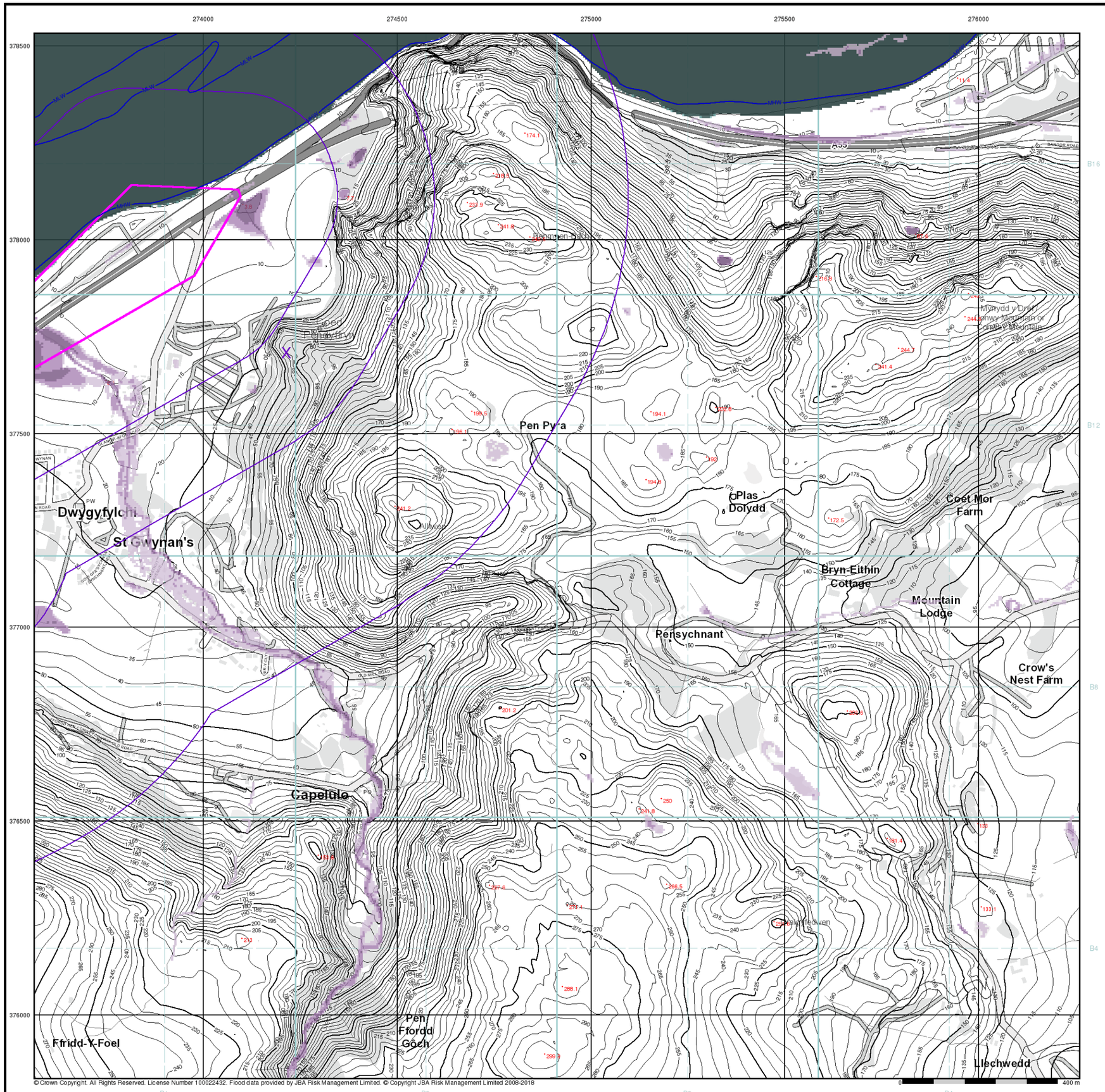
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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0 400 m

RAMBOLL

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

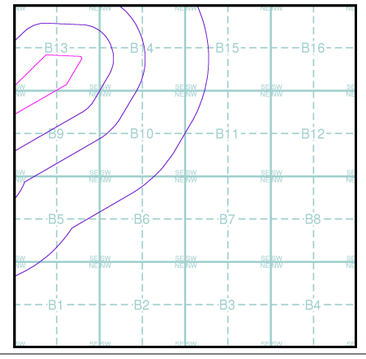
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 75 Year Return Flood Map (Undefended) - Slice B



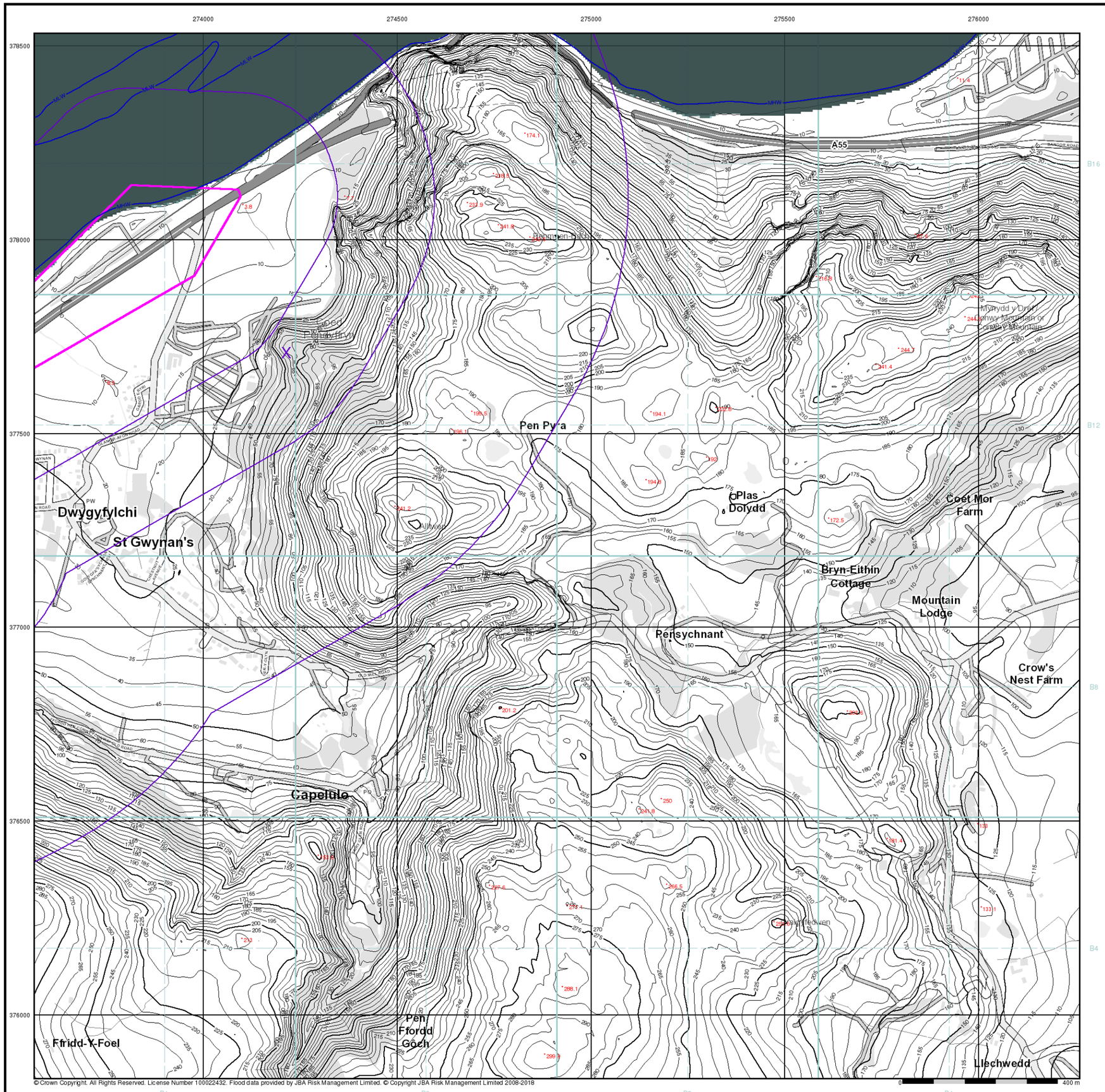
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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0 400 m

RAMBOLL

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Fluvial Depth	Coastal Depth
0.01m - 0.05m	0.01m - 0.05m
0.05m - 0.1m	0.05m - 0.1m
0.1m - 0.3m	0.1m - 0.3m
0.3m - 1m	0.3m - 1m
>1m	>1m

Contours (height in metres)

Standard Contour 105

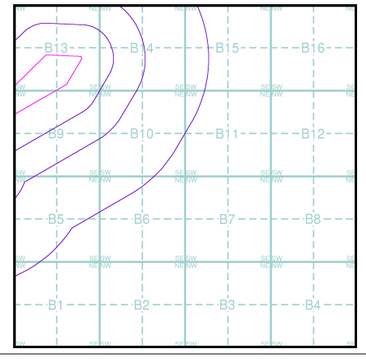
Master Contour 100 95

Spot Height 167.8

MLW Mean Low Water

MHW Mean High Water

JBA 100 Year Return Flood Map (Undefended) - Slice B



Order Details

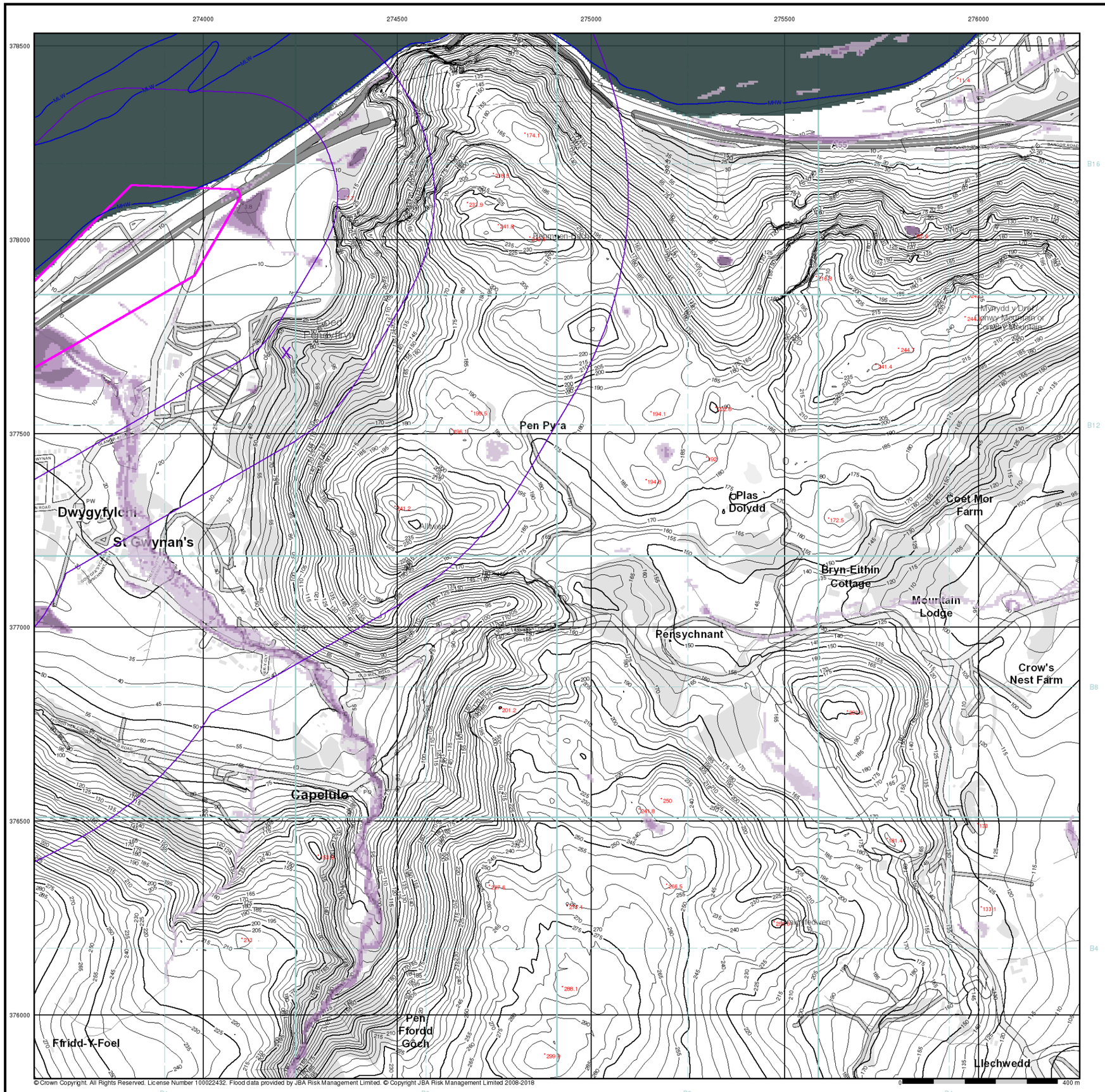
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

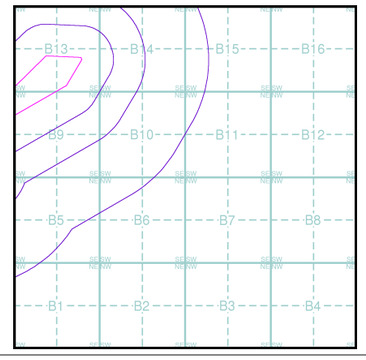
Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

Standard Contour
Master Contour
Spot Height 157.8

MLW Mean Low Water
MHW Mean High Water

JBA 200 Year Return Flood Map (Undefended) - Slice B



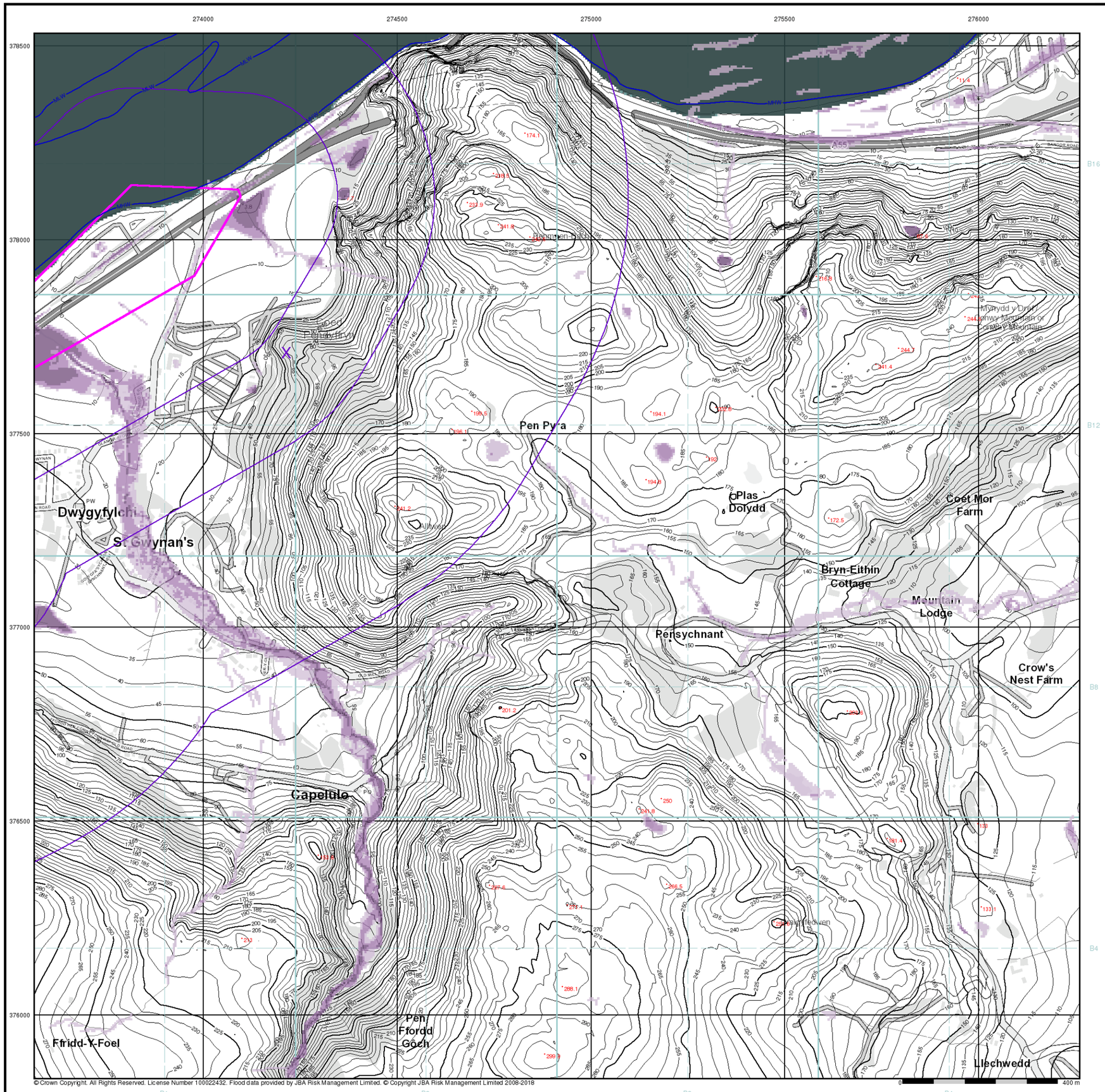
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

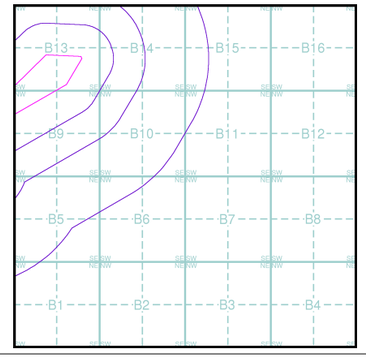
Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

Standard Contour
Master Contour
Spot Height 157.8

MLW Mean Low Water
MHW Mean High Water

JBA 1000 Year Return Flood Map (Undefended) - Slice B



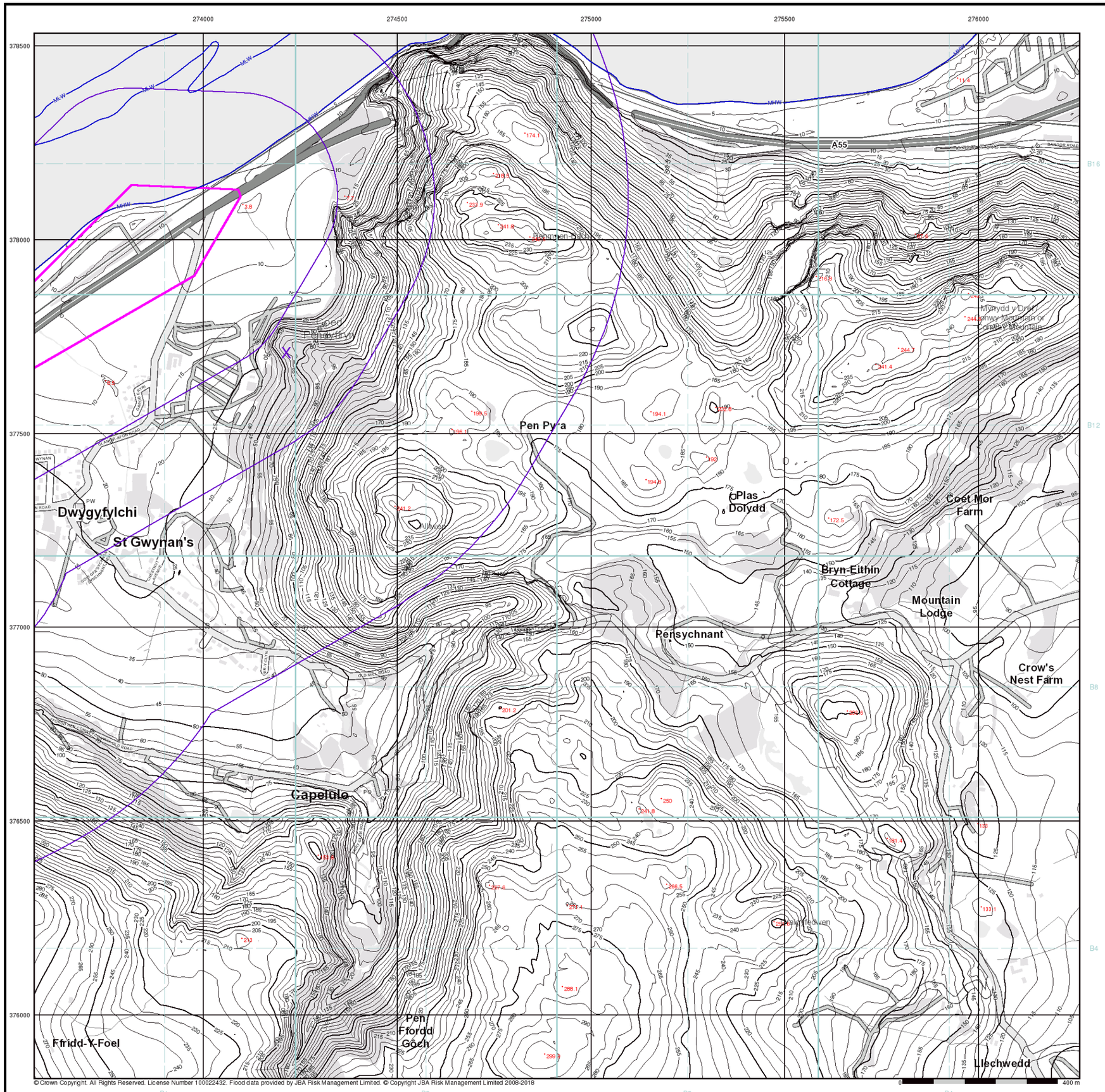
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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JBA Canal Failure Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

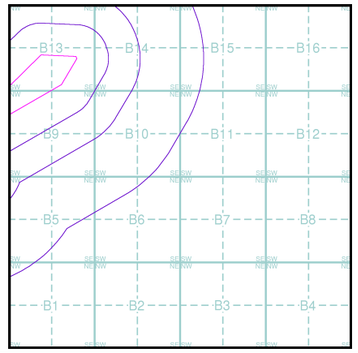
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA Canal Failure Flood Map - Slice B



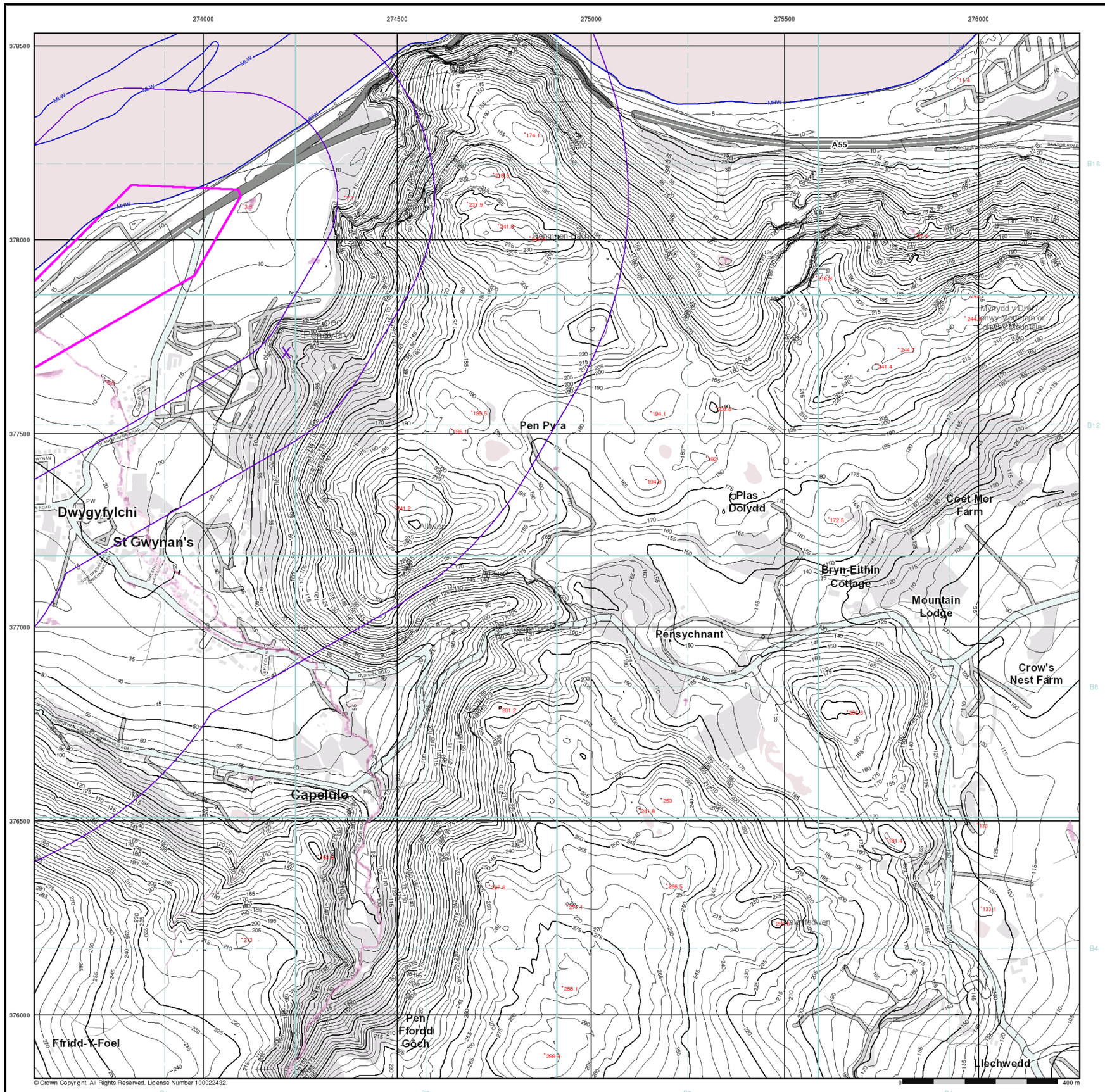
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

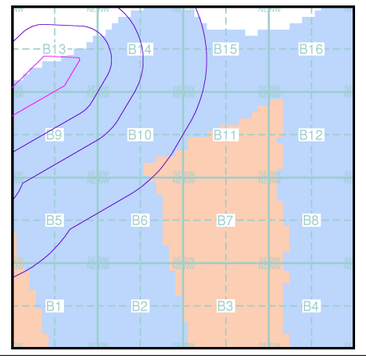
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



Order Details

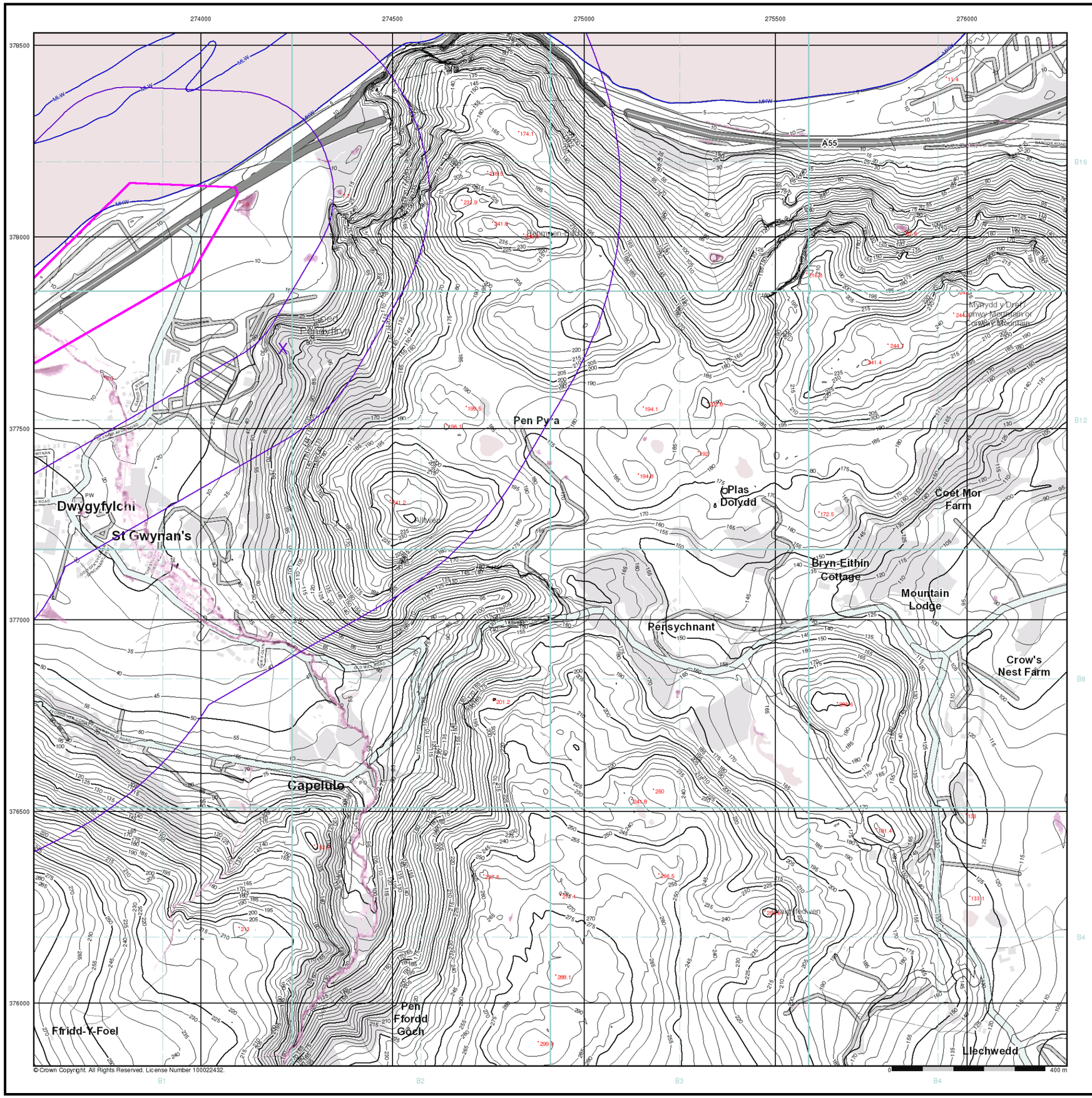
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

EA/NRW Surface Water 100 Year Return Depth Map

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

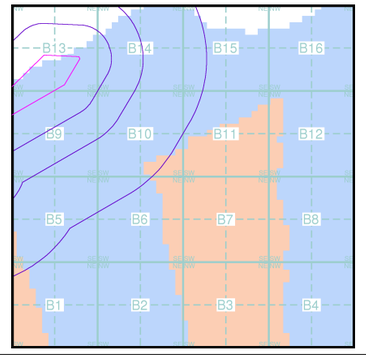
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



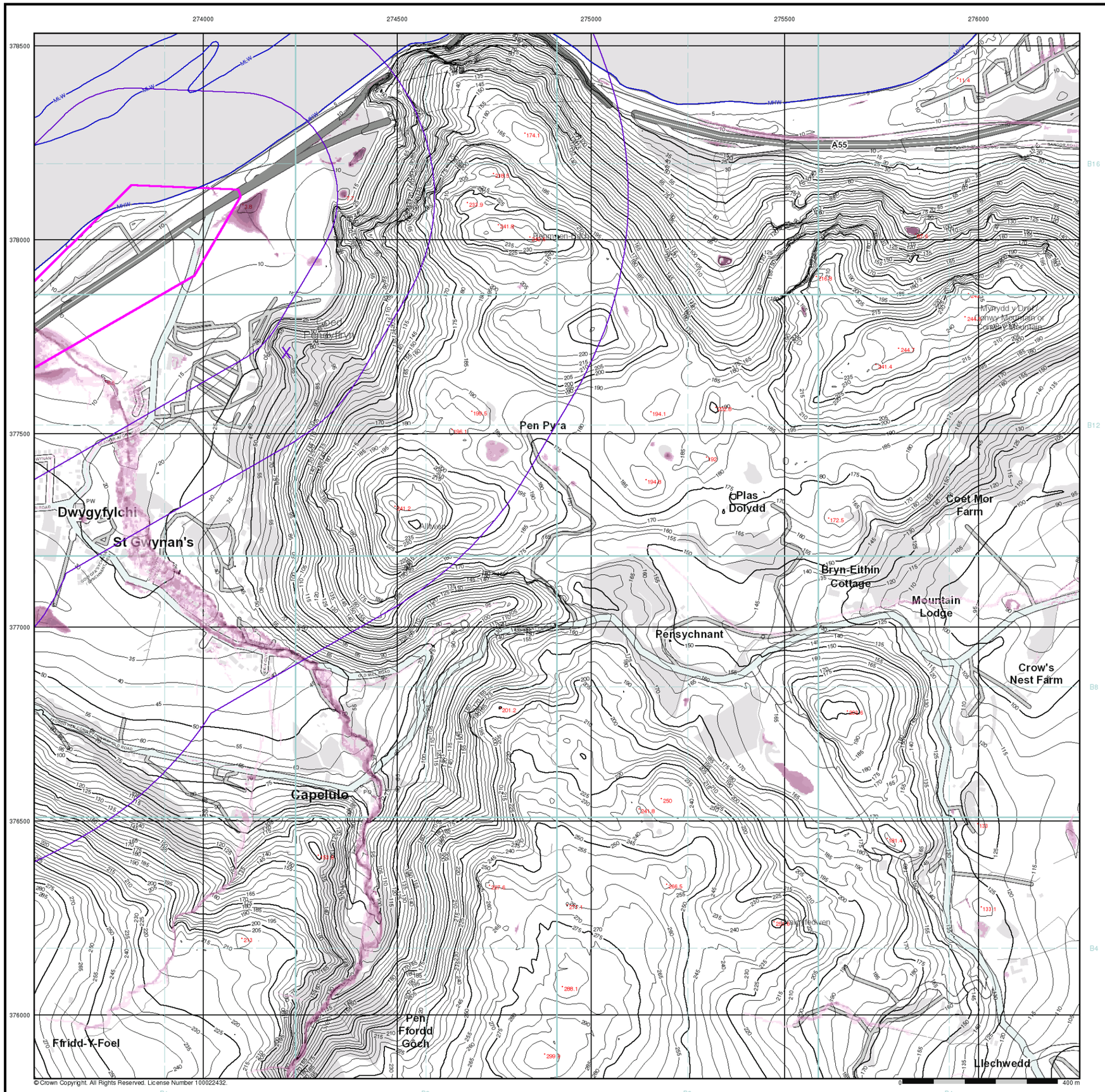
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

EA/NRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

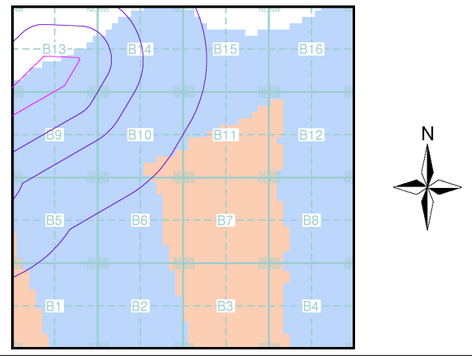
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



Order Details

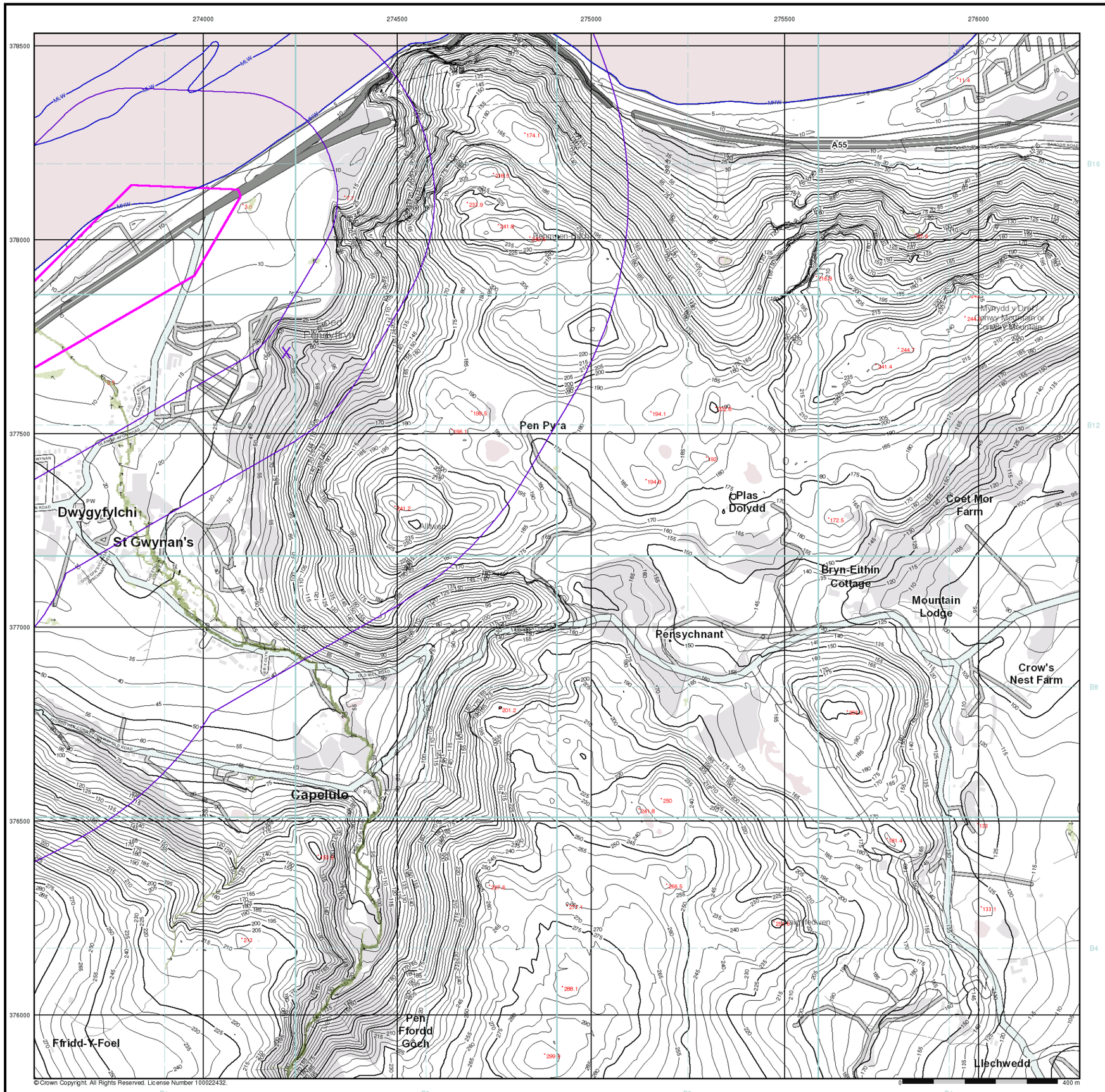
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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RAMBOLL

EA/NRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour | Master Contour | Spot Height (167.8)

MLW Mean Low Water

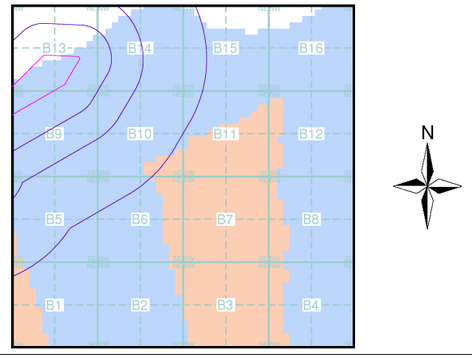
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



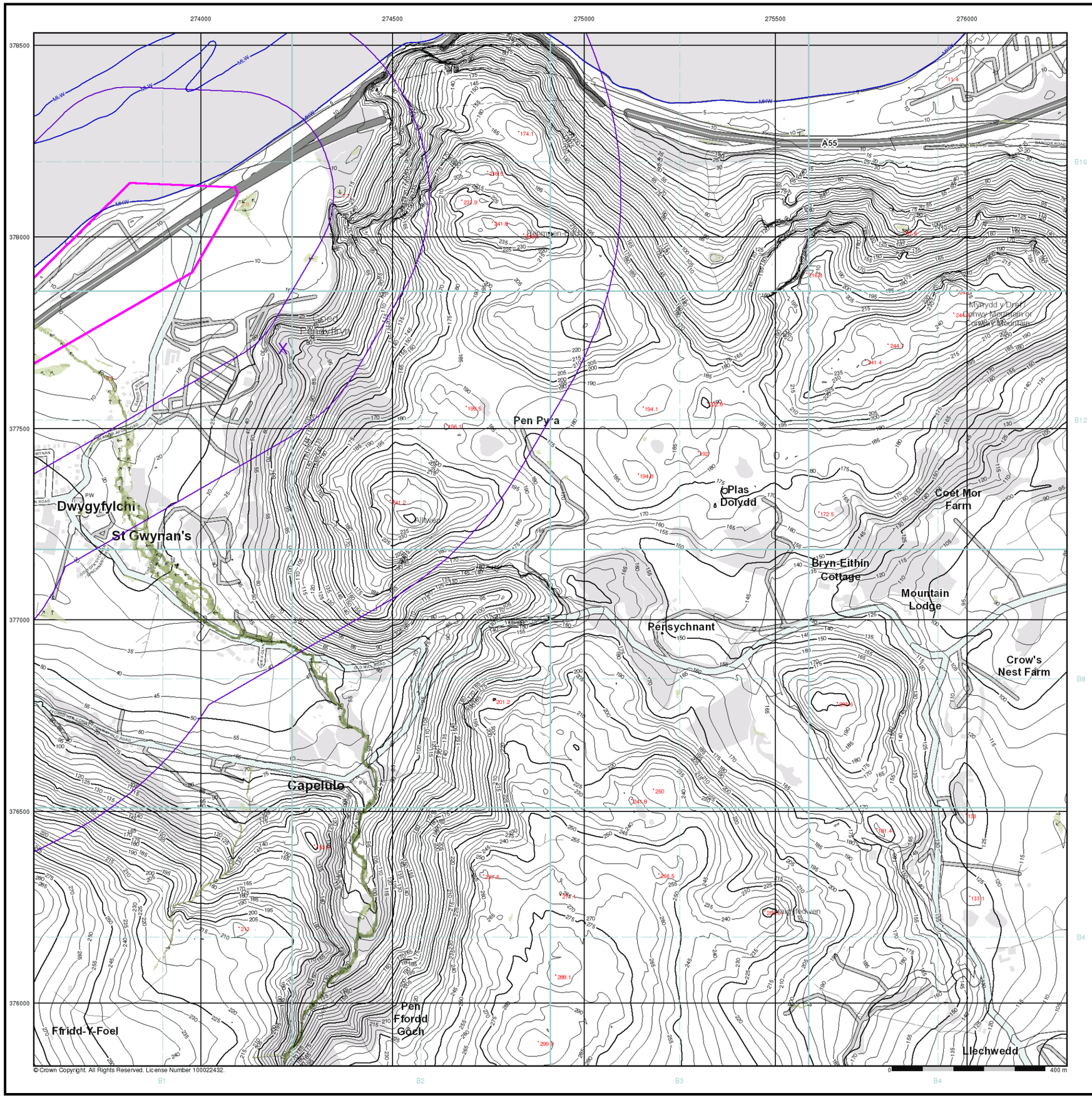
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

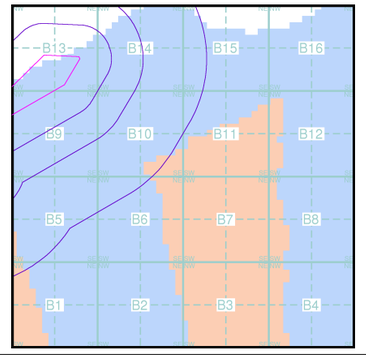
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



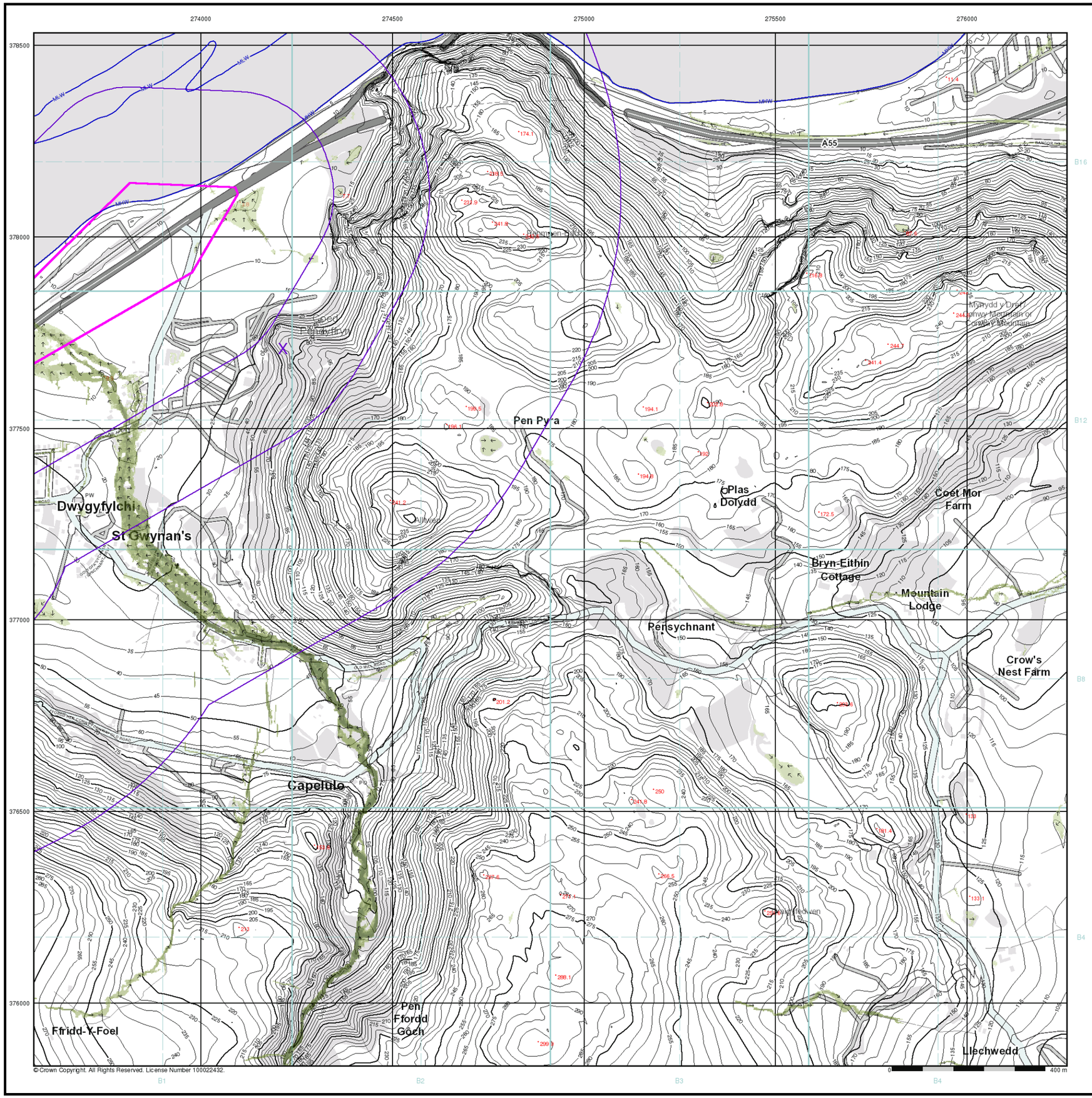
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
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EA/NRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

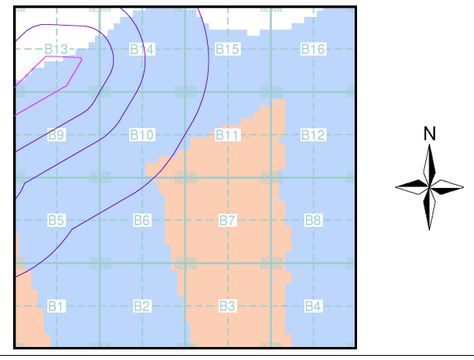
MHW Mean High Water

Suitability

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- National to county
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- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



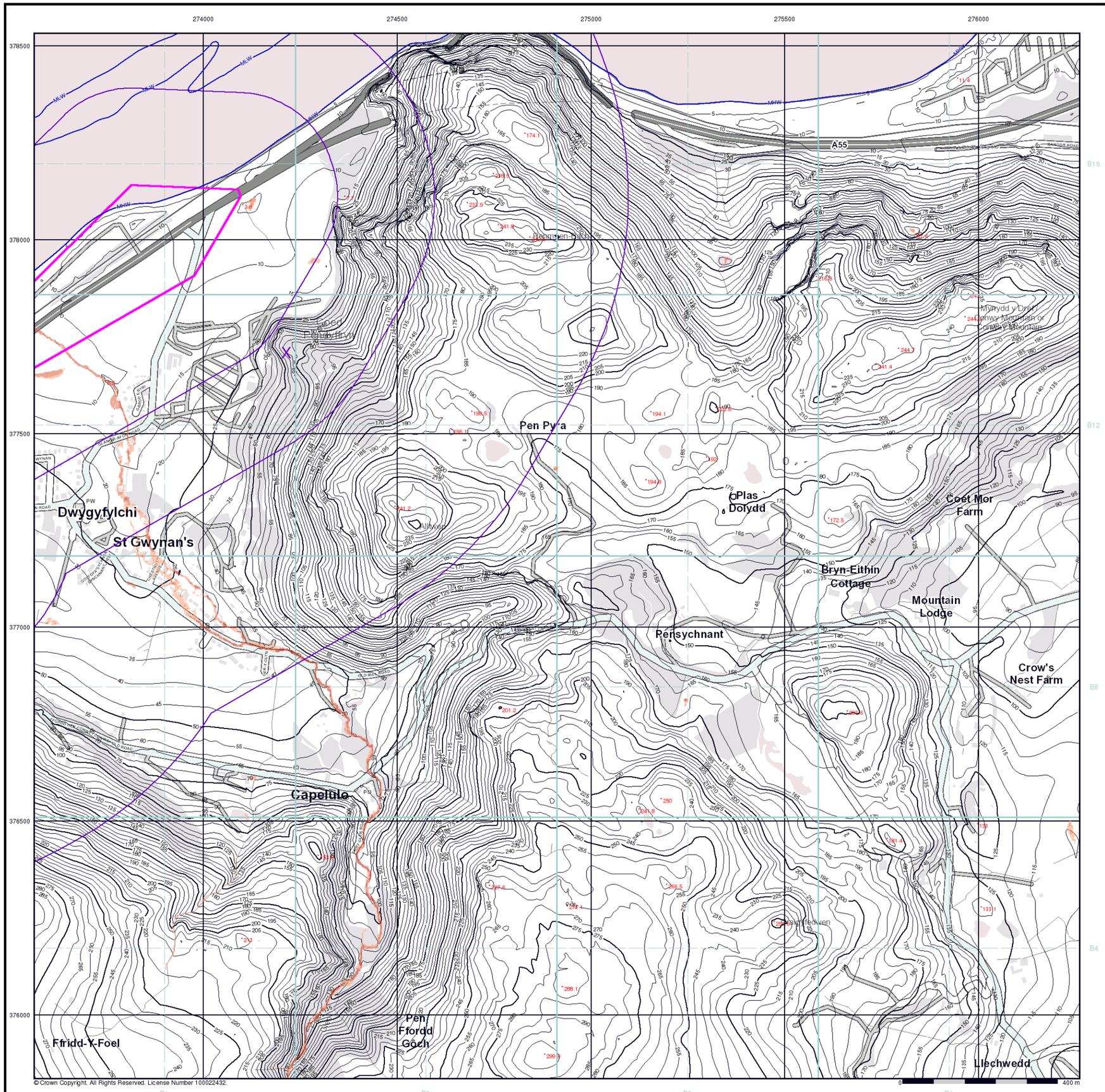
Order Details

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EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

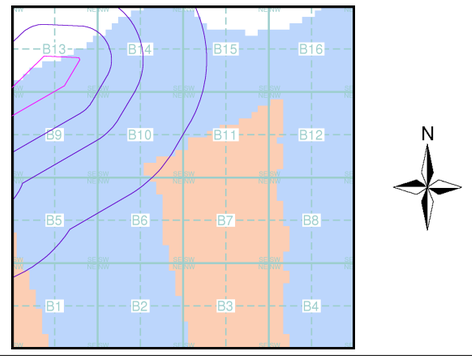
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



Order Details

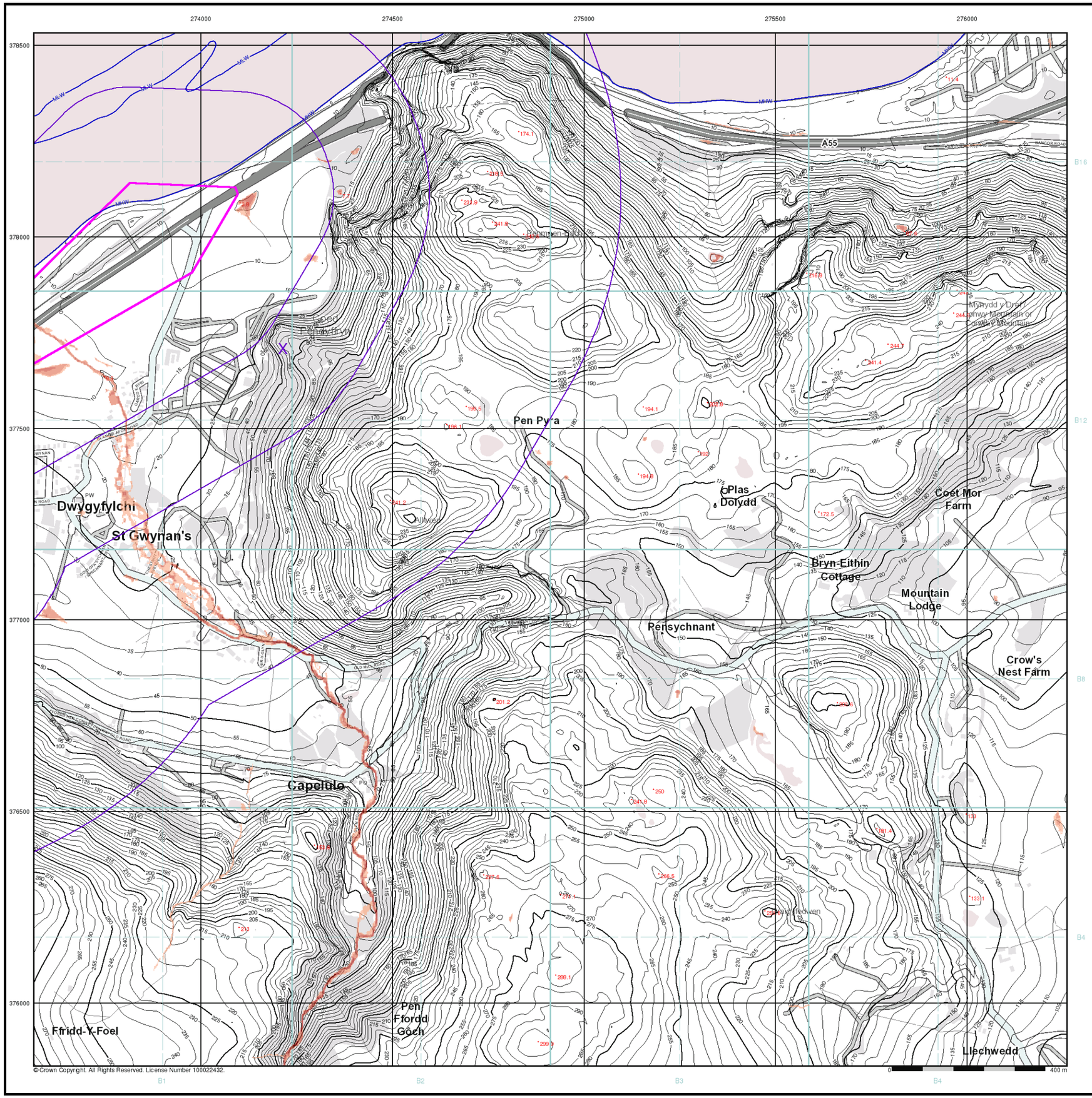
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
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EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

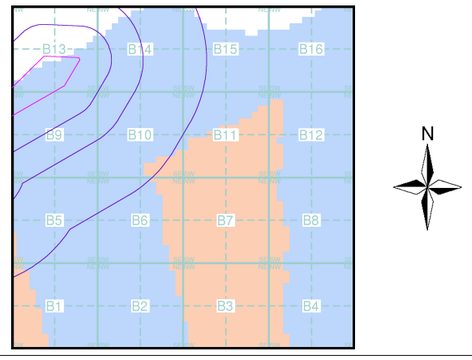
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



Order Details

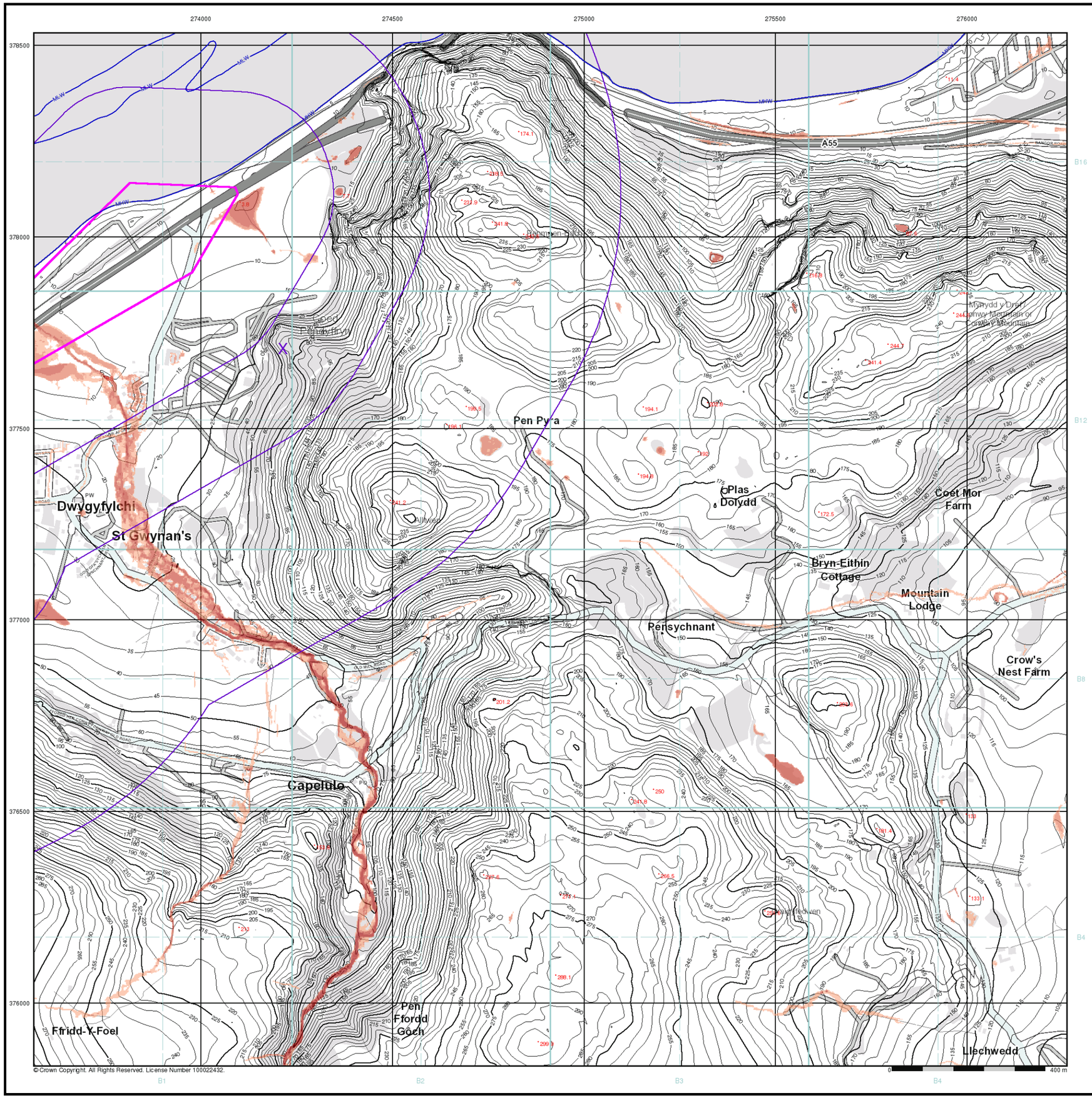
Order Number:	175417398_1_1
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EA/NRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

General

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Surface Water Hazard Rating

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- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

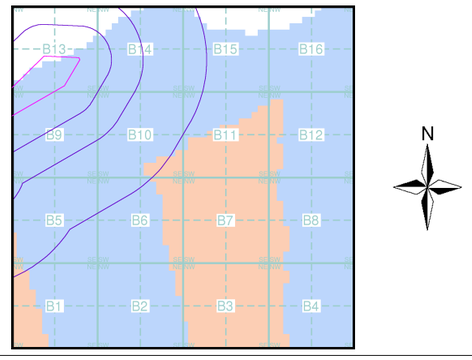
MHW Mean High Water

Suitability

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EA/NRW Suitability Map - Slice B



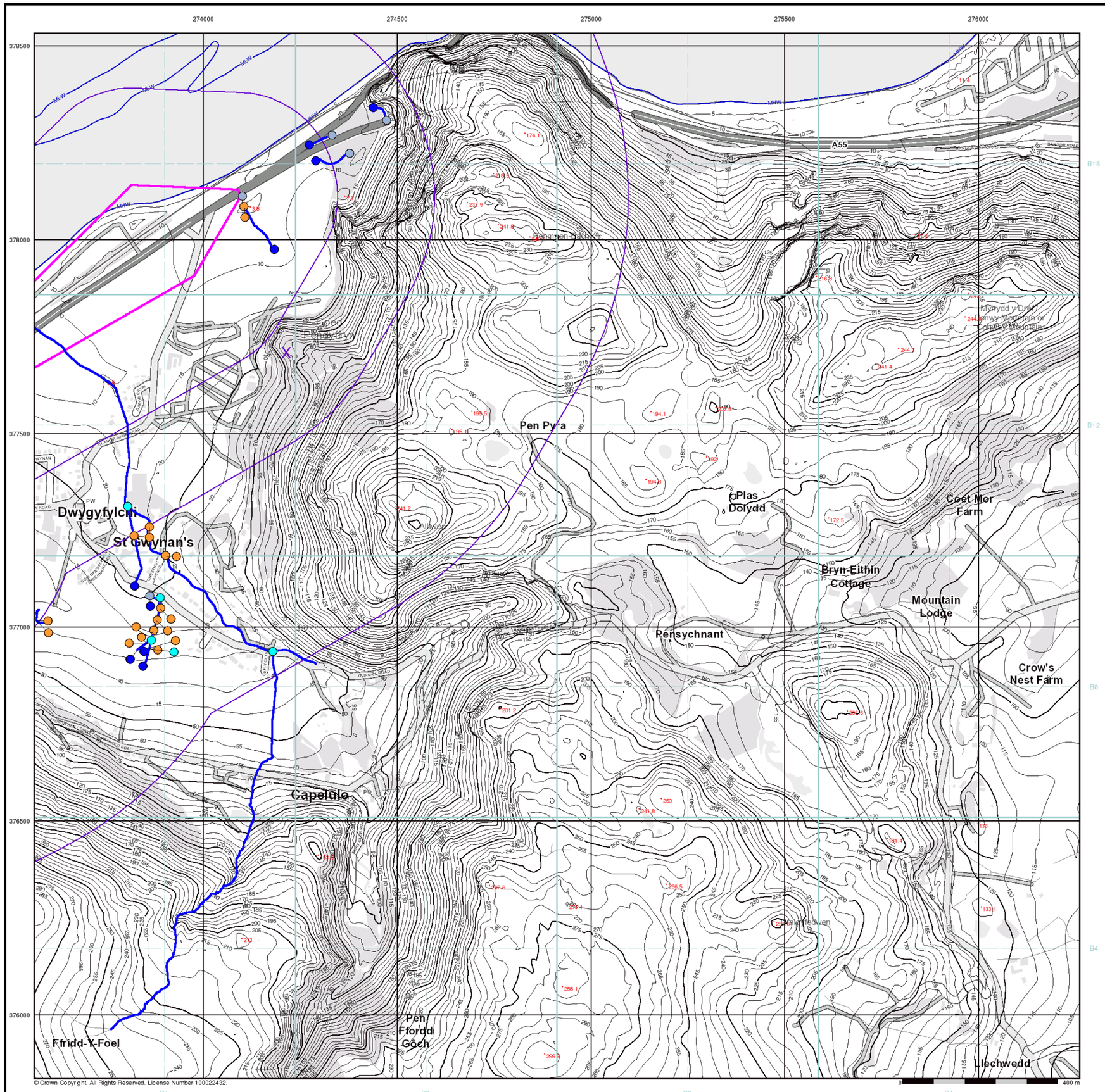
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OS Water Network Lines Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea
- Junction
- Outlet
- Pseudo
- Source
- Other

Contours (height in meters)

Standard Contour 105

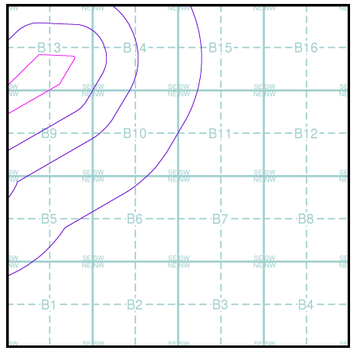
Master Contour 100 95

Spot Height 167.3

MLW Mean Low Water

MHW Mean High Water

OS Water Network Map - Slice B



Order Details

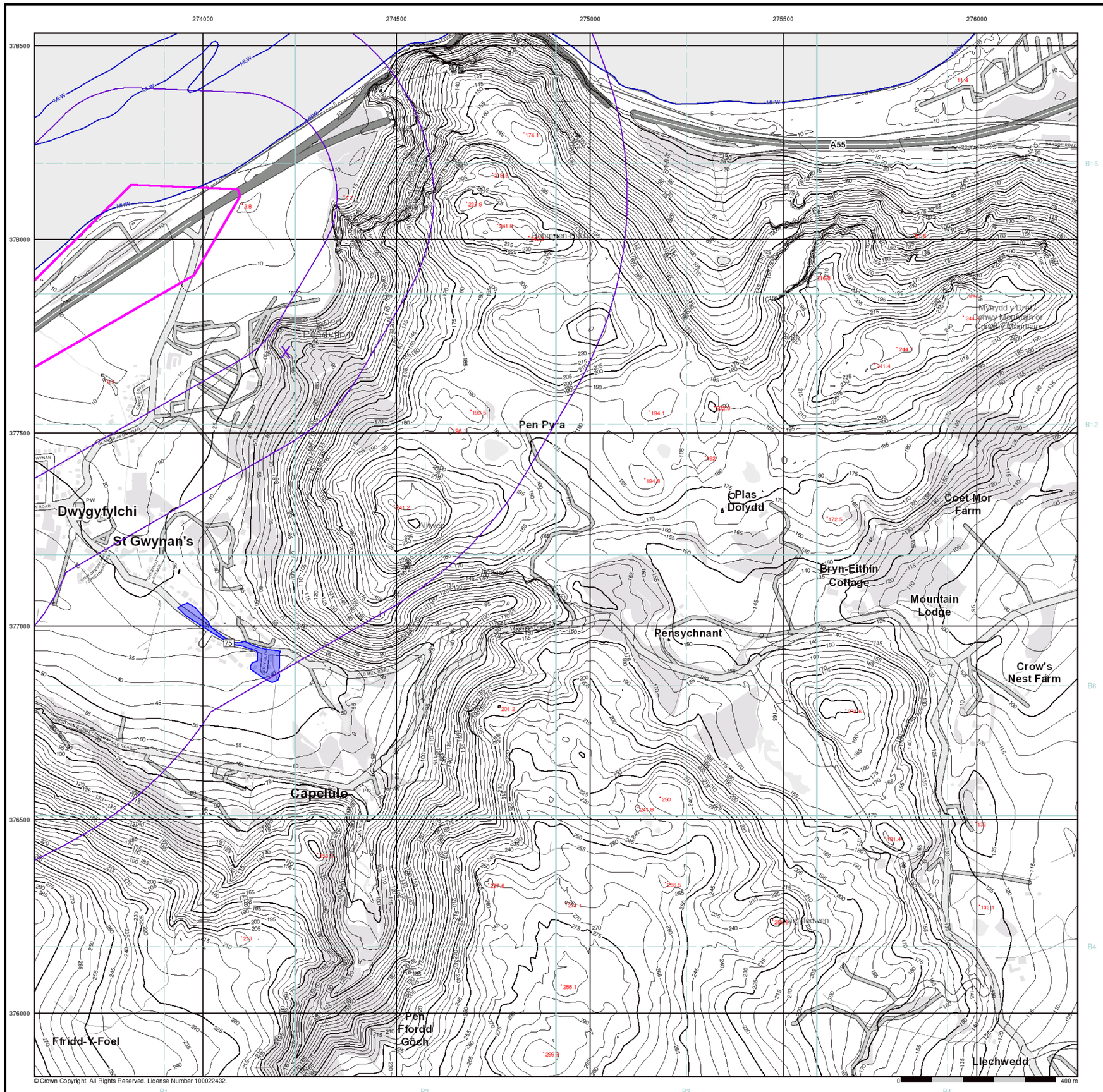
Order Number:	175417398_1_1
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EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

Historic Flood Events Data

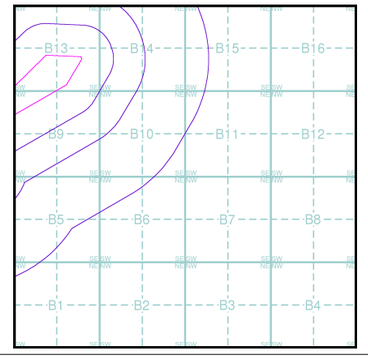
- Channel Capacity Exceeded (no raised defences)
- Channel Capacity Exceeded /Surface Water
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Historical Flood Liabilities
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Surface Water
- Unknown

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height 167.8

- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Historic Flood Map - Slice B



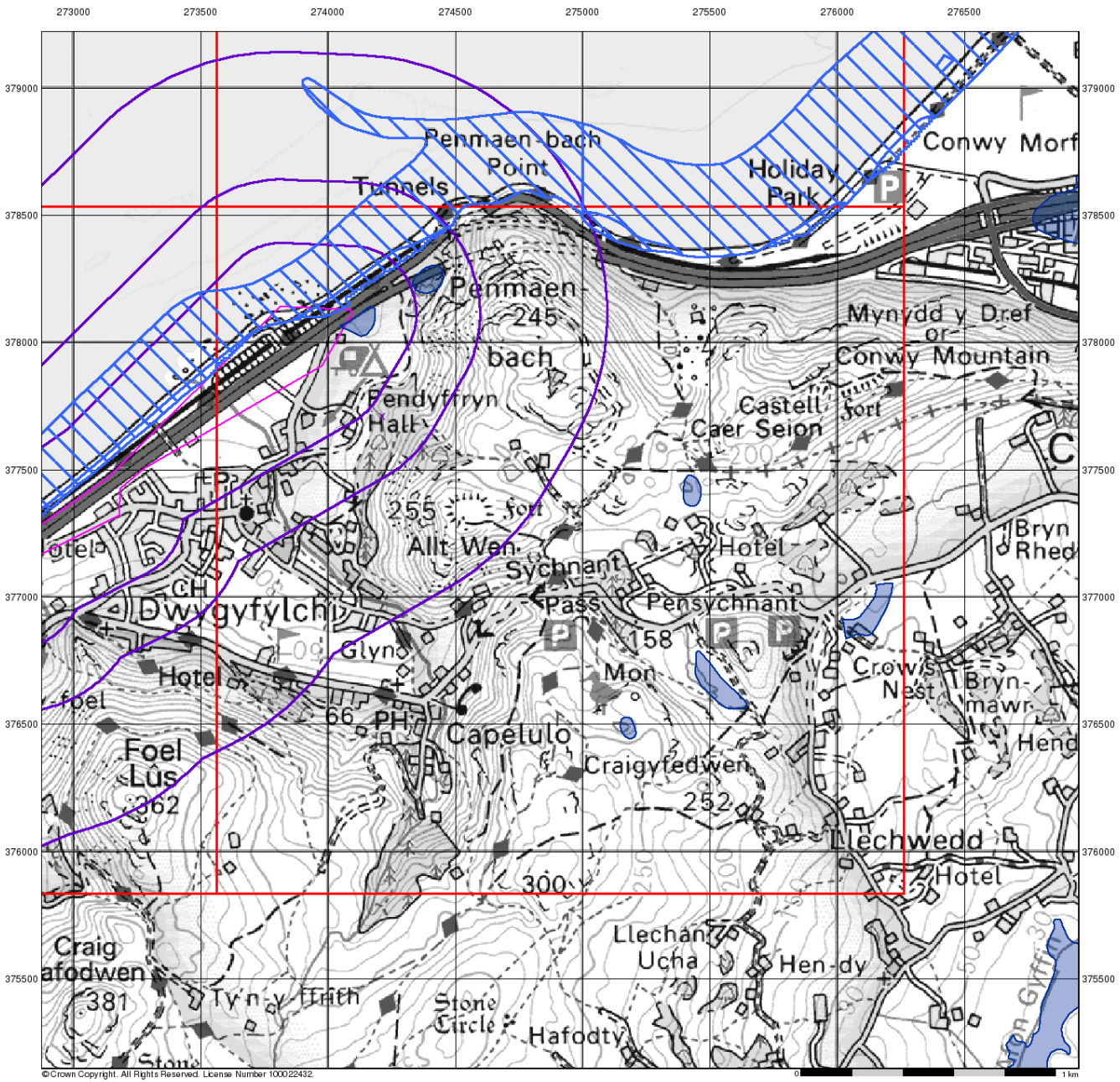
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
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BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

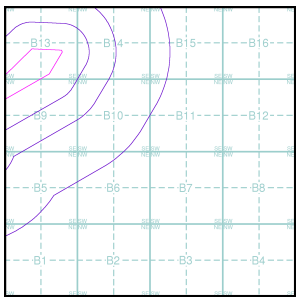
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice B



Order Details

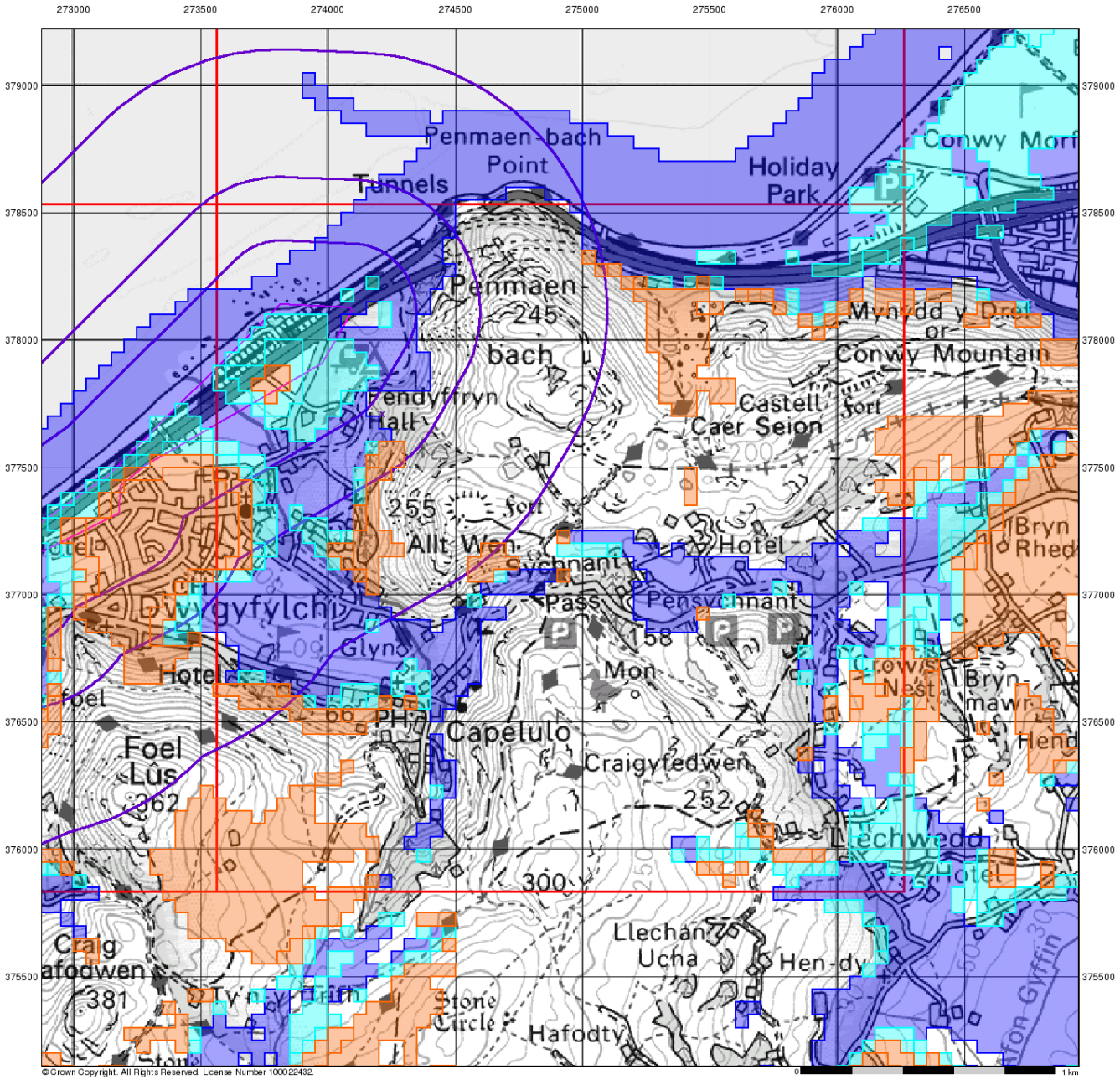
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

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BGS Flood Data (1:50,000)

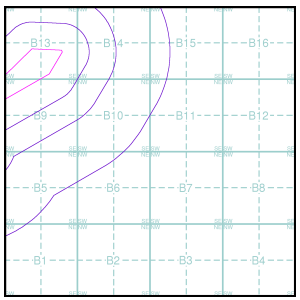
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

BGS Groundwater Flooding Susceptibility

- Potential for Groundwater Flooding to Occur at Surface
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice B

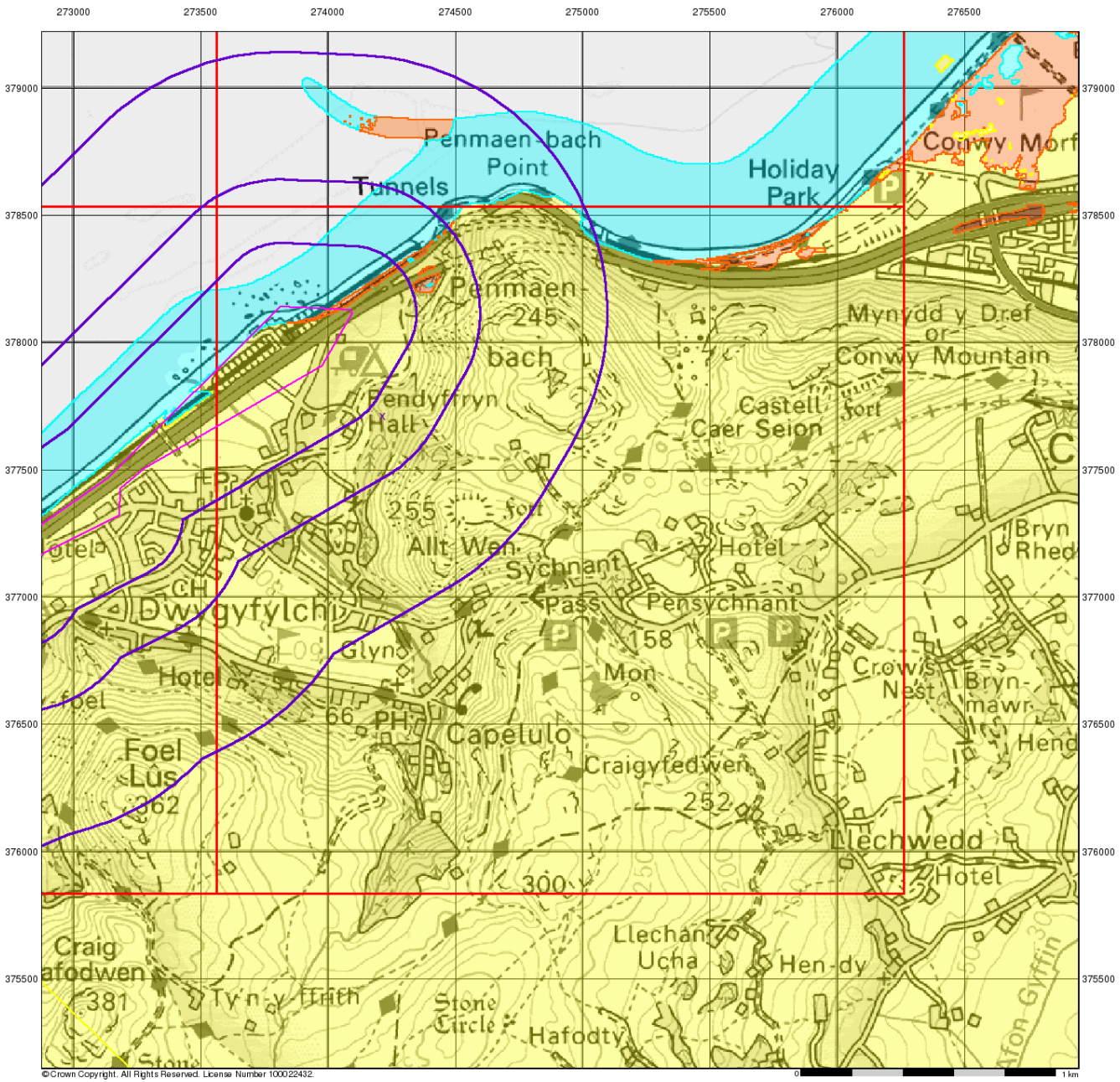


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Slice:	B
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Site Details

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RAMBOLL

GeoSmart Information Groundwater Flood Map (1:50,000)

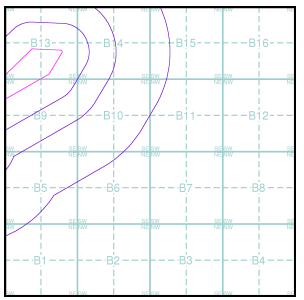
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

GeoSmart Information Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice B



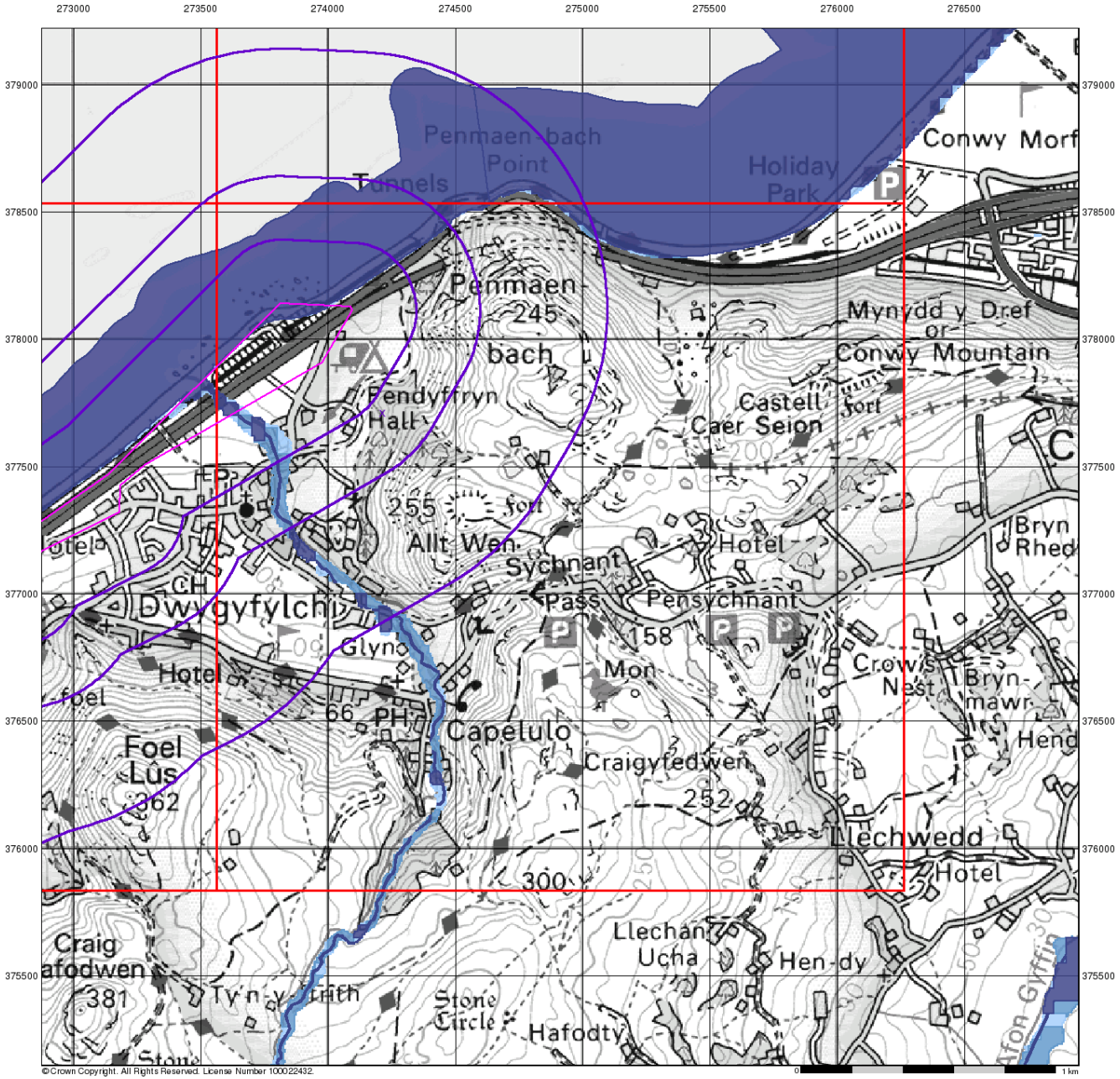
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EA/NRW RoFRS Data (1:50,000)

General

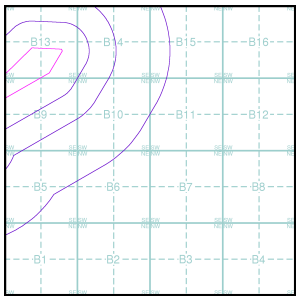
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice B



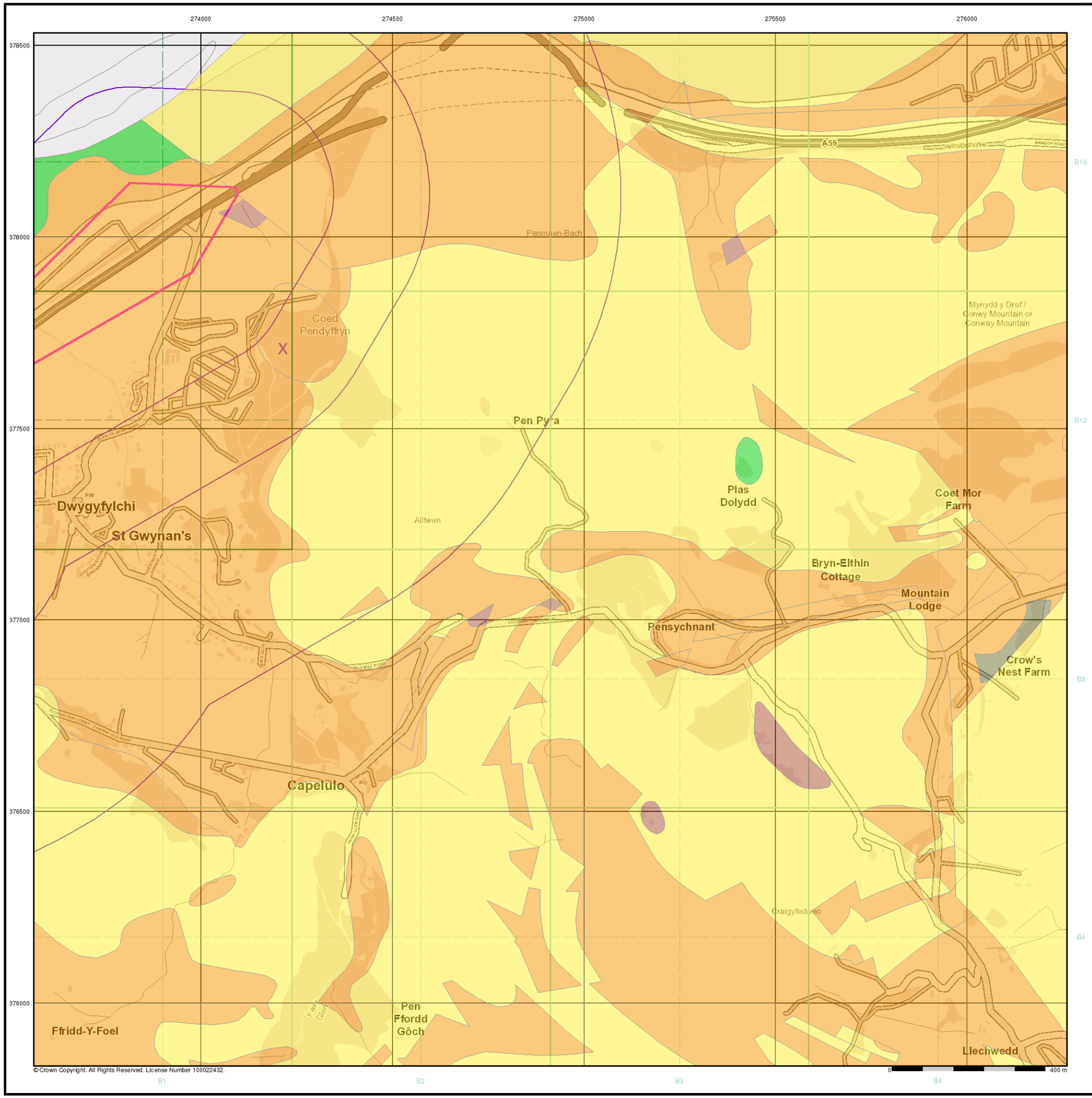
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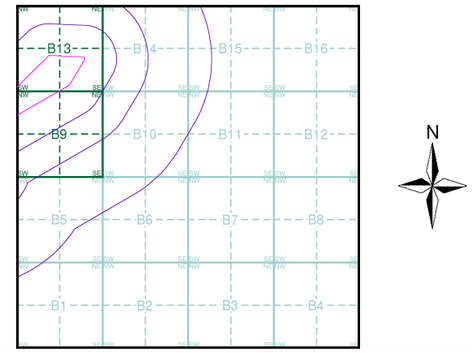
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice B



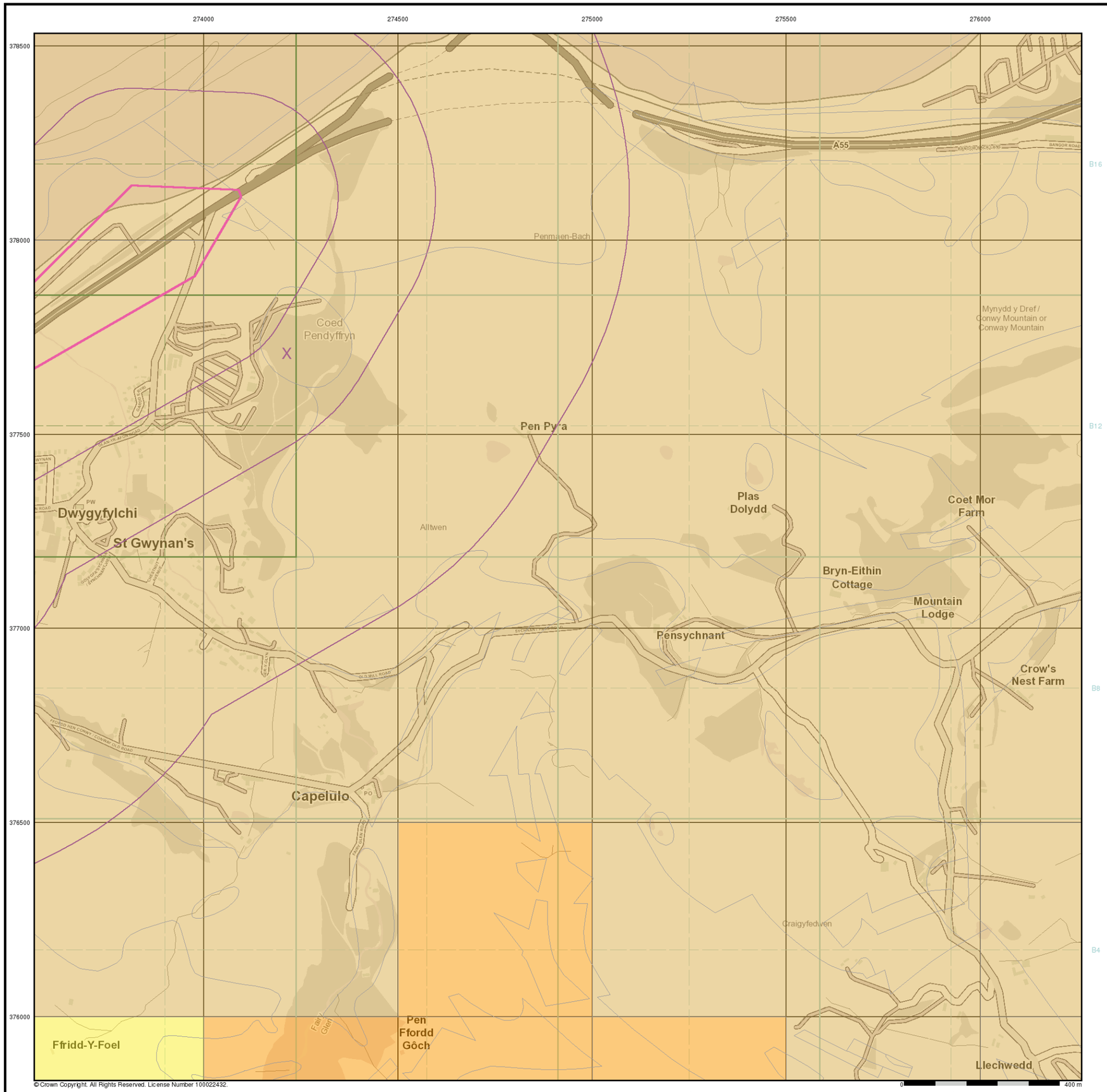
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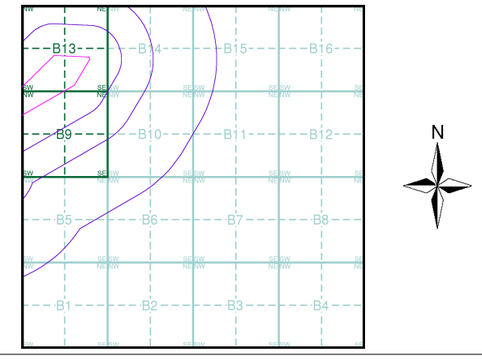
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice B



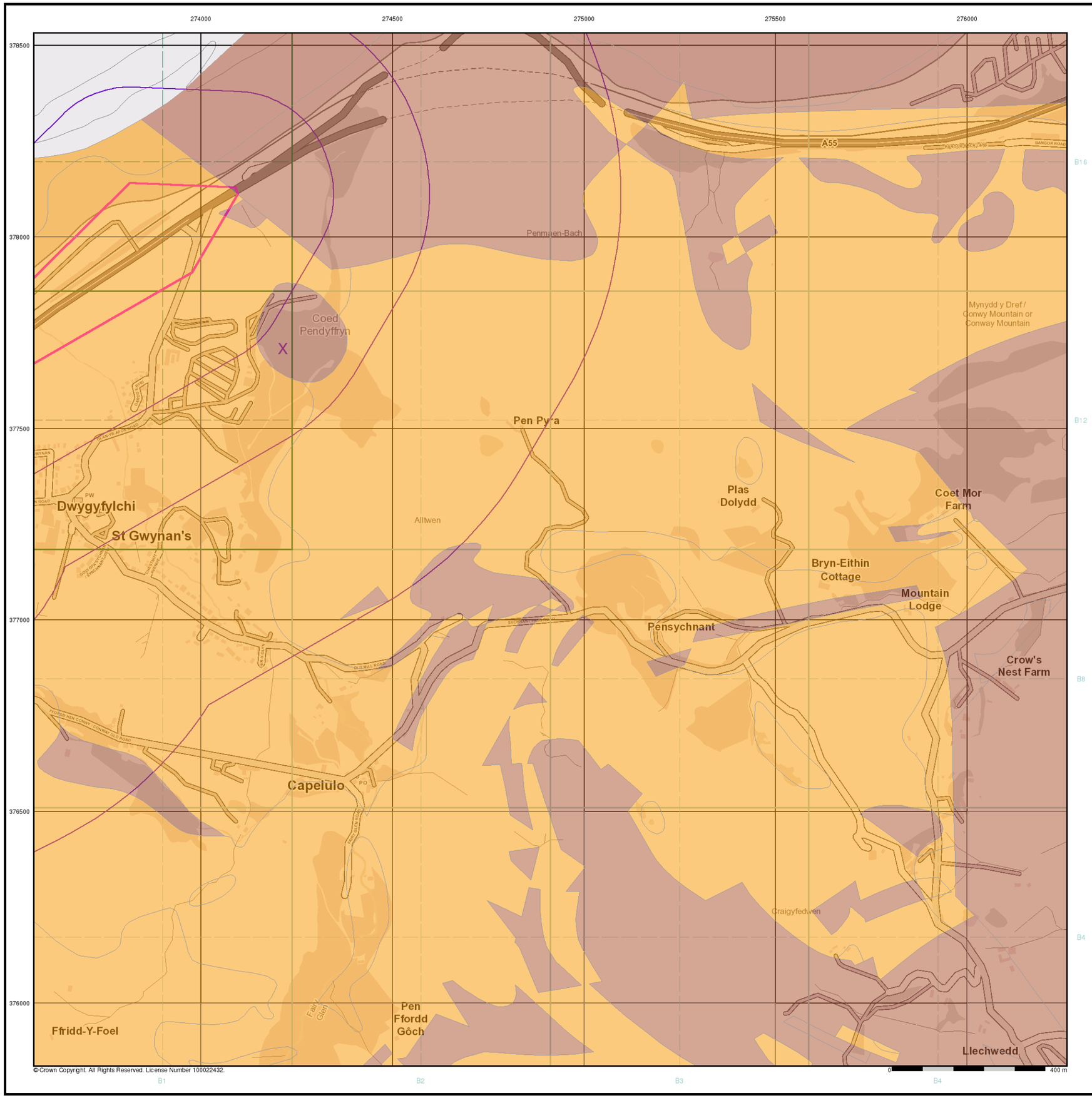
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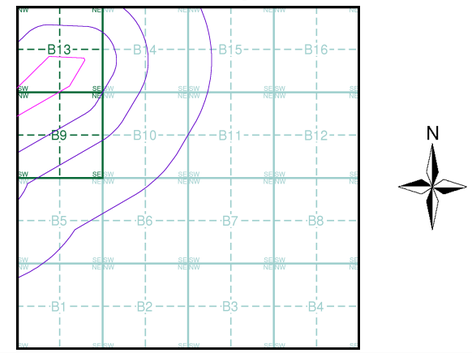
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice B



Order Details

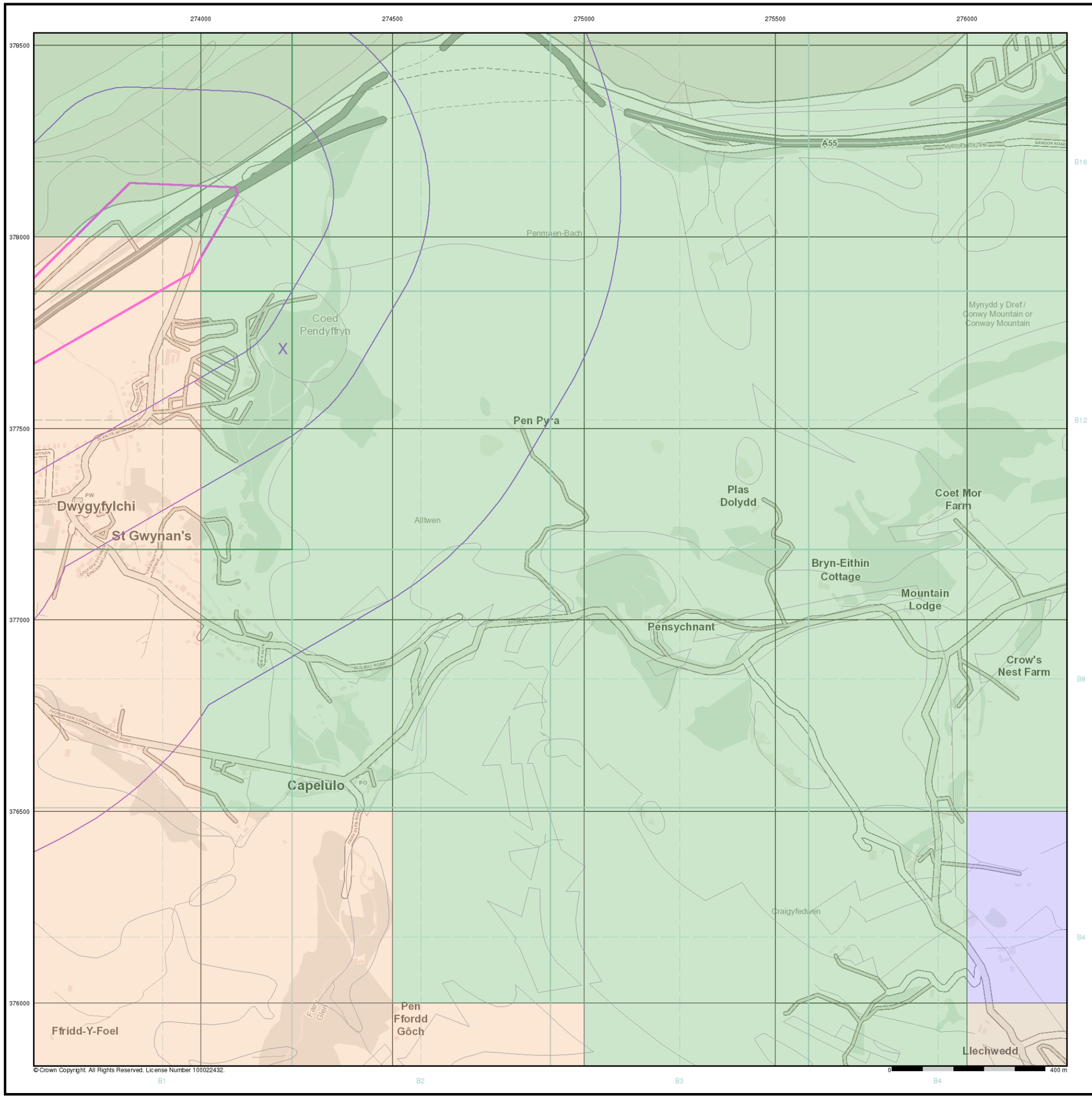
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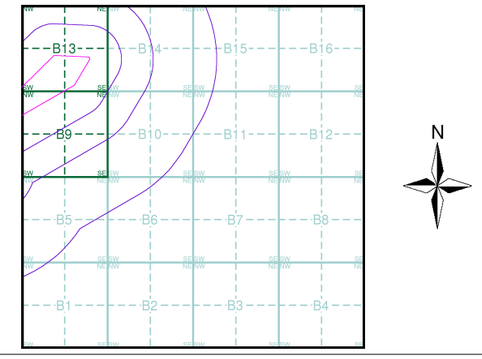
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice B



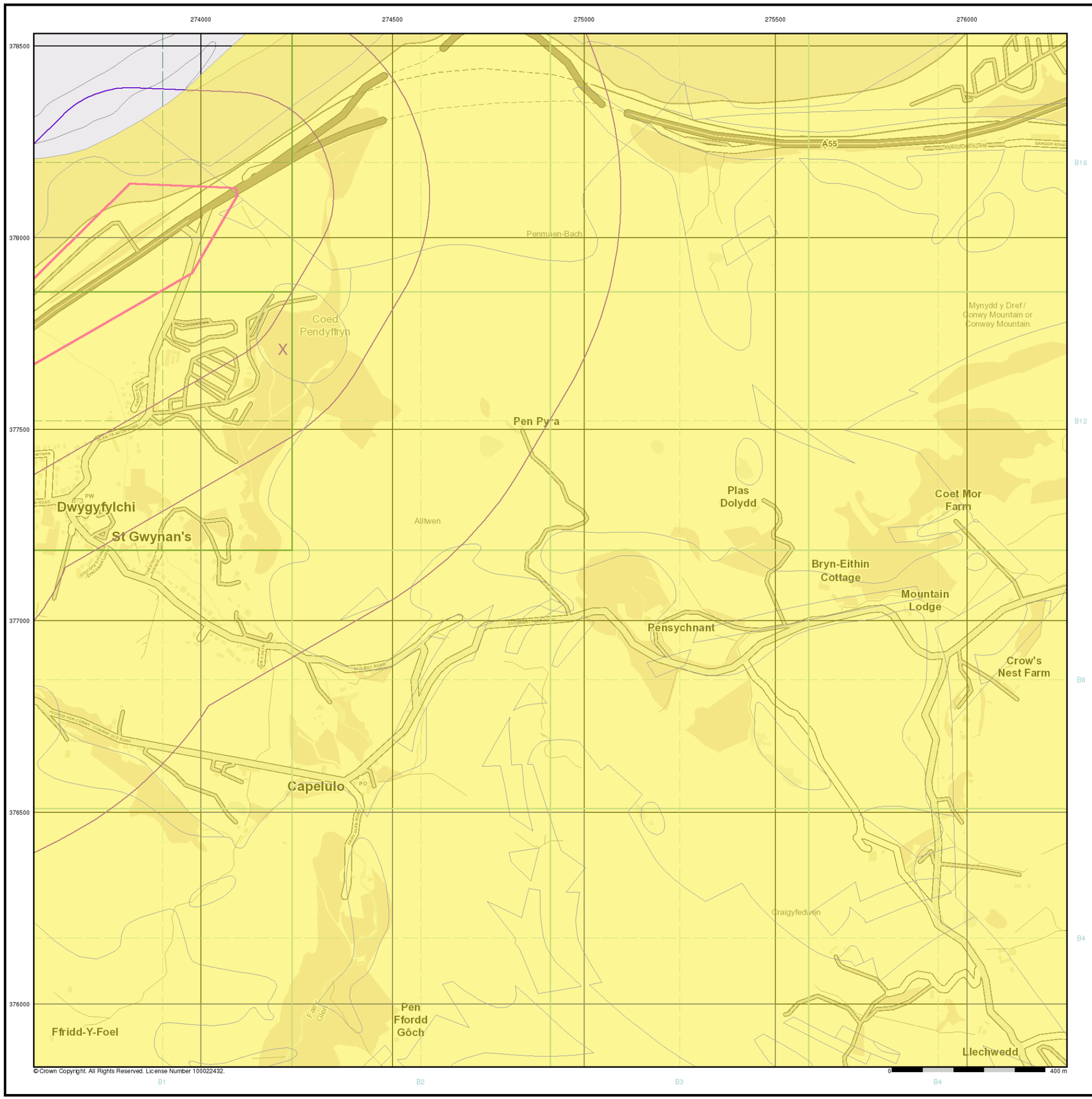
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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General

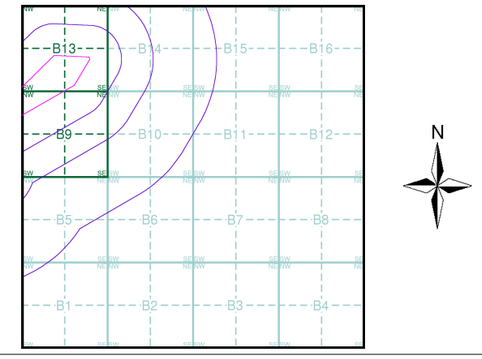
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice B



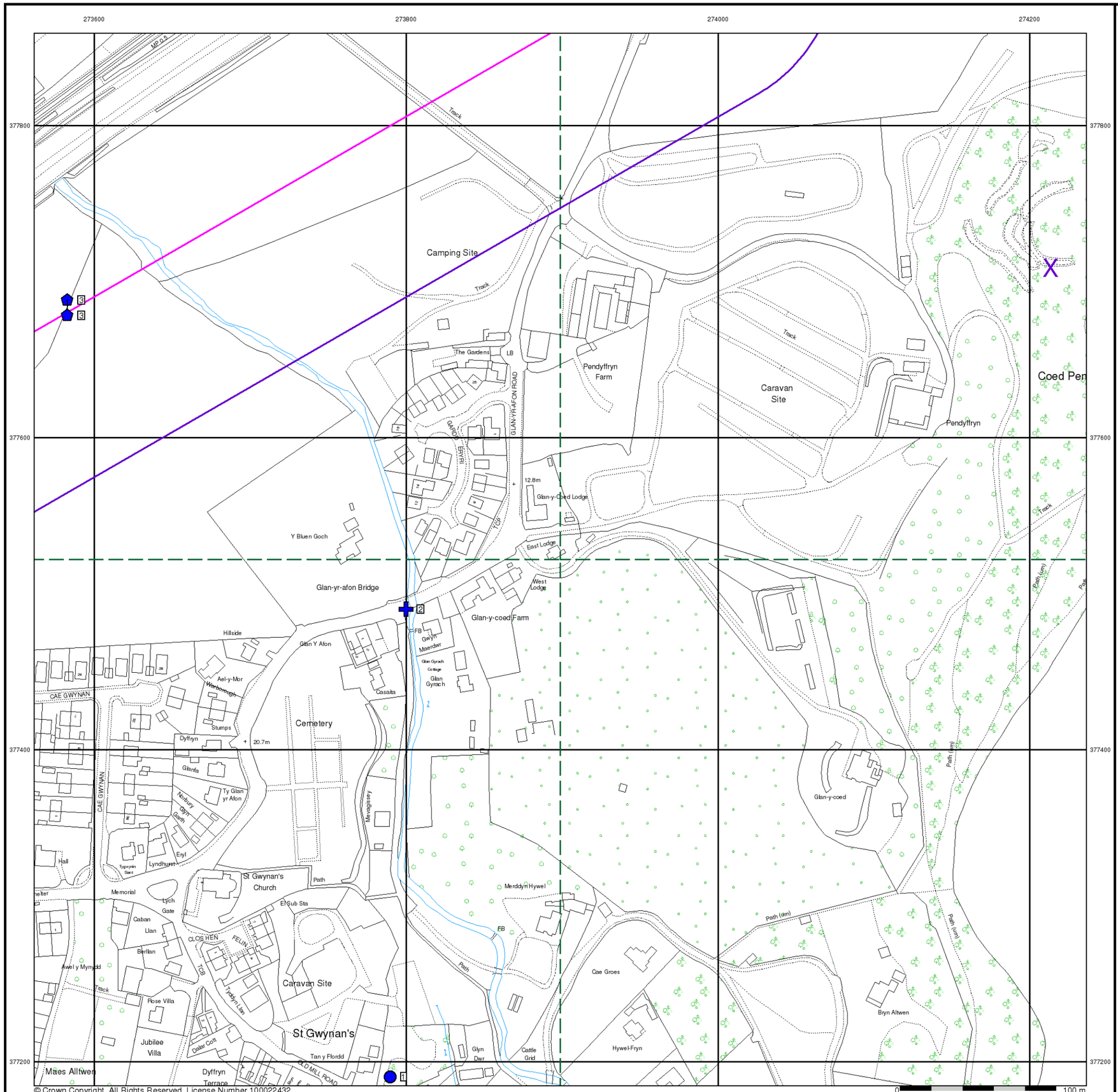
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

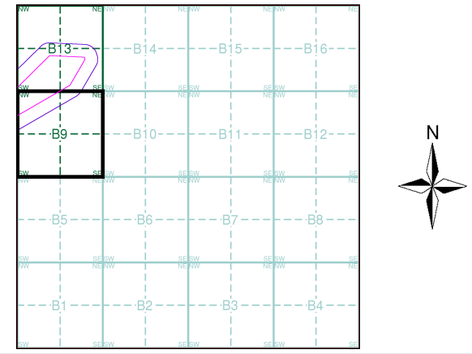
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment B9



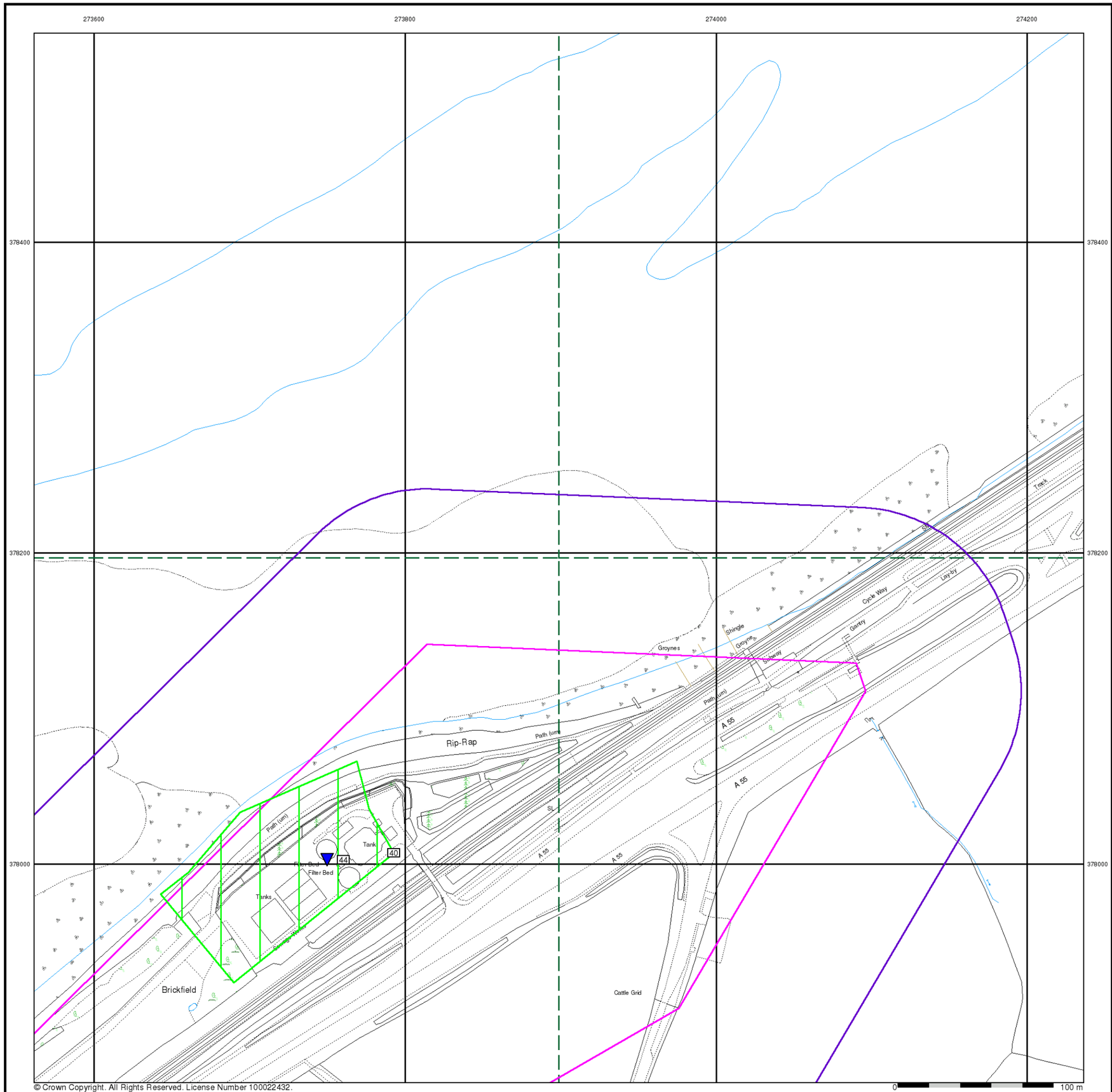
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

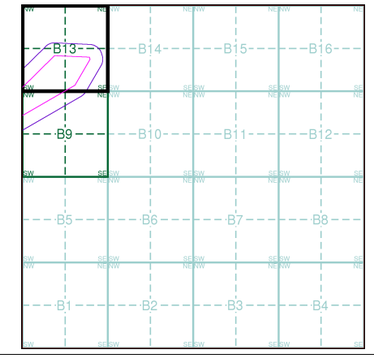
Geological

- BGS Recorded Mineral Site

Waste

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- Potentially Infilled Land (Water)
- Registered Landfill Site
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- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment B13



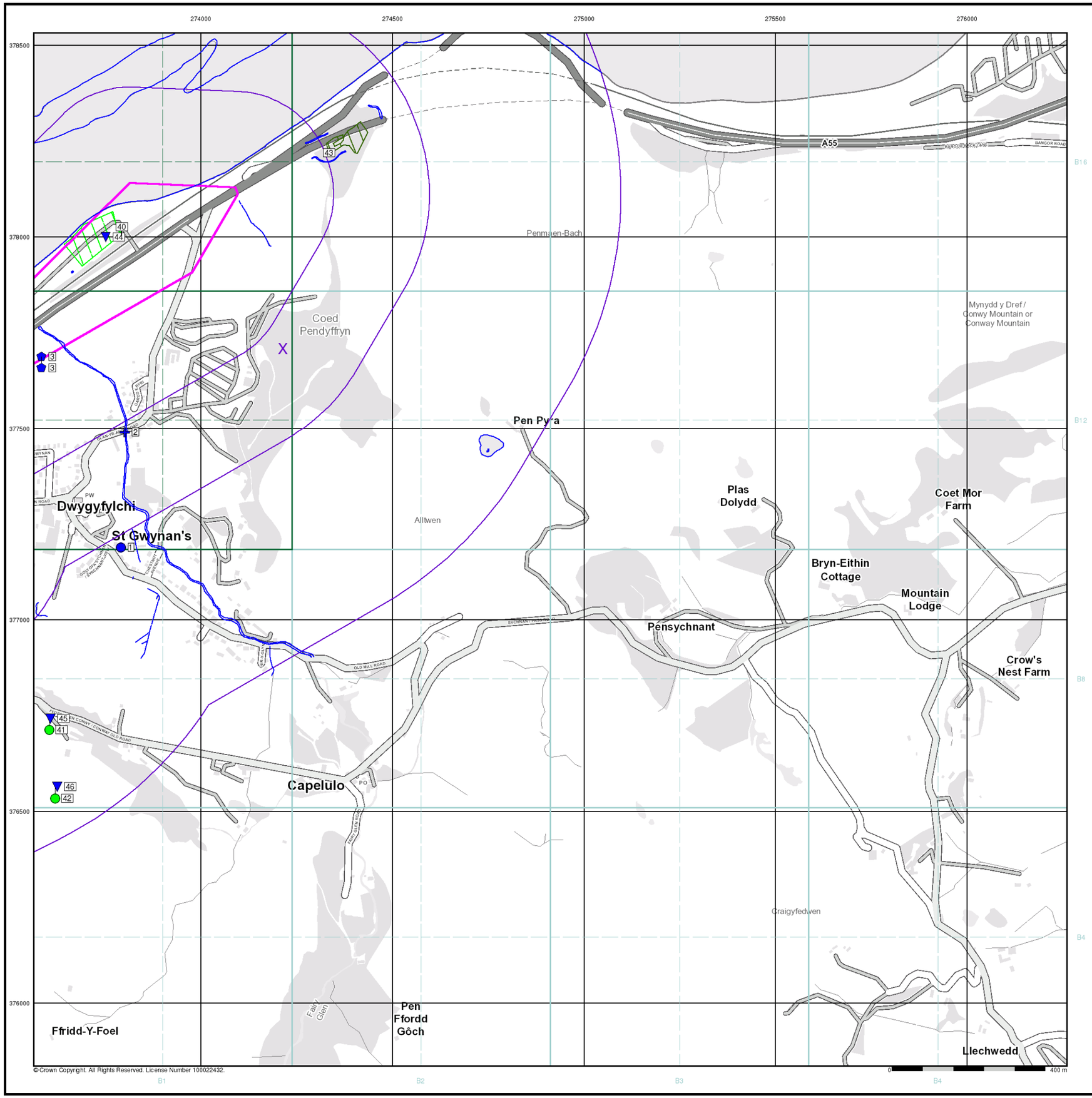
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Plot Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
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- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Hazardous Substances

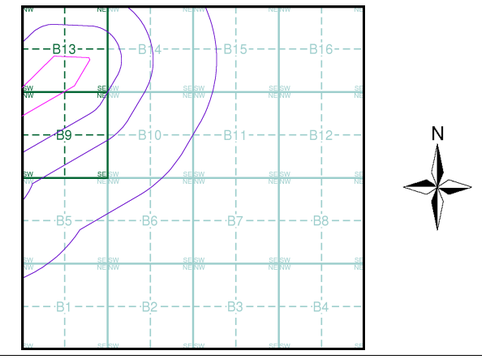
COMAH Site | Explosive Site

- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Recorded Mineral Site

Site Sensitivity Map - Slice B



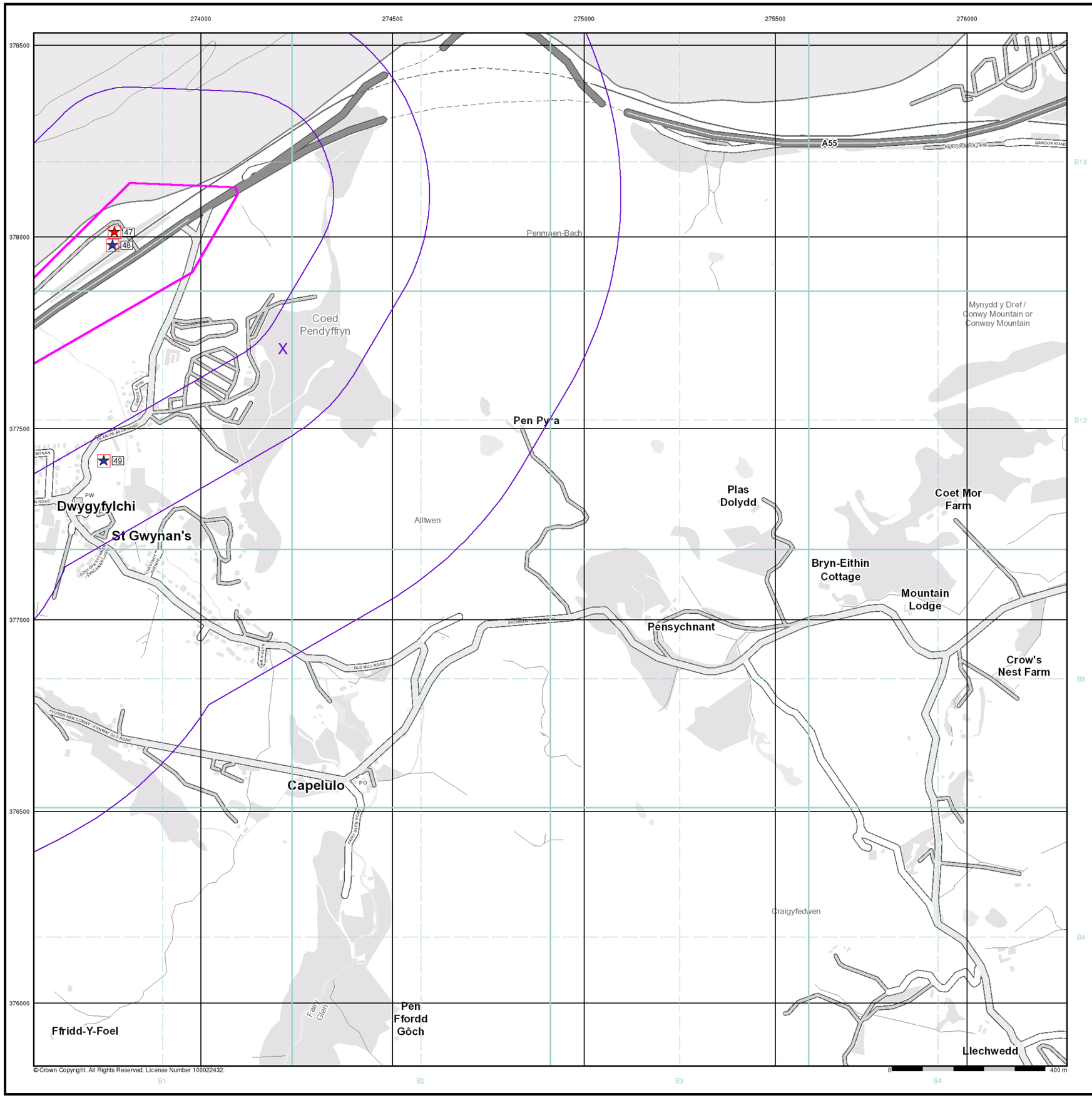
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Industrial Land Use Map

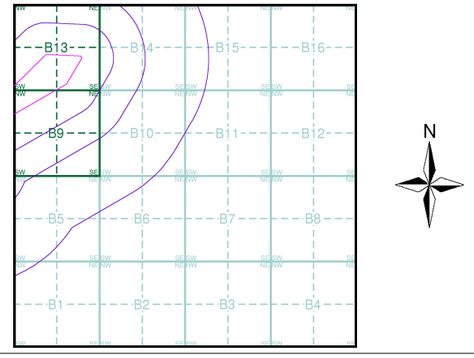
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice B



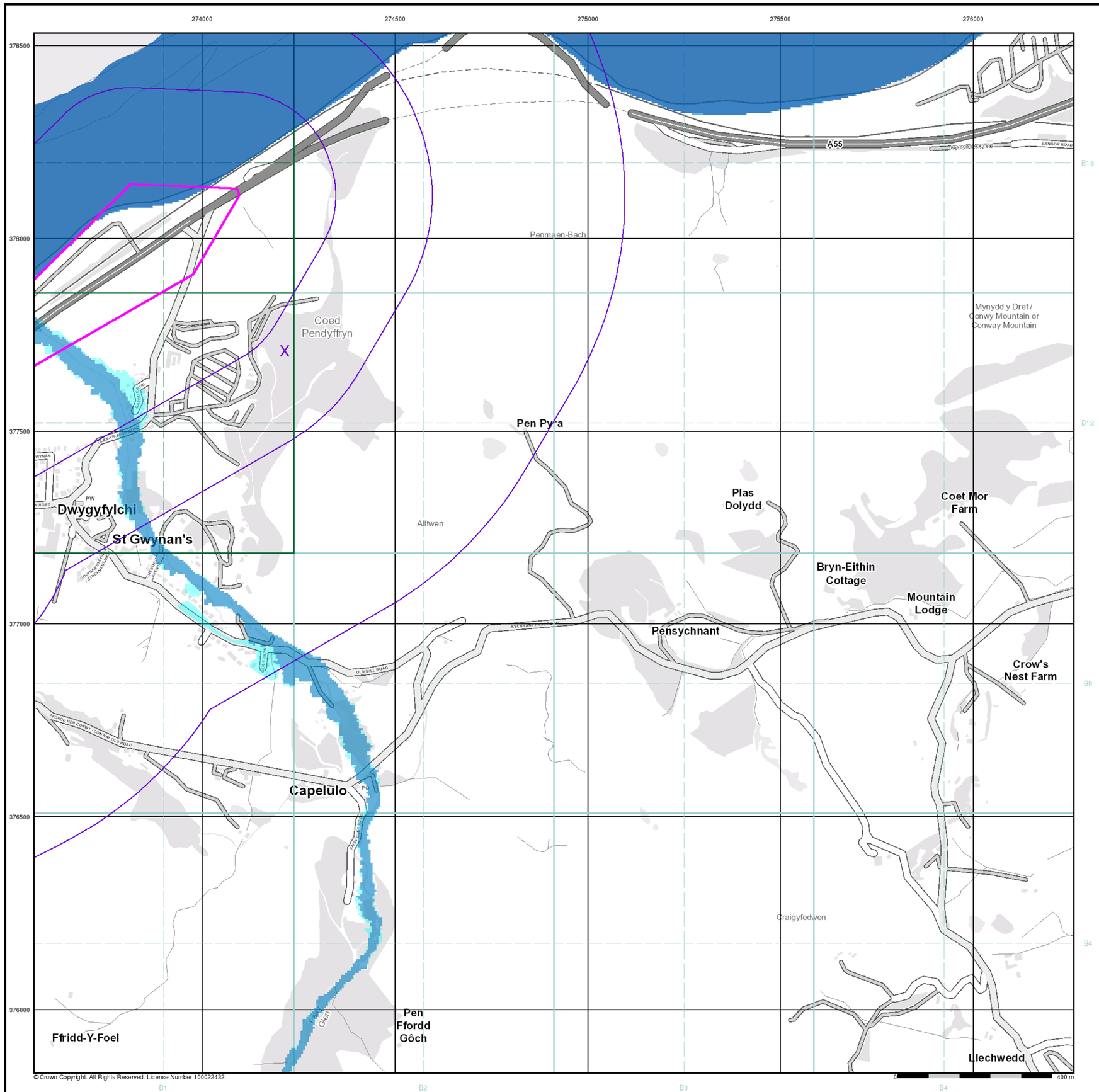
Order Details

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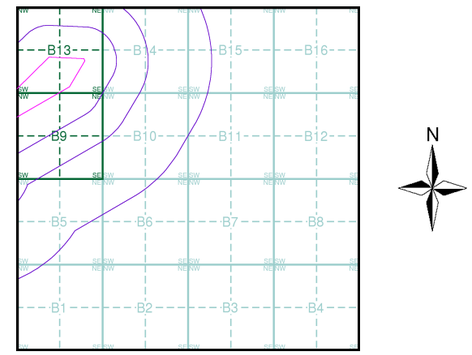
General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice B



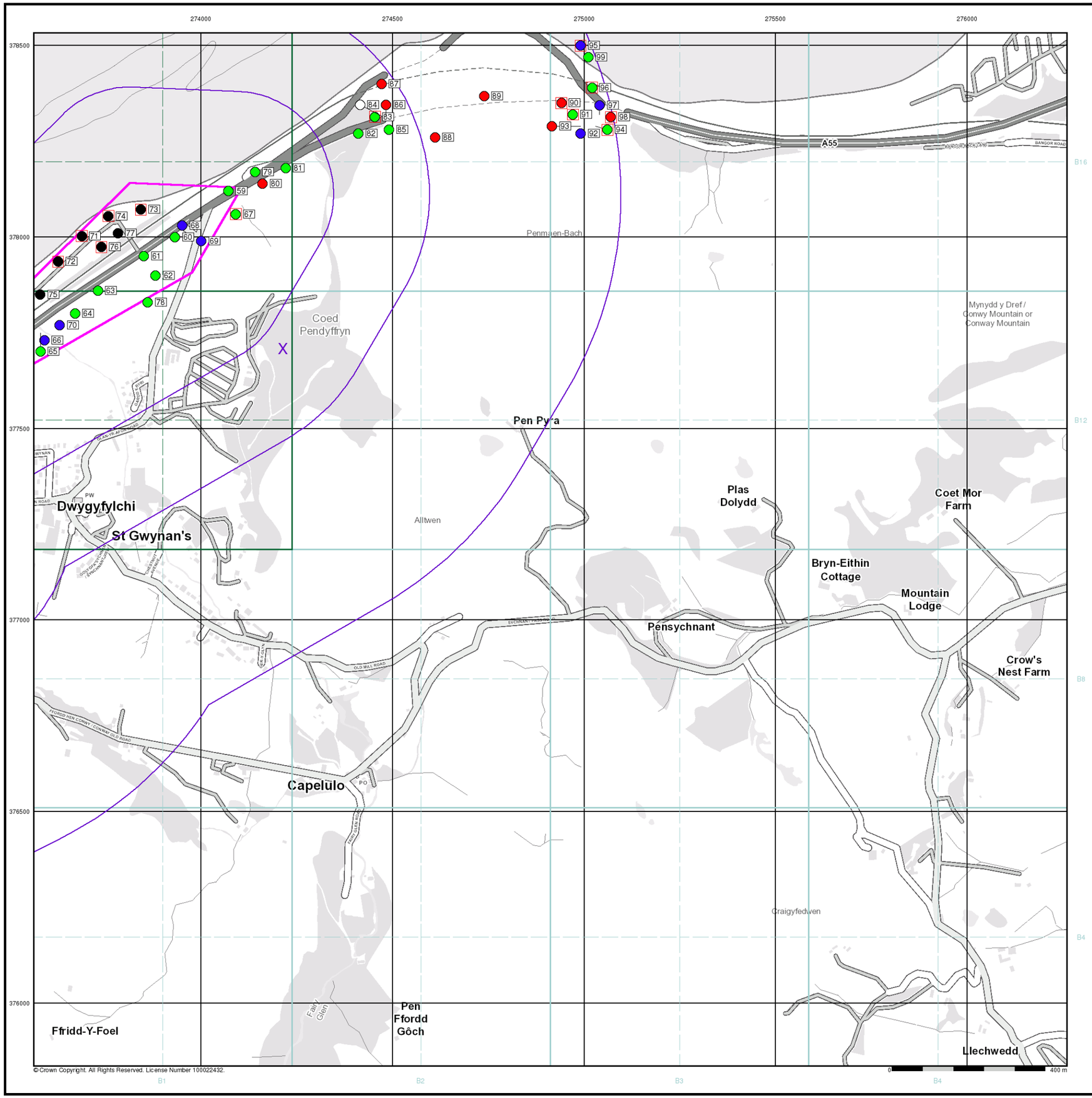
Order Details

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Slice:	B
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RAMBOLL

General

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- Specified Buffer(s)
- X Bearing Reference Point
- Map ID
- Several of Type at Location

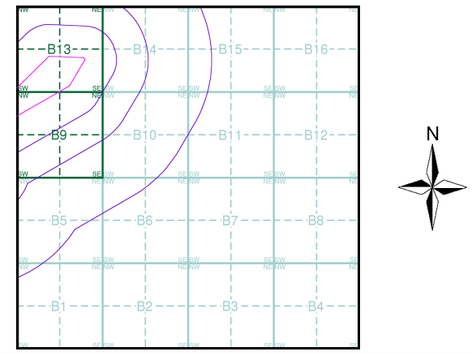
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice B



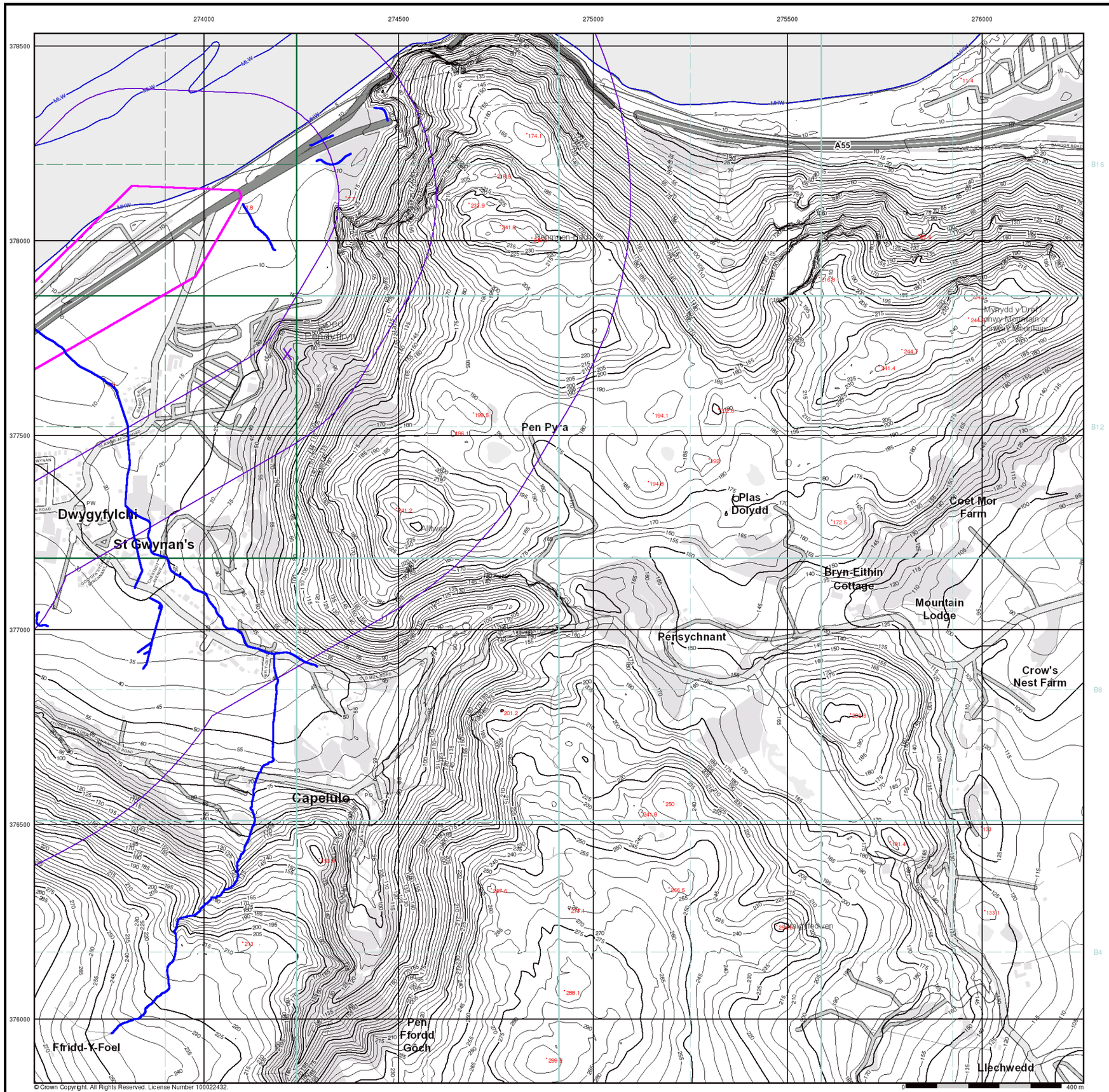
Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

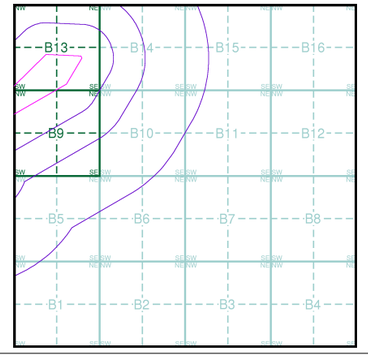
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice B



Order Details

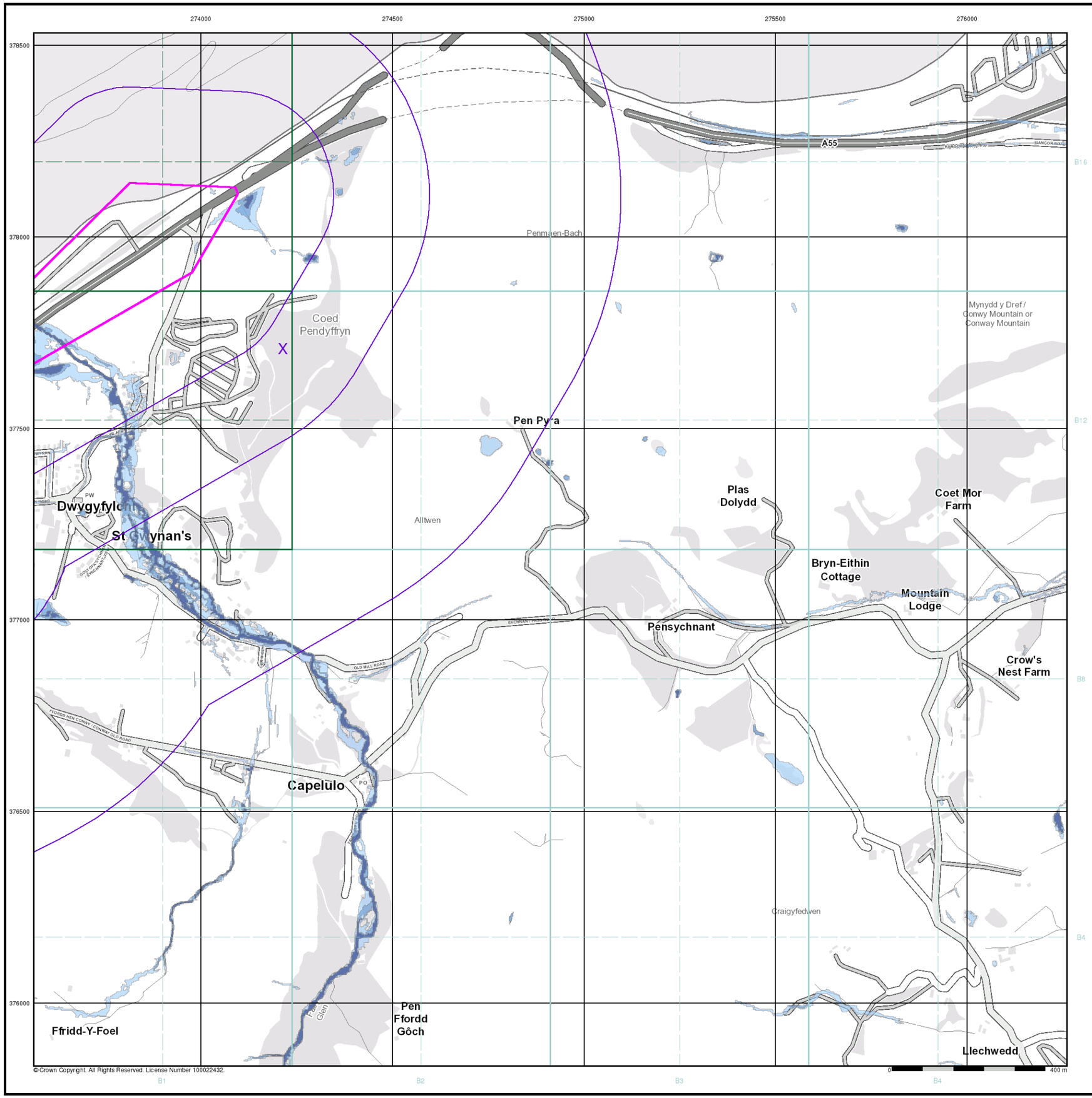
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Risk of Flooding from Surface Water

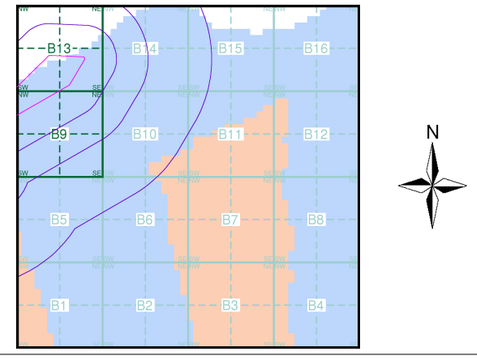
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice B



Order Details

Order Number:	175417398_1_1
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National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

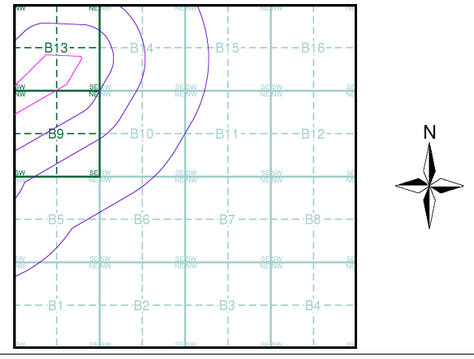
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:10,560	1888	2
Caernarvonshire	1:10,560	1901	3
Caernarvonshire	1:10,560	1915	4
Caernarvonshire	1:10,560	1938	5
Caernarvonshire	1:10,560	1953	6
Ordnance Survey Plan	1:10,000	1964	7
Ordnance Survey Plan	1:10,000	1975	8
Ordnance Survey Plan	1:10,000	1990 - 1992	9
Ordnance Survey Plan	1:10,000	1993	10
10K Raster Mapping	1:10,000	2000	11
10K Raster Mapping	1:10,000	2006	12
VectorMap Local	1:10,000	2018	13

Historical Map - Slice B



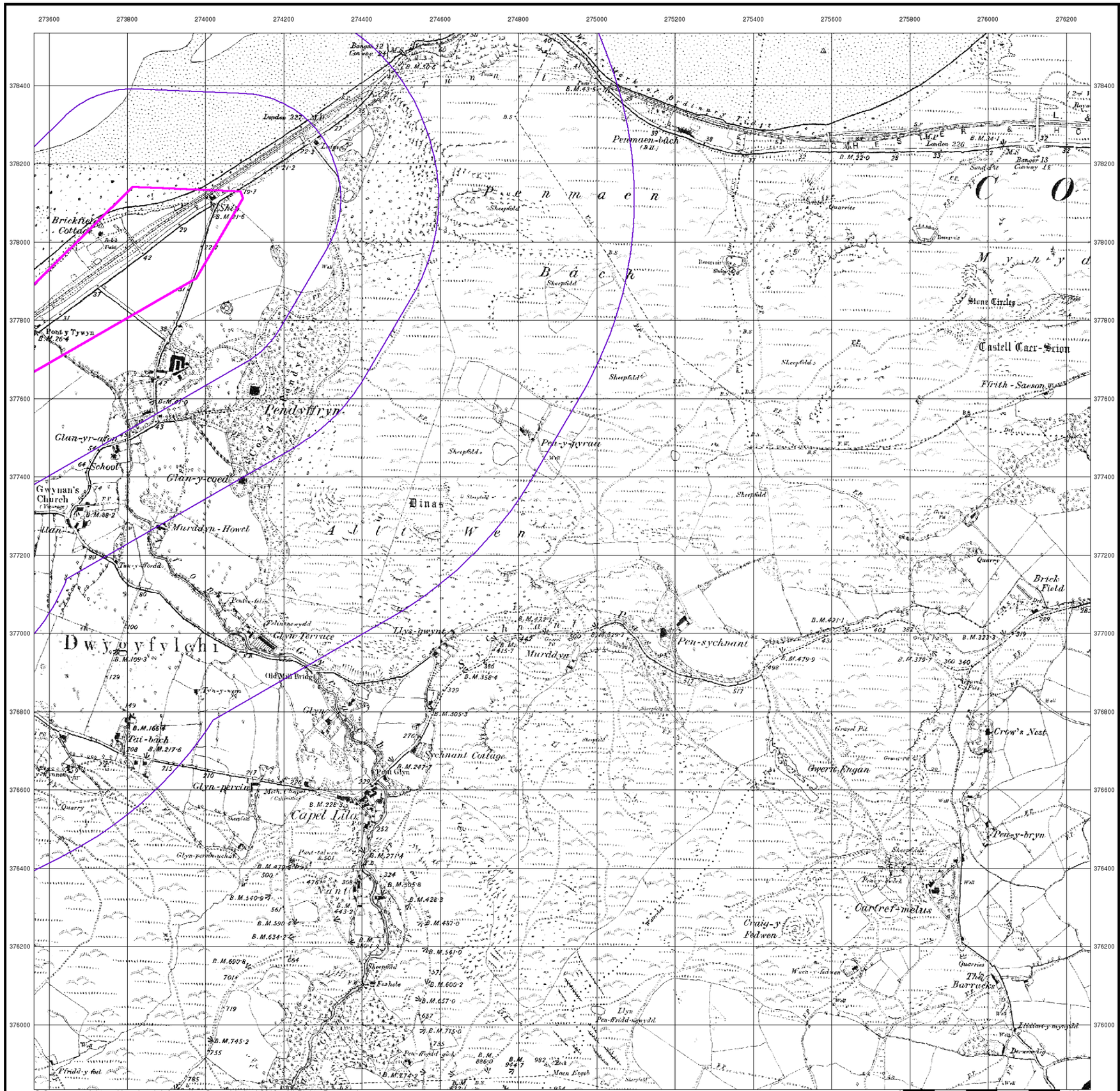
Order Details

Order Number: 175417398_1_1
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Slice: B
Site Area (Ha): 28.4
Search Buffer (m): 1000

Site Details

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Web: www.envirocheck.co.uk



RAMBOLL

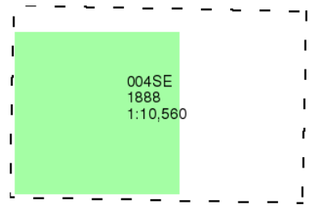
Caernarvonshire

Published 1888

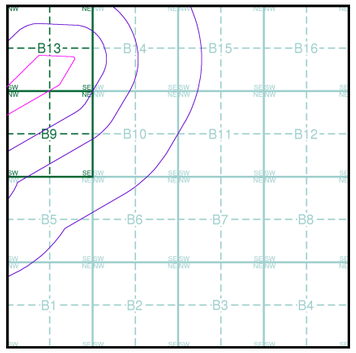
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice B



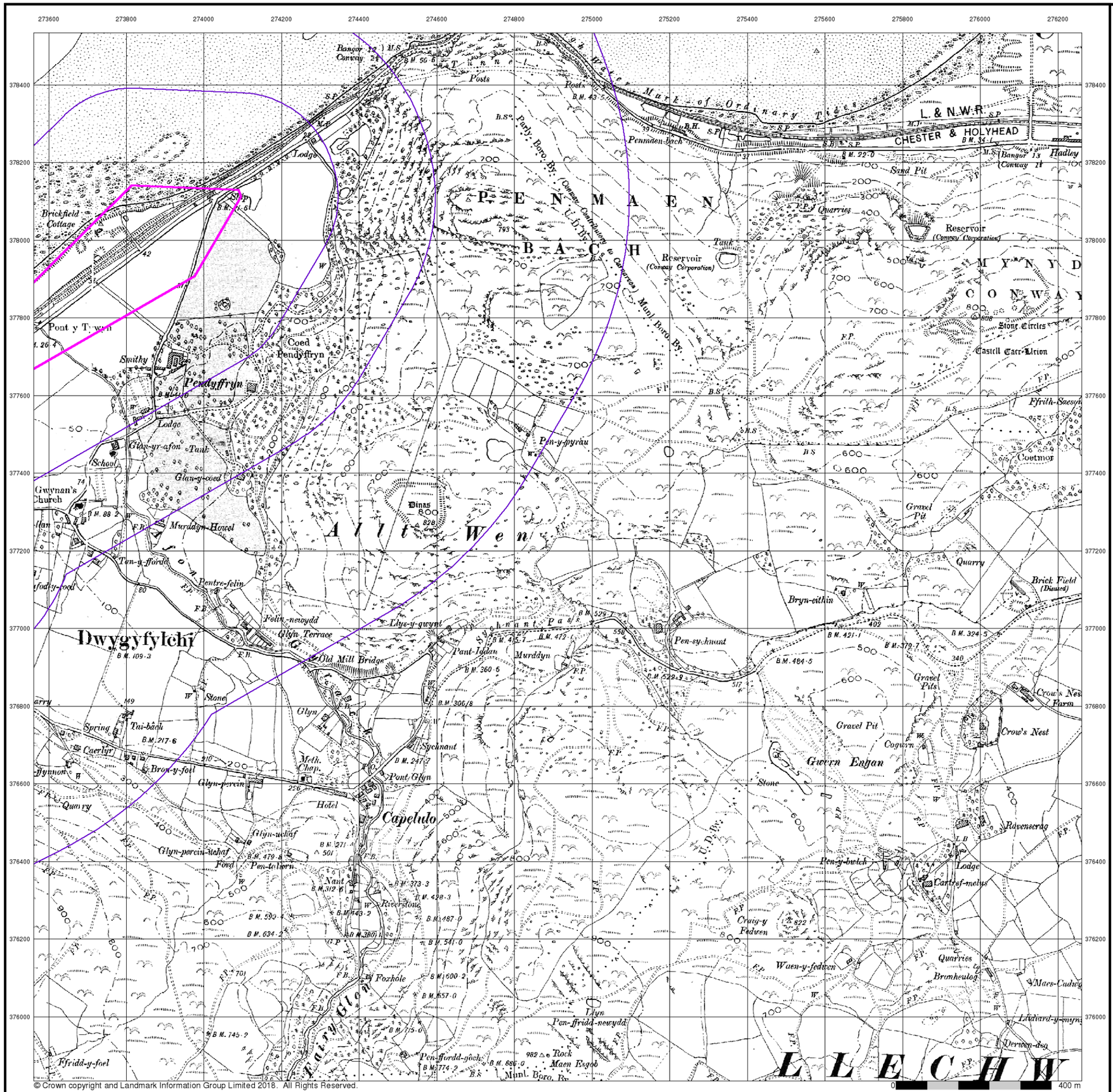
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Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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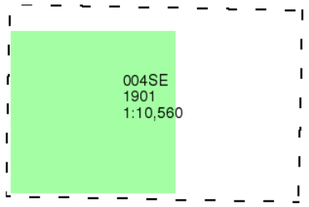
Caernarvonshire

Published 1901

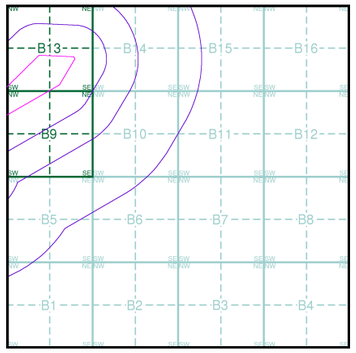
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Map Name(s) and Date(s)



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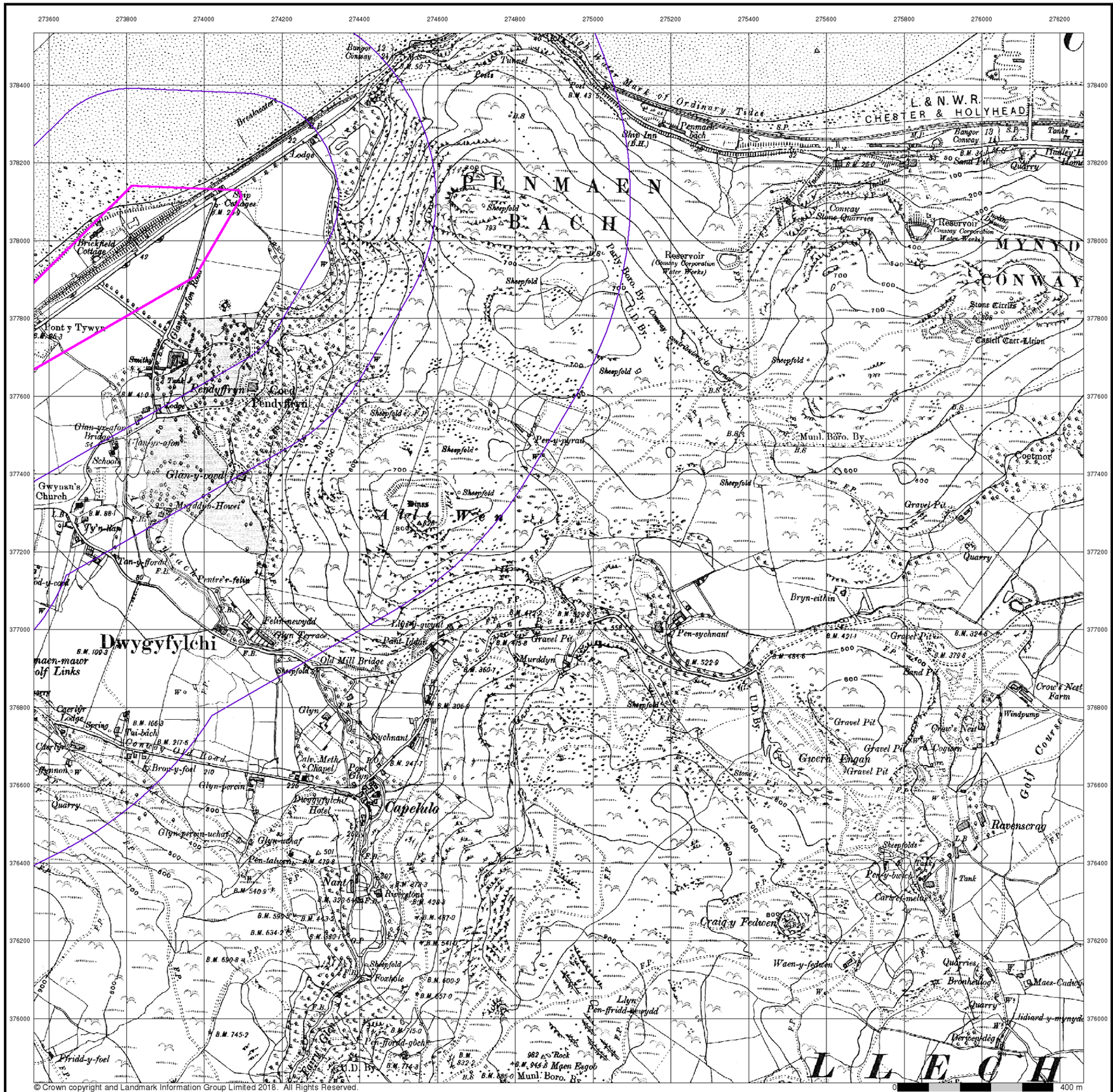
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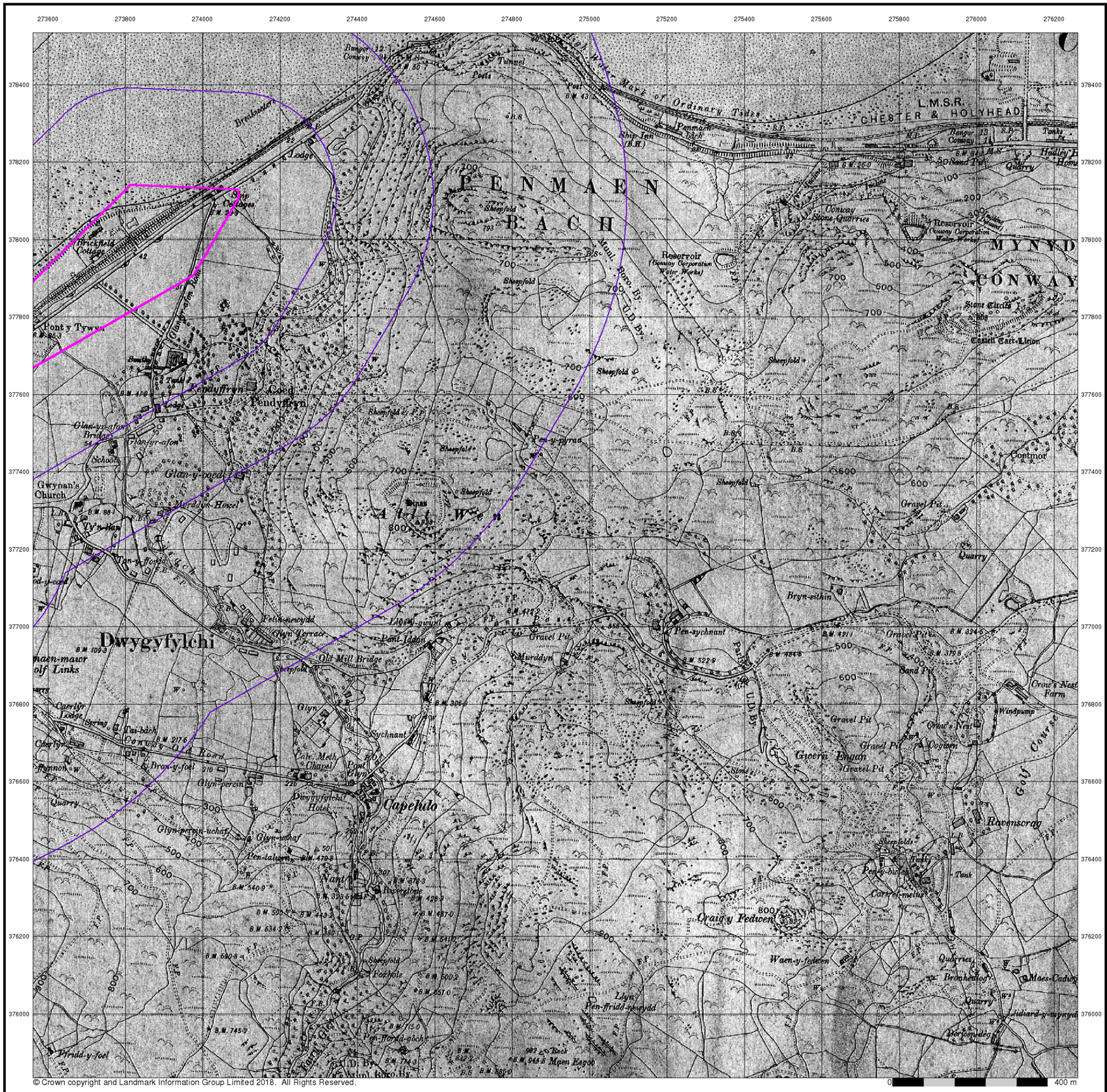
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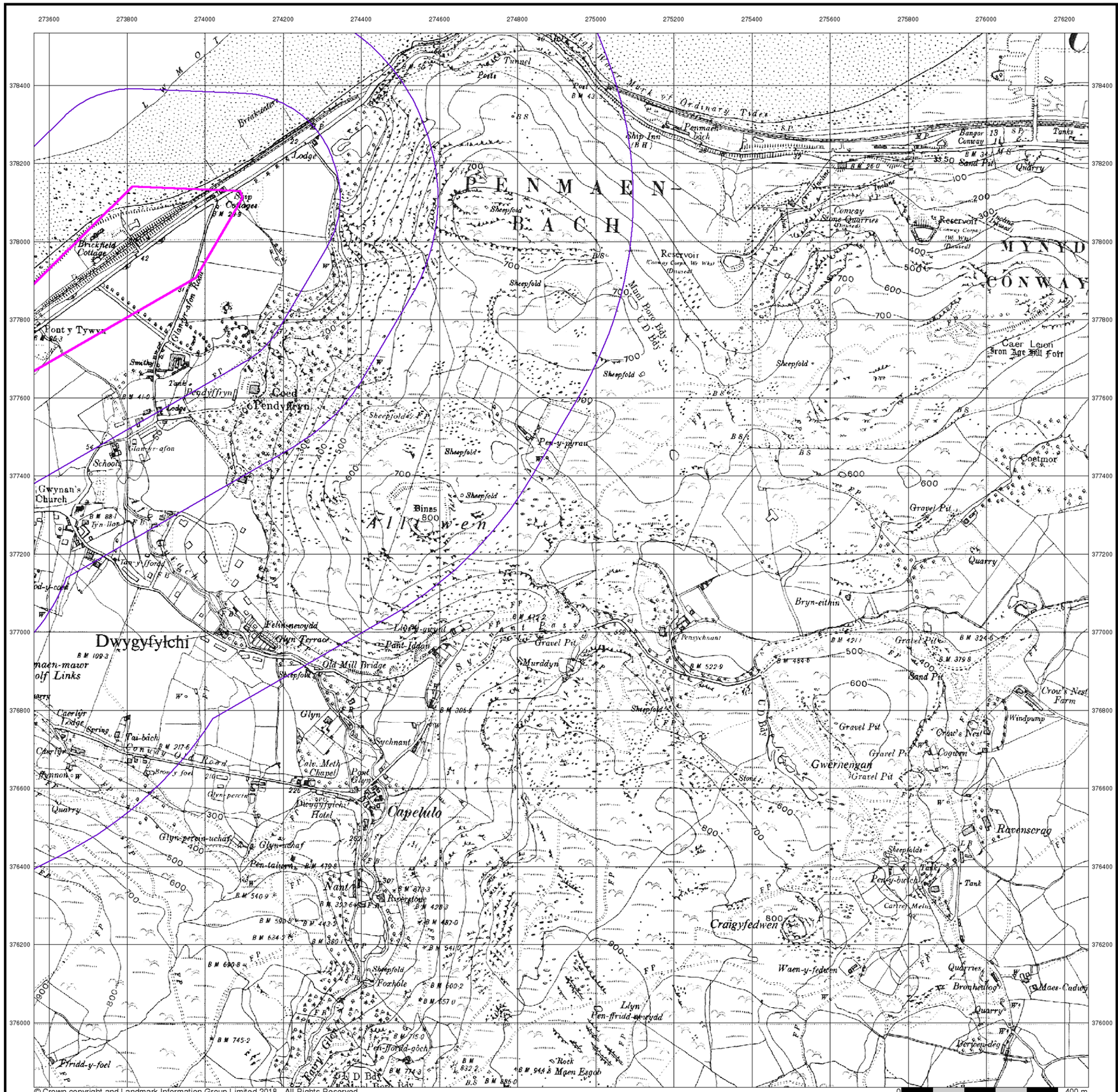
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PENMAENBACH
Dwygyfylchi
CAPELULO
CONWAY
L L E C H
Penmaen Bach
Reservoir
Pont y Tywyn
Pendyffryn Coed
Pendyffryn
Glan-y-coed
Gwynnan's Church
Ty'n-Rhos
Maddyn-Howel
Dinas
Alltwen
Pen-y-pyrad
Muncipal Boro. By
Coetmor
Gravel Pit
Quarry
Bryn-eithin
Pen-sychnant
Murddyn
Sychnant
Glyn
Old Mill Bridge
Glyn Terrace
Felin-newydd
Pant Iddon
Caerhyr Lodge
Tai-bach
Dwygyfylchi Hotel
Glyn-percin
Glyn-percin-uchaf
Glyn-uchaf
Pen-talcen
Nant
Foxhole
Pen-ffordd-goch
Ffridd-y-foel
Craig-y-Fedwen
Waen-y-fedwen
Llyn Pen-ffridd-newydd
Maen Esgob
Bronheulog
Maes-Cadwgan
Tidsard-y-mynydd
Ravenscraig
Castell Caer-Lleion
Stone Circles
Golf Course
Crow's Nest Farm
Windpump
Conway Stone Quarries
Sand Pit
Tanks
Sheepfold
Rock
Quarries
Tank
Ty'n-y-bwlch
Carlo'r-melus
Sheepfolds
Brickfield Cottage
Ship Cottages
Ship Inn (B.H.)
Penmaen Bach
Breakwater
Tunnel
Post
Mark of Ordinary Tides
L. & N. W. R.
CHESTER & HOLYHEAD
Bangor 13 Conway 14
Saint Pet
Lodge
Smithy
Glan-y-afon Bridge
Glan-y-afon
School
Pen-y-Craig
Pen-y-bryn
Tan-y-fordd
Pentre'r-felin
Llwyn-y-gwalch
Old Links
Caerhyr Lodge Spring
Conway Old Road
Bron-y-foel
Chapel
Alv. Meth. Chapel
P.O.
Pont Glyn
Stone
Tank
Gravel Pit
Sand Pit
Quarry
Reservoir (Conway Corporation Water Works)
Parly. Boro. By. (Conway Southern Extension)
U.D. By.
Municipal Boro. By.
Municipal Boro. By.
Municipal Boro


PENMAENBACH
CONWAY MYNYD
Dwygyfylchi
Capelulo
Penmaen Bach
Reservoir (Conway Corporation Water Works)
Conway Stone Quarries
Penmaenmawr Golf Links
Gwynan's Church
Ty'n-Han
Pont y Tywyn
Brickfield Cottage
Penmaen Bach Lodge
Ship Cottages
Penmaen Bach Tunnel
Penmaen Bach Post
Penmaen Bach Ship Jetty (B.H.)
Penmaen Bach Pumps
Penmaen Bach Sheepfold
Penmaen Bach Reservoir (Conway Corporation Water Works)
Penmaen Bach Conway Stone Quarries
Penmaen Bach Stone Circle
Penmaen Bach Caerleon Cast. Lleion
Penmaen Bach Coetmor
Penmaen Bach Gravel Pit
Penmaen Bach Quarry
Penmaen Bach Sand Pit
Penmaen Bach Crow's Nest Farm
Penmaen Bach Windpump
Penmaen Bach Crow's Nest
Penmaen Bach Coytom
Penmaen Bach Ravenscraig
Penmaen Bach Sheepfolds
Penmaen Bach Tank
Penmaen Bach Carreg-melus
Penmaen Bach Craig y Fedwen
Penmaen Bach Waen-y-fedwen
Penmaen Bach Quarries
Penmaen Bach Bronheulog
Penmaen Bach Maes-Cadwgan
Penmaen Bach Pen-y-bryn-eithin
Penmaen Bach Pen-sychnant
Penmaen Bach Pen-y-pyrad
Penmaen Bach Pen-ffridd-newydd
Penmaen Bach Maen Esgob
Penmaen Bach Pen-ffridd-goch
Penmaen Bach Ffridd-y-foel
Penmaen Bach Graig-wen
Penmaen Bach Murddyn
Penmaen Bach Sychnant
Penmaen Bach Glyn
Penmaen Bach Glyn-percin
Penmaen Bach Glyn-percin-uchaf
Penmaen Bach Glyn-uchaf
Penmaen Bach Pen-talwrn
Penmaen Bach Nant
Penmaen Bach Pont-Idaon
Penmaen Bach Old Mill Bridge
Penmaen Bach Felin-newydd
Penmaen Bach Glyn Terrace
Penmaen Bach Caerlon Lodge
Penmaen Bach Caerlon Spring
Penmaen Bach Tai-bach
Penmaen Bach Conway Old Road
Penmaen Bach Bron-y-foel
Penmaen Bach Calv. Meth. Chapel
Penmaen Bach Post Glyn
Penmaen Bach Dwygyfylchi Hotel
Penmaen Bach Powerstime
Penmaen Bach Porthole
Penmaen Bach Tynant
Penmaen Bach Glan-y-wern
Penmaen Bach Glan-yr-afon
Penmaen Bach Glan-yr-afon Bridge
Penmaen Bach Schools
Penmaen Bach Meirdyn-Hwcel
Penmaen Bach Ty'n-Ffordd
Penmaen Bach Pendyffryn
Penmaen Bach Pendyffryn Coed
Penmaen Bach Pendyffryn Lodge
Penmaen Bach Smithy
Penmaen Bach Tynant
Penmaen Bach Breidden
Penmaen Bach Lodge
Penmaen Bach Penmaen Ditch
Penmaen Bach Mean Low Water Mark of Ordinary Tides
Penmaen Bach Mean Low Water of Ordinary Tides


PENMAEN-BACH
MYNYDD CONWAY
Dwygyfylchi
Capelulo
Penmaen-mawr Golf Links
Gwernengan
Craigyfedwen
Allt-wen
Caer Leon Iron Age Hill Fort
Penmaen Beach
Mark of Ordinary Tides
Ship Inn (B H)
Tunnel
Reservoir
Sand Pot
Quarry
Sheepfold
Gravel Pit
Old Mill Bridge
Glyn Terrace
Chapel
Hotel
Gwynan's Church
Coetmor
Ravenscraig
Bronheilog
Maes-Cadwgan
Bryn-eithin
Crow's Nest Farm
Windpump
Ty'n-llon
Pen-y-pyrau
Pen-ffridd-uchaf
Pen-ffridd-goch
Foxhole
Rock
Maen Esgob
Ffridd-y-foel
Nant
Glyn-percin-uchaf
Glyn-percin
Pen-talwrn
Sychnant
Murddyn
Penysychnant
Old Conway Road
Clarendon Road
Brickfield Cottage
Font y Tywyn
Pendyffryn Coed
Pendyffryn
Tai-bach
Caerlyn Lodge
Caerlyn Spring
Gwern-y-foel
Cae-le-Meth Chapel
Ty'n-llon
Tan-y-ffordd
Penmaen-mawr
Penmaenmawr
Conway
Bangor
Tanks
Ty'n-y-coed
Ty'n-y-cae
Ty'n-y-llwyn
Ty'n-y-graig
Ty'n-y-bwlch
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0 400 m

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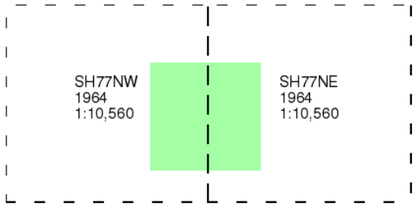
Ordnance Survey Plan

Published 1964

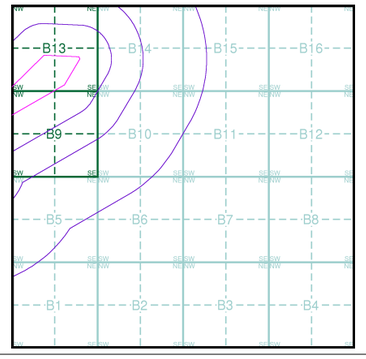
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice B



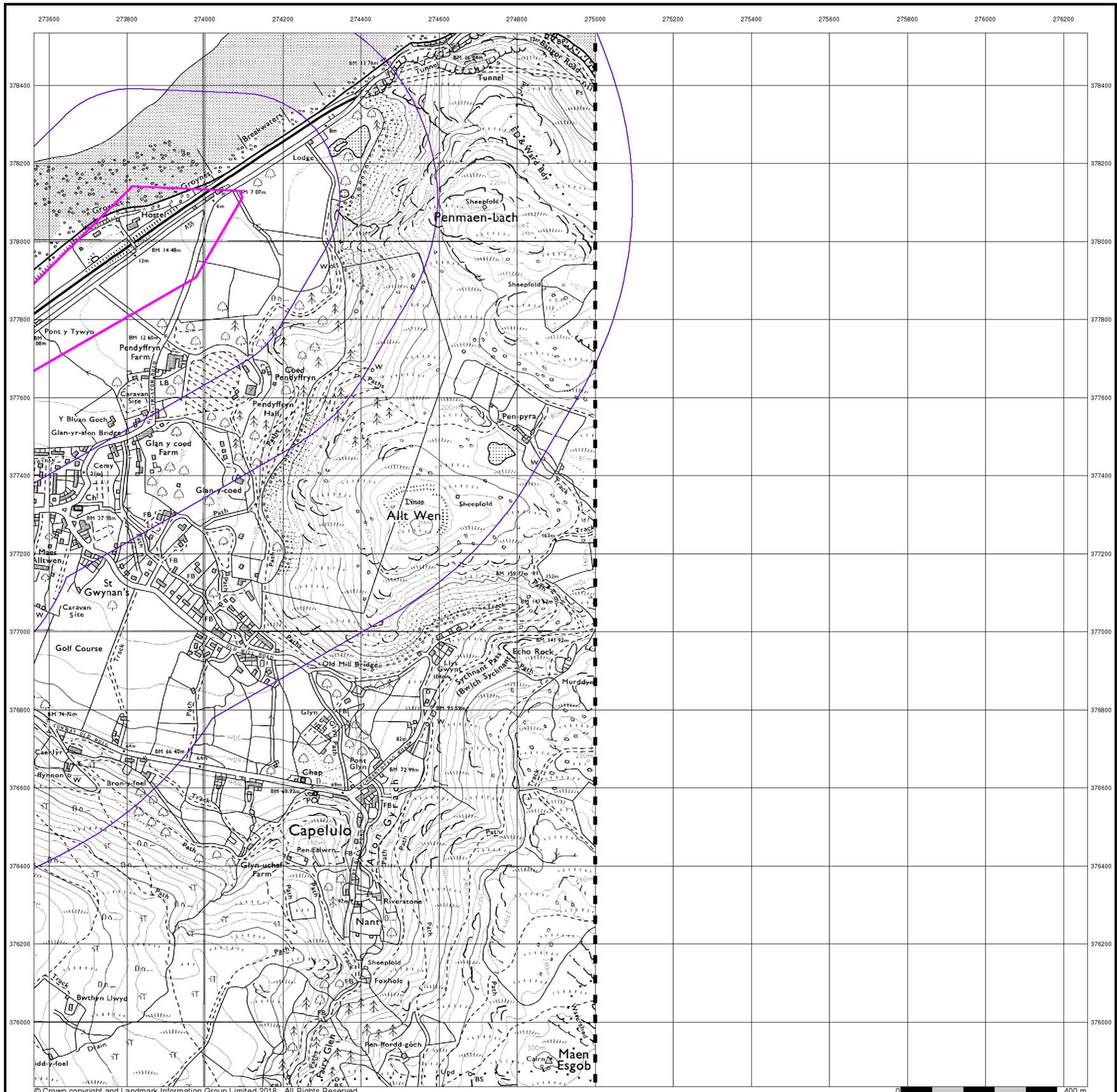
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Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

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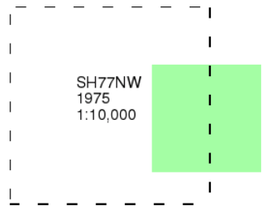
Ordnance Survey Plan

Published 1975

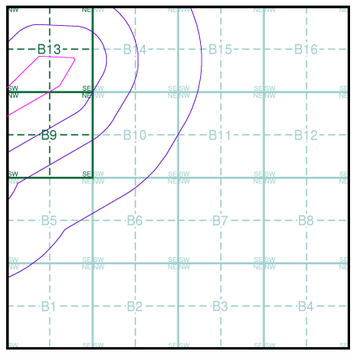
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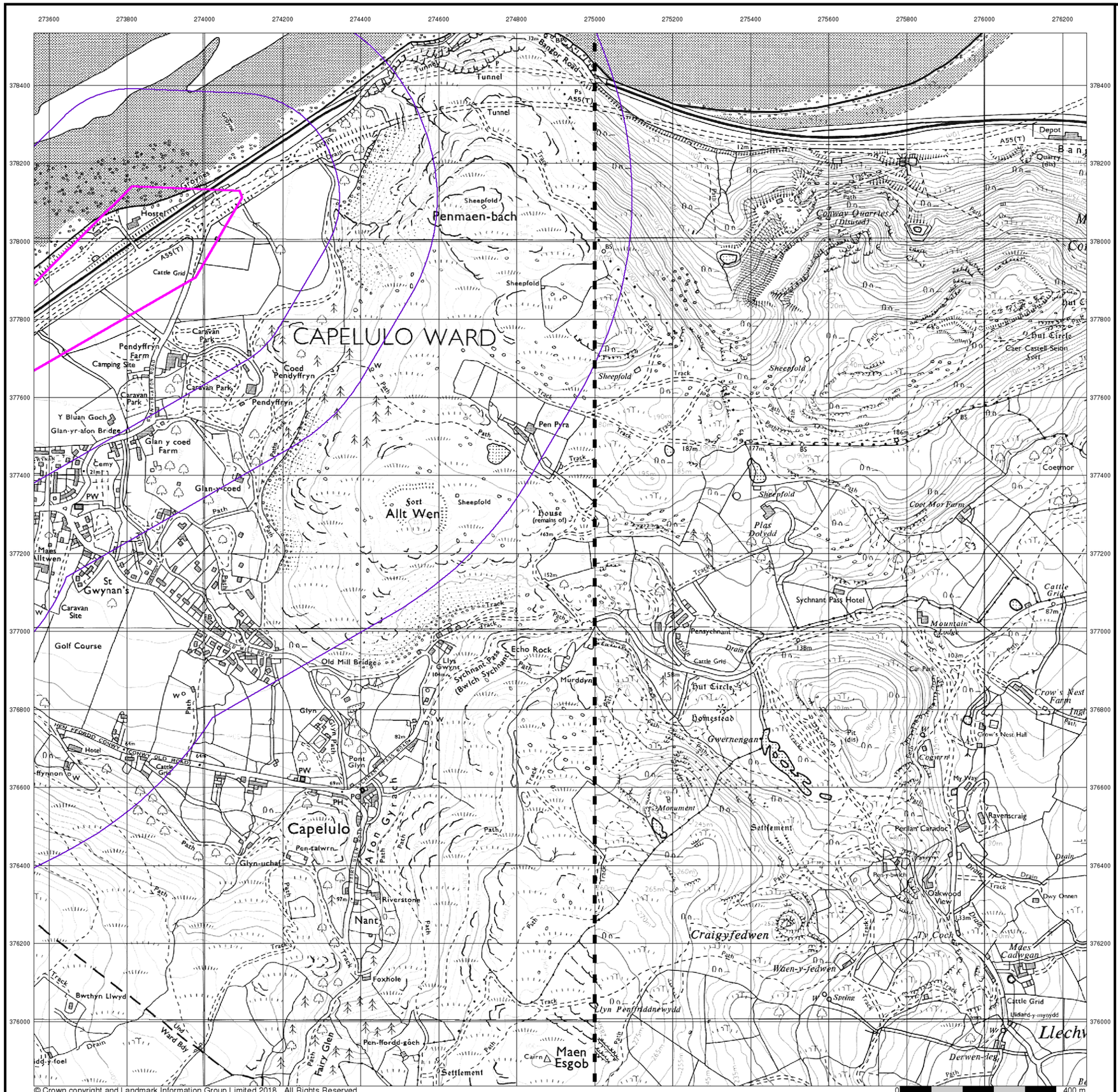
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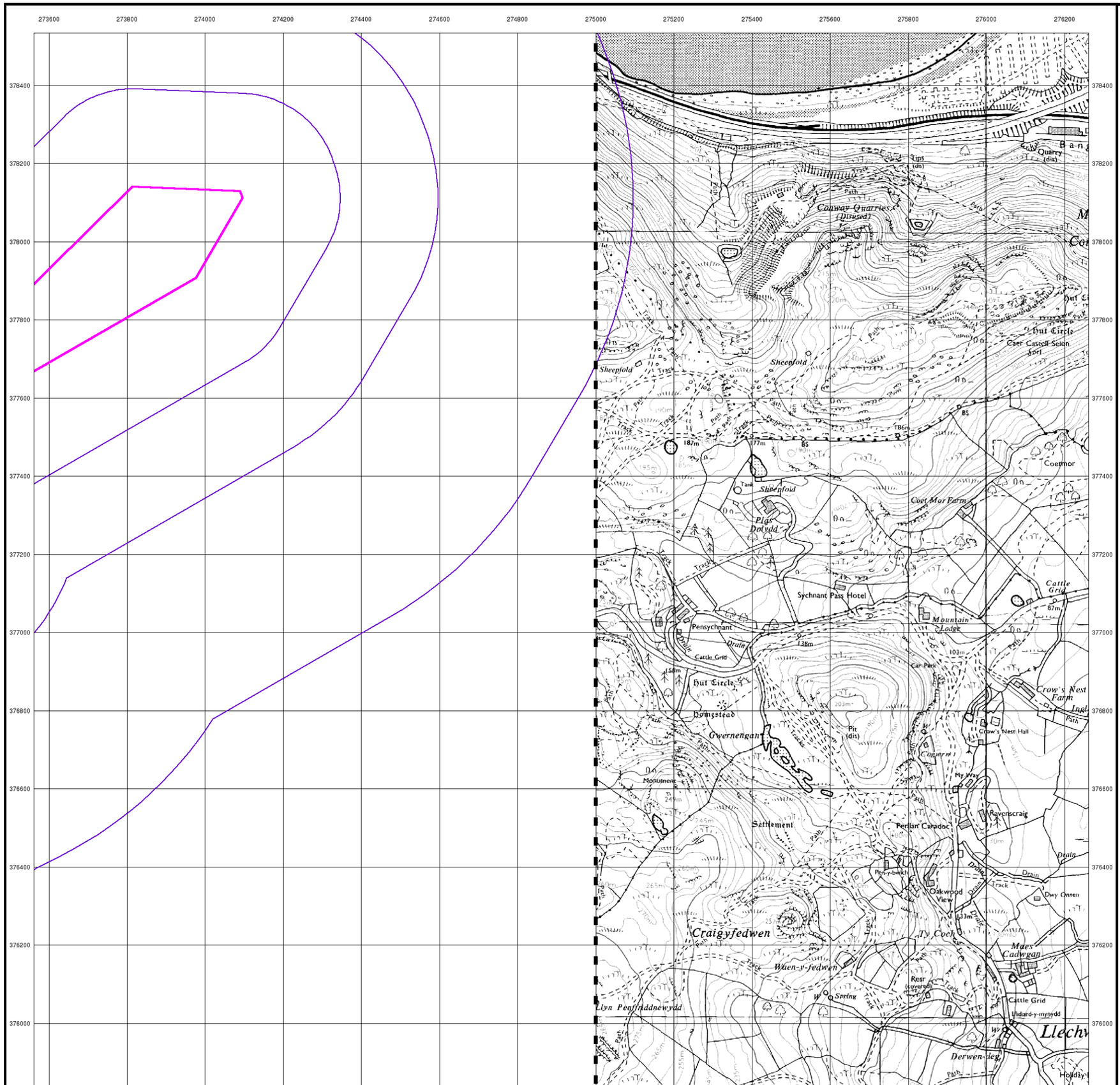
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CAPELULO WARD
Penmaen-bach
Capelulo
Sort Allt Wen
Maen Esgob
Craigyfedwen
Llyn Penrhiddnewydd
Conway Quarries (Disused)
Plas Dolydd
Coet Mor Farm
Sychnant Pass Hotel
Penysychnant
Crow's Nest Farm
Crow's Nest Hall
Gwernengan
Homestead
Monument
Settlement
Perllan Caradoc
Ravenscraig
Oakwood View
Ty Coch
Waen-y-fedwen
Maes Cadwgan
Llechwedd
Coetmor
Pen Pyra
Pendyffryn Farm
Coed Pendyffryn
Glan-yr-afon Bridge
Glan y coed Farm
Glan-y-coed
Maes Ailtwen
St Gwynan's
Golf Course
Old Mill Bridge
Echo Rock
Murddyn
Glyn
Pont Glyn
Glyn-uchaf
Pen-talwrn
Nant
Riverstone
Foxhole
Bwthyn Llwyd
Pen-ffordd-goch
Fairy Glen
Sheepfold
Hut Circle
Cattle Grid
Caravan Park
Camping Site
Caravan Site
Quarry (dis)
Depot
Tunnel
A55(T)
Track
Path
Drain
Old Mill Bridge
Hotel
PW
PO
PH
Cairn
Settlement
Mountain
Car Park
Pit (dis)
Sprins
Cae'r Castell Seiont
Hut Circle
Dwy Onnen
Tyddiard-y-mynydd
Derwen-fedw
Ffynnon
Y Bluan Goch
Cemy
Llys Gwyne
Sychnant Pass (Bwlch Sychnant)
Penysychnant
Tunnel
Bangor Road
A55(T)
Groynes
Hostel
Cattle Grid
Caravan Park
Pendyffryn
Sheepfold
House (remains of)
Track
Path
Drain
Cattle Grid
Car Park
Mountain
Monument
Settlement
Hut Circle
Quarry (dis)
Depot
Sprins
Cairn
Tunnel
Sheepfold



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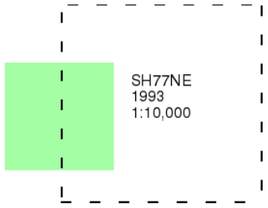
Ordnance Survey Plan

Published 1993

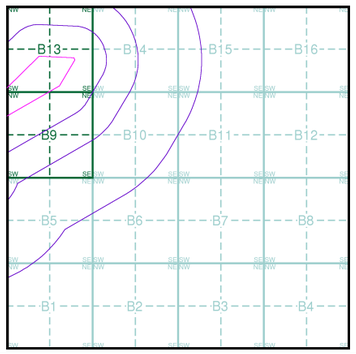
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice B



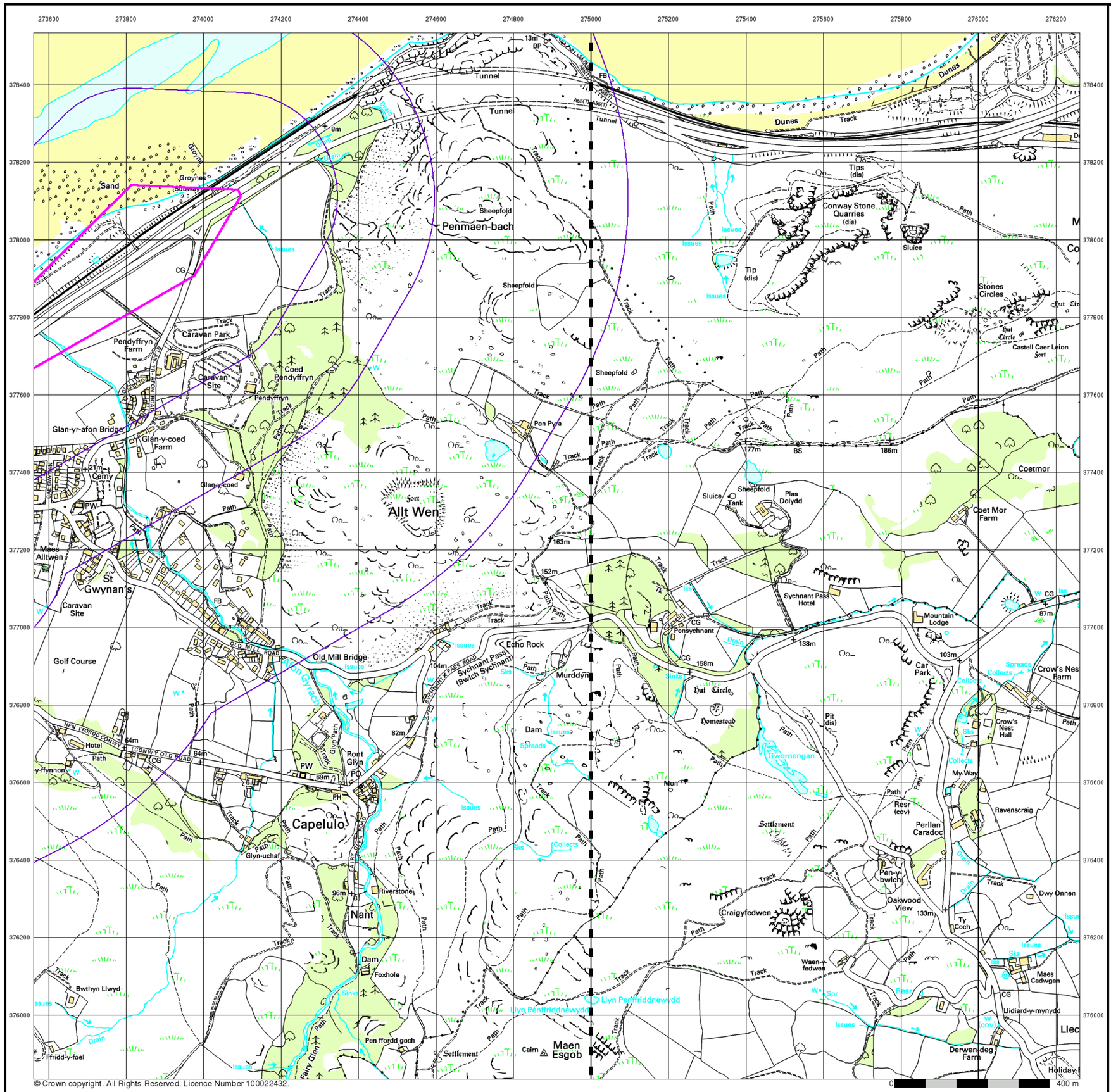
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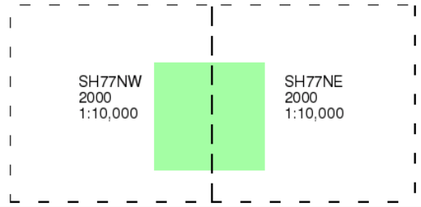
10k Raster Mapping

Published 2000

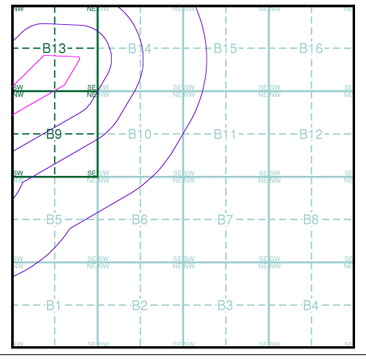
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice B



Order Details

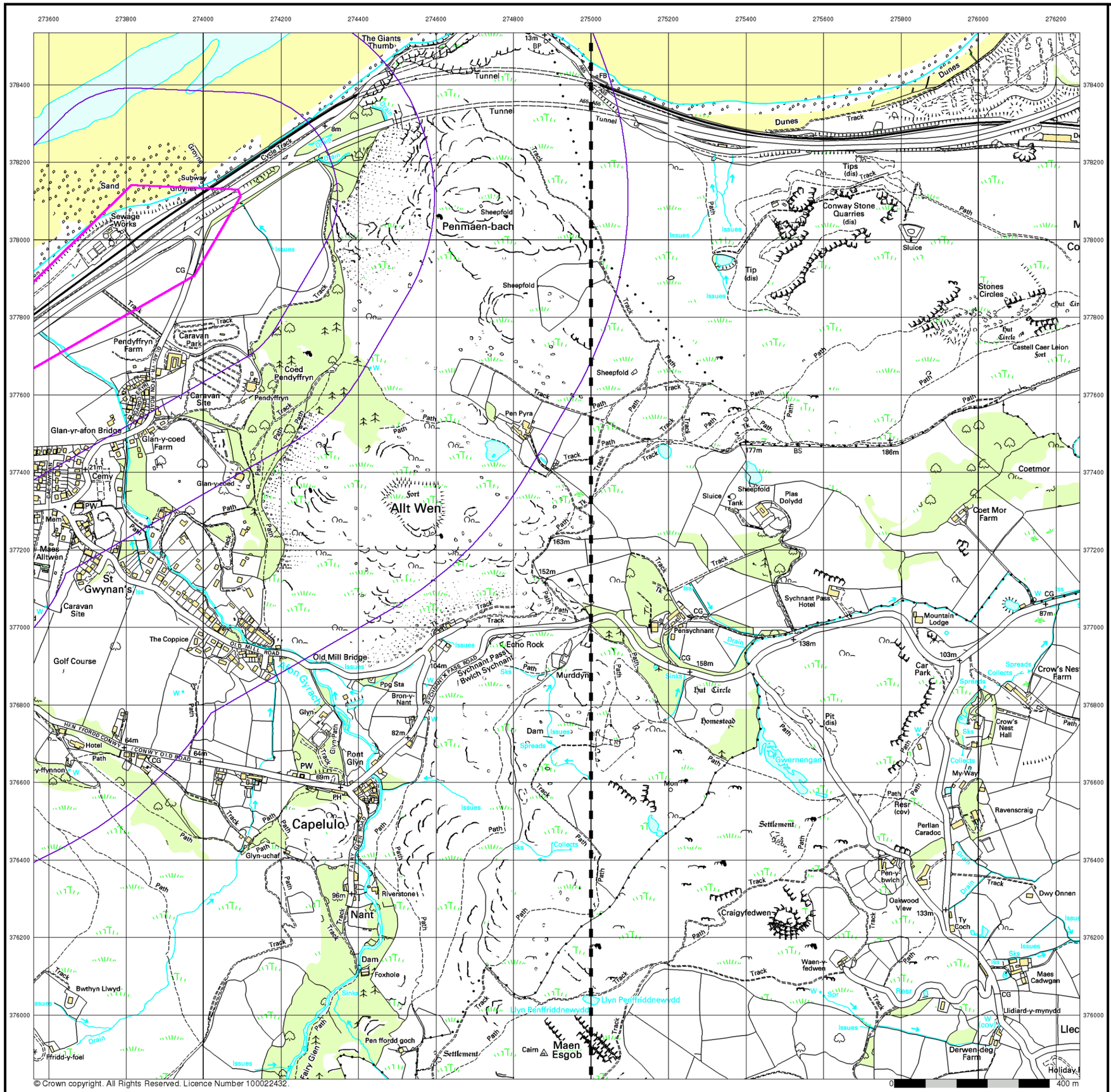
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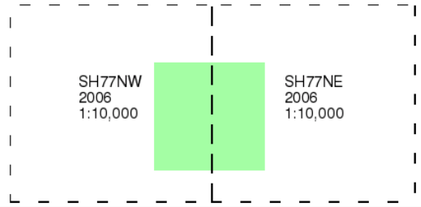
10k Raster Mapping

Published 2006

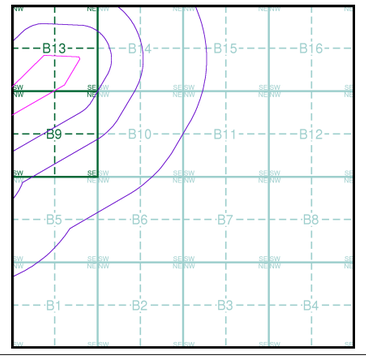
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice B



Order Details

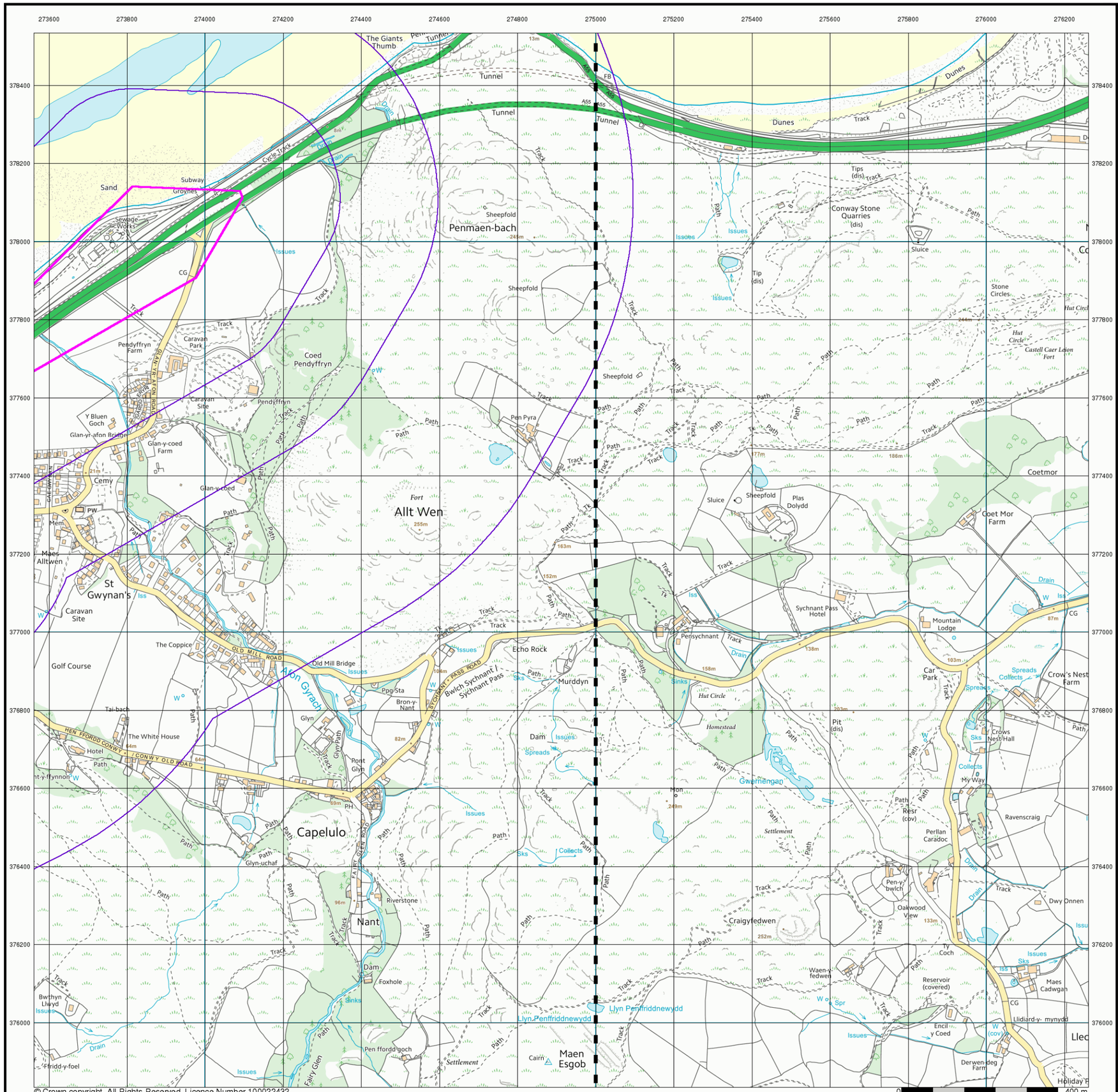
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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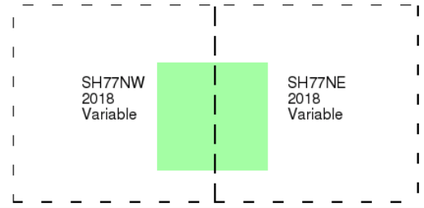
VectorMap Local

Published 2018

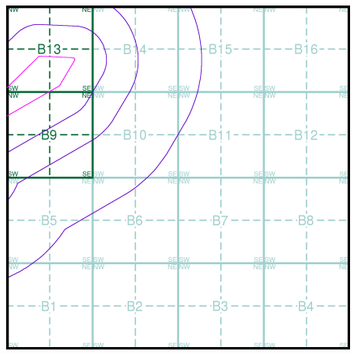
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice B



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

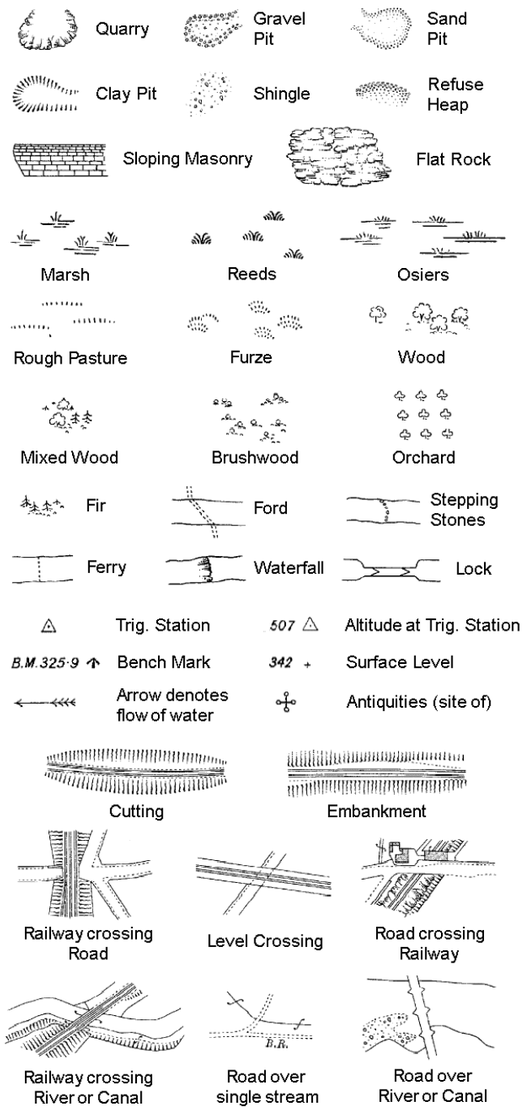
Site at, Penmaenmawr, Conwy

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

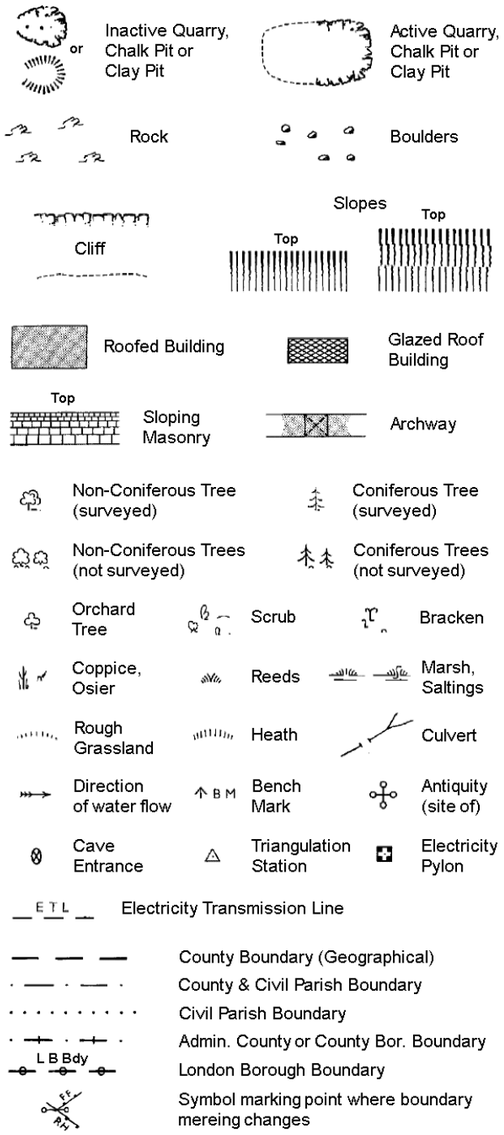
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

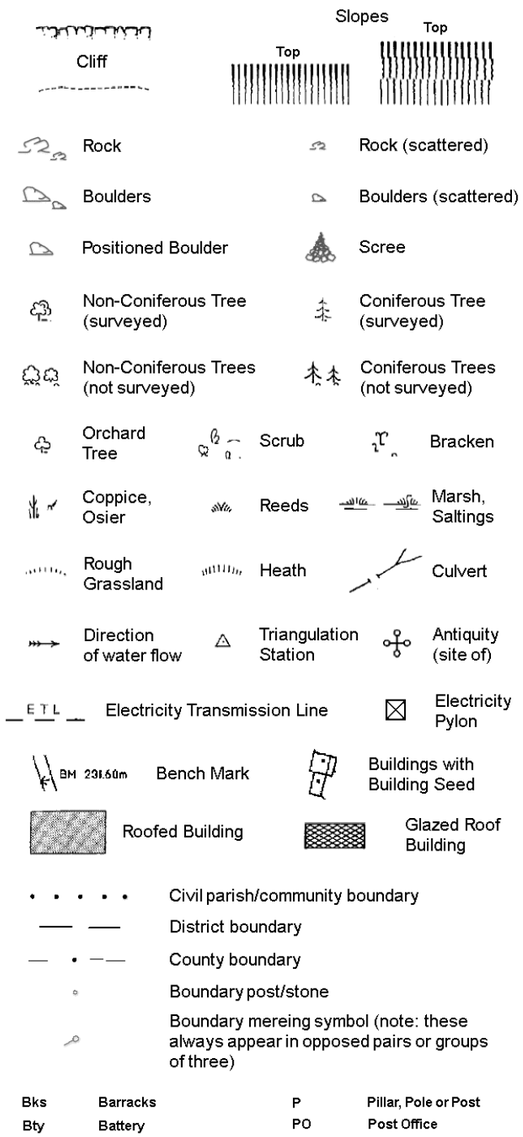
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

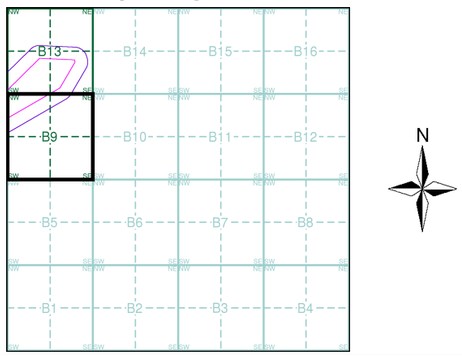
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1959 - 1966	5
Supply of Unpublished Survey Information	1:2,500	1973	6
Additional SIMs	1:2,500	1977 - 1991	7
Ordnance Survey Plan	1:2,500	1992	8
Large-Scale National Grid Data	1:2,500	1995	9
Historical Aerial Photography	1:2,500	2000	10

Historical Map - Segment B9



Order Details

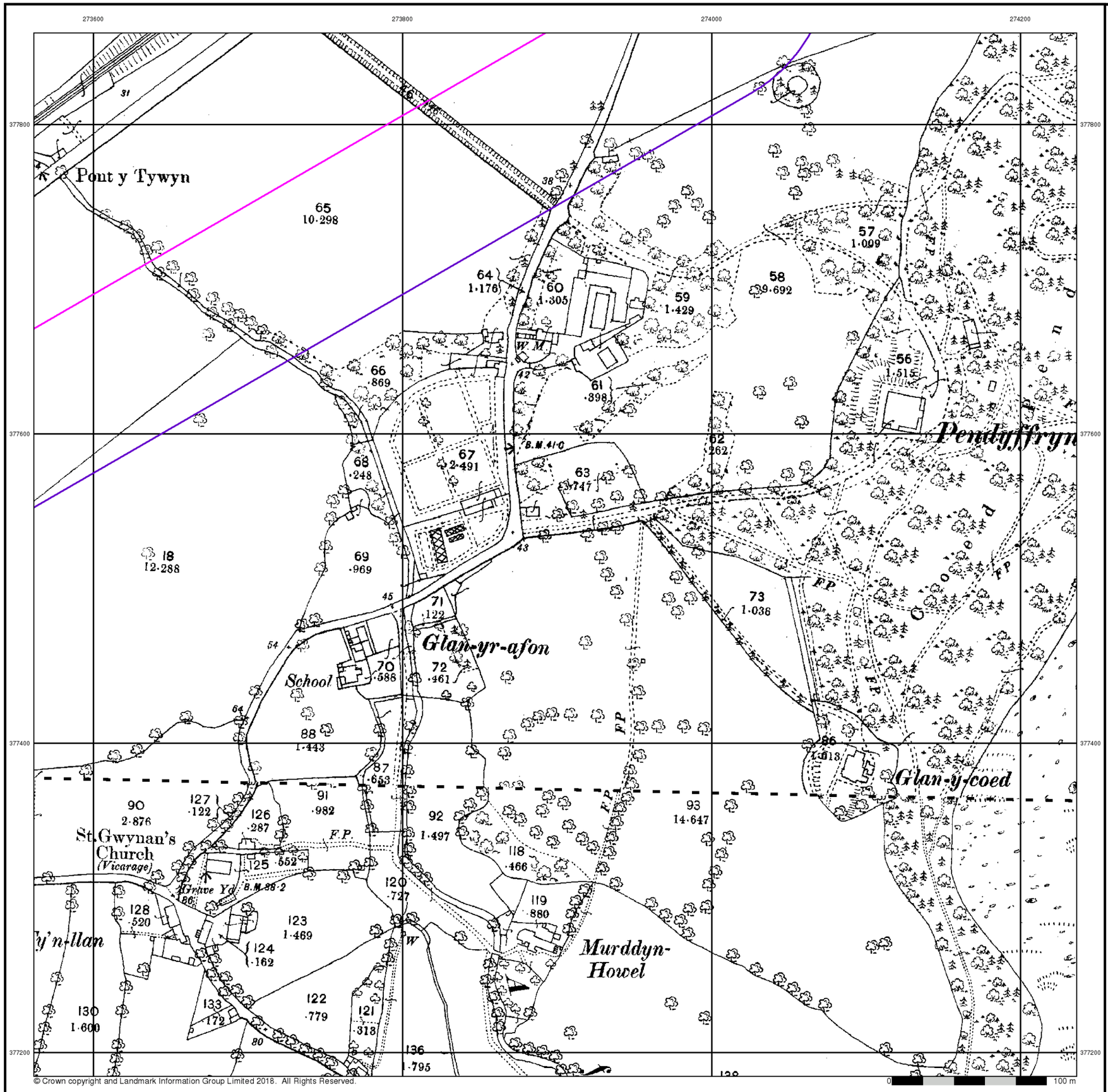
Order Number: 175417398_1_1
Customer Ref: 1620004796 - J16
National Grid Reference: 274210, 377710
Slice: B
Site Area (Ha): 28.4
Search Buffer (m): 100

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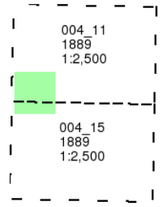
Caernarvonshire

Published 1889

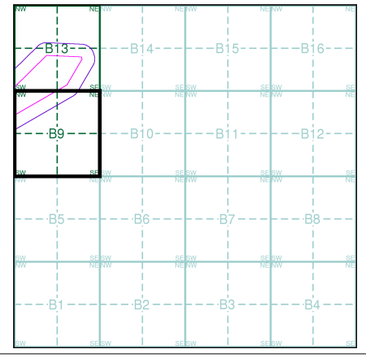
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment B9



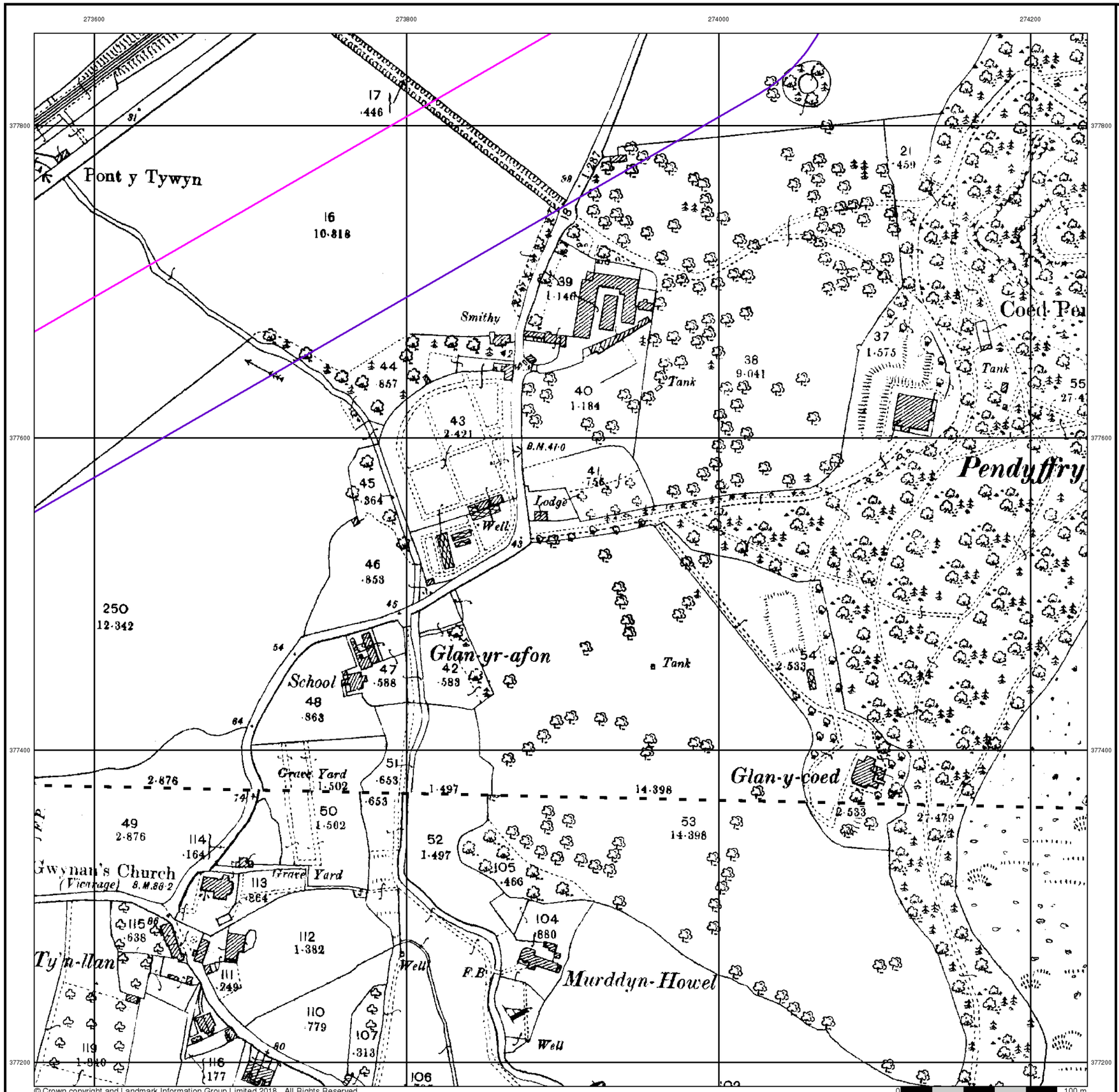
Order Details

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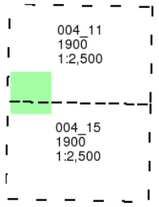
Caernarvonshire

Published 1900

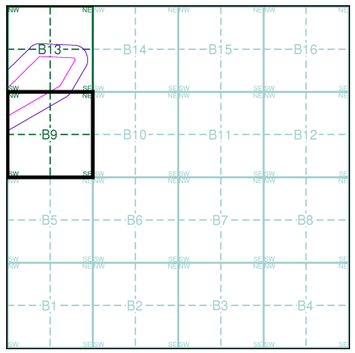
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment B9



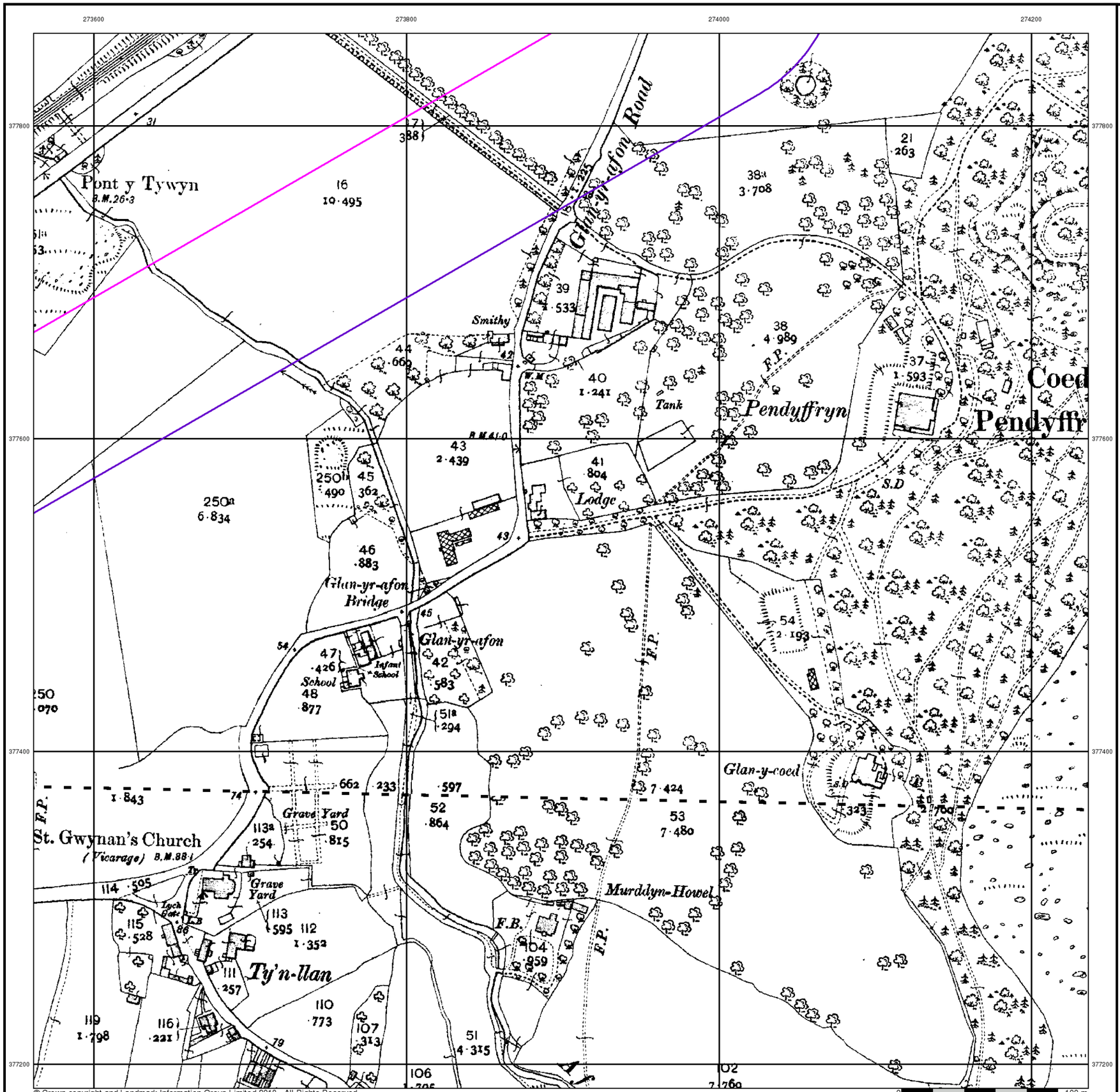
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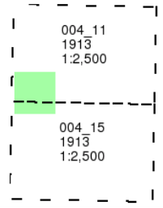
Caernarvonshire

Published 1913

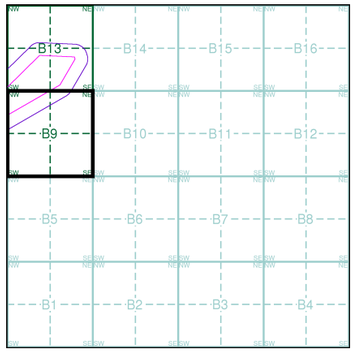
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment B9



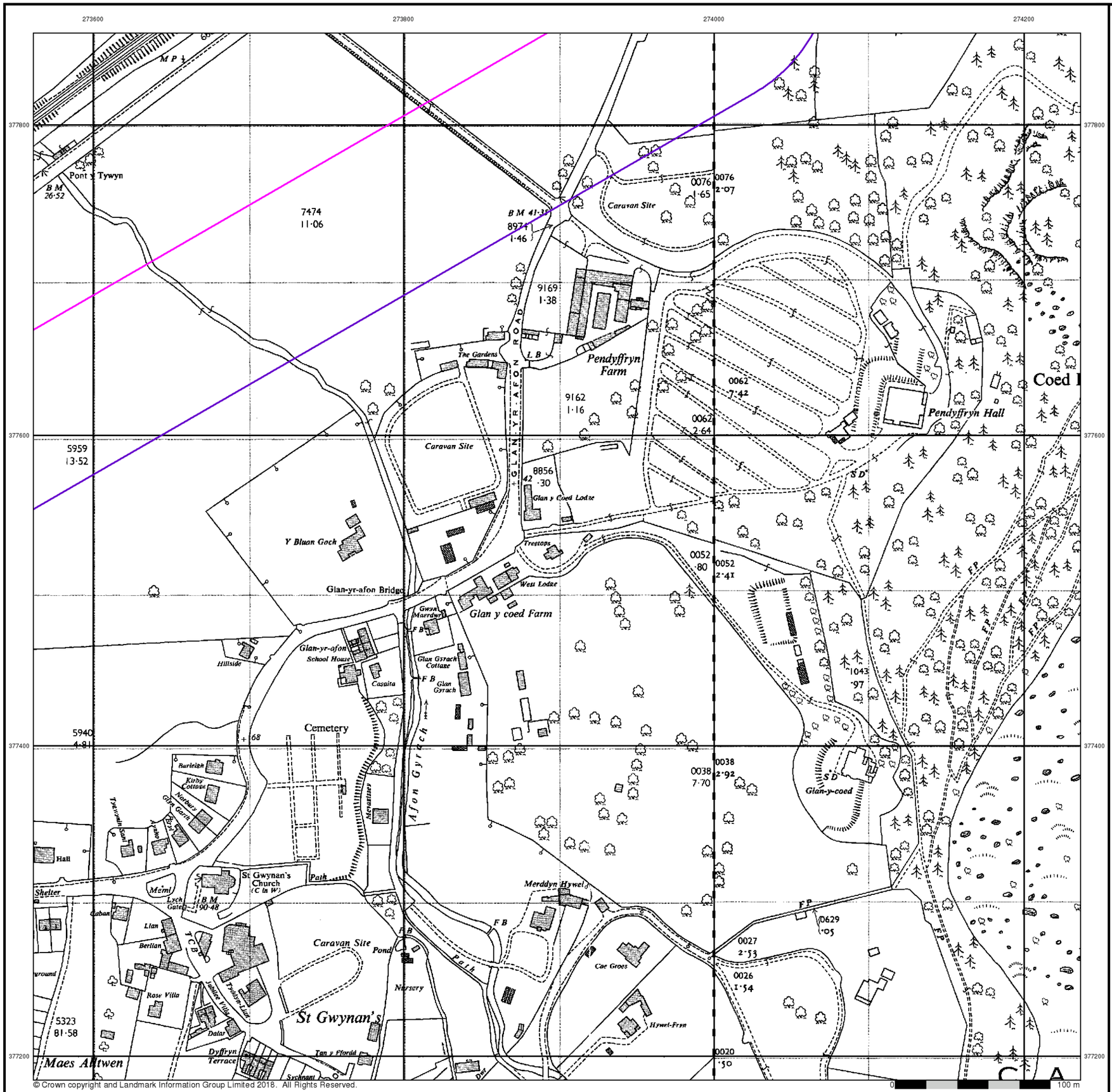
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Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
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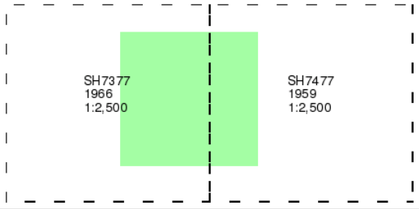
Ordnance Survey Plan

Published 1959 - 1966

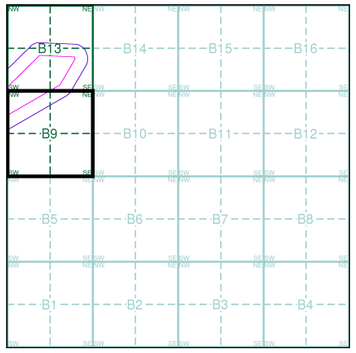
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment B9



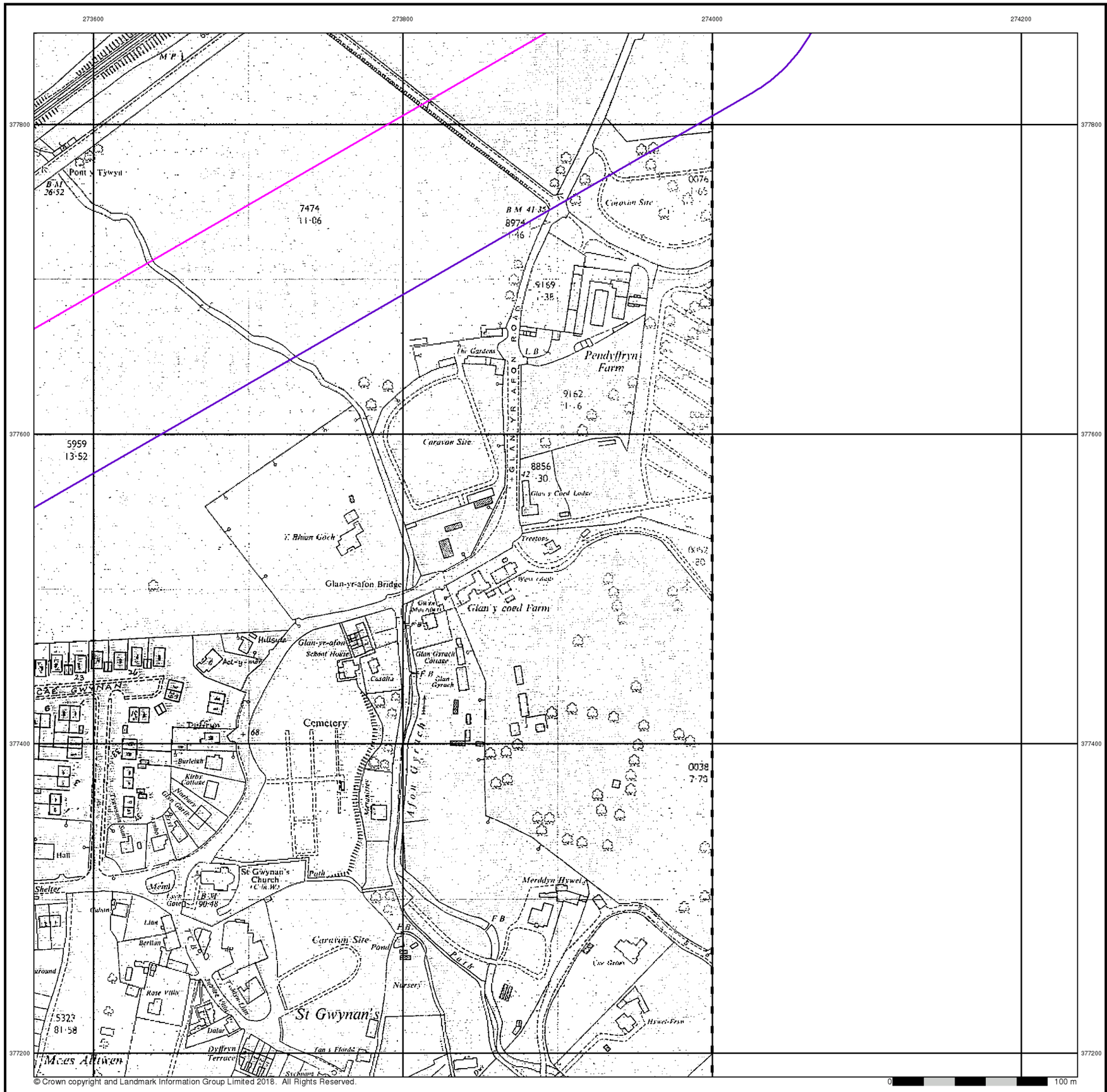
Order Details

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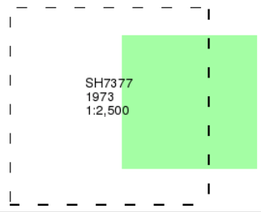
Supply of Unpublished Survey Information

Published 1973

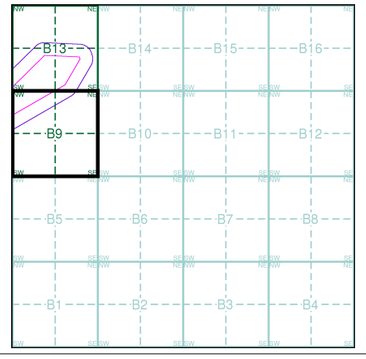
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B9



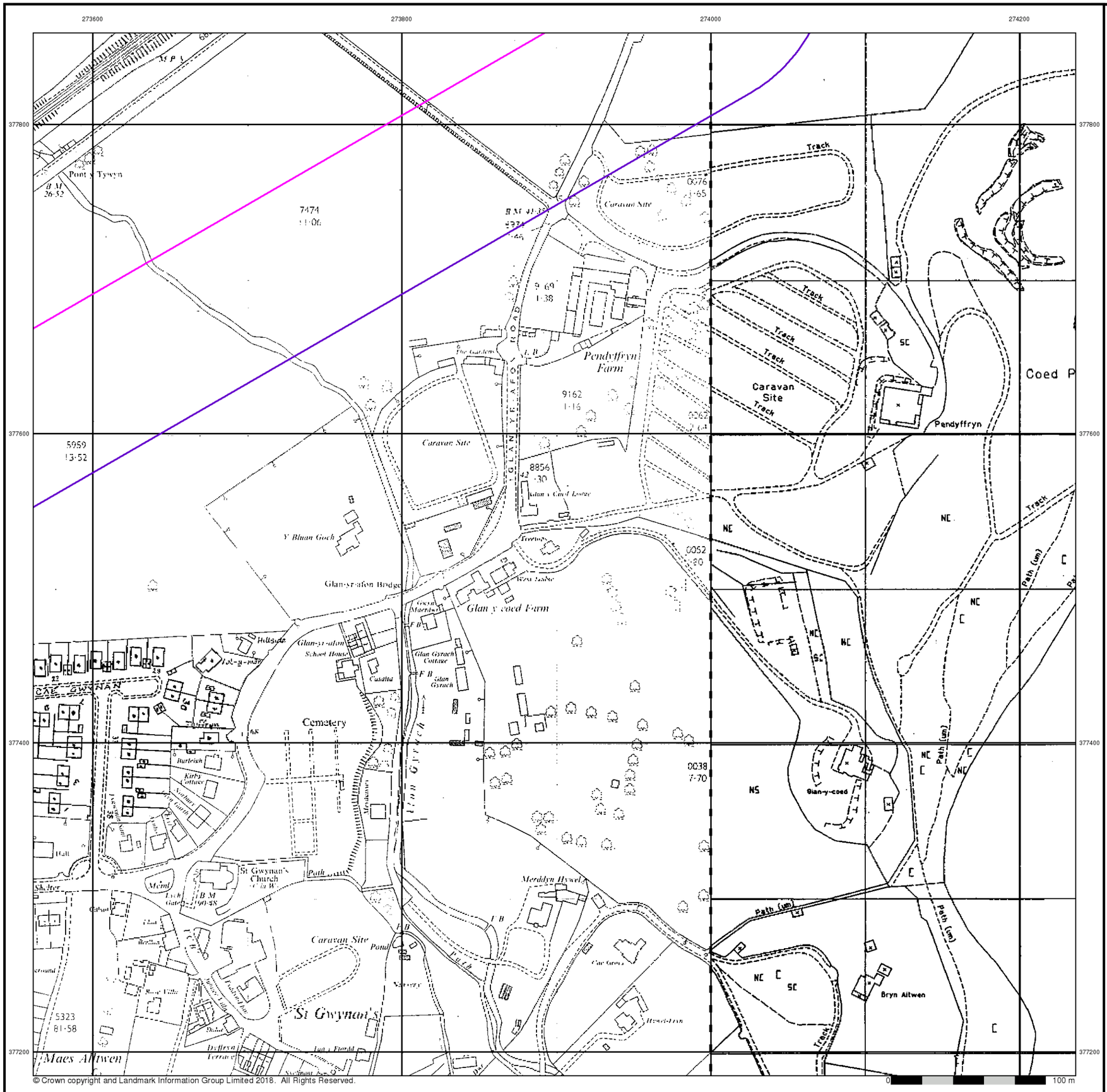
Order Details

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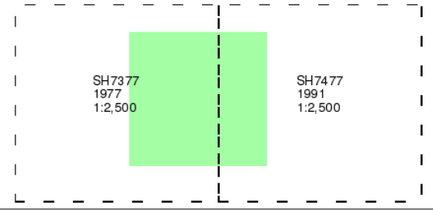
Additional SIMs

Published 1977 - 1991

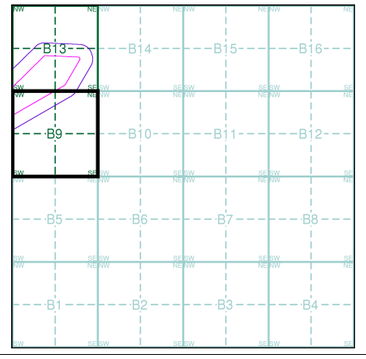
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B9



Order Details

Order Number:	175417398_1_1
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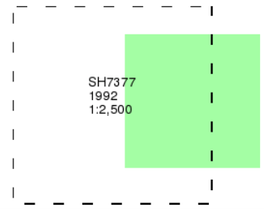
Ordnance Survey Plan

Published 1992

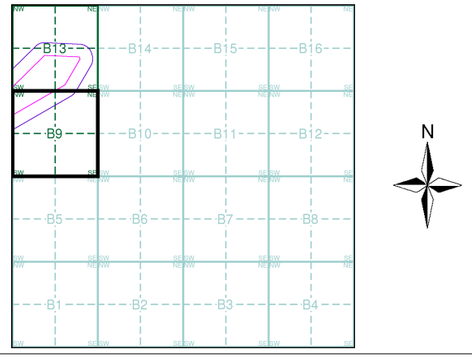
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment B9



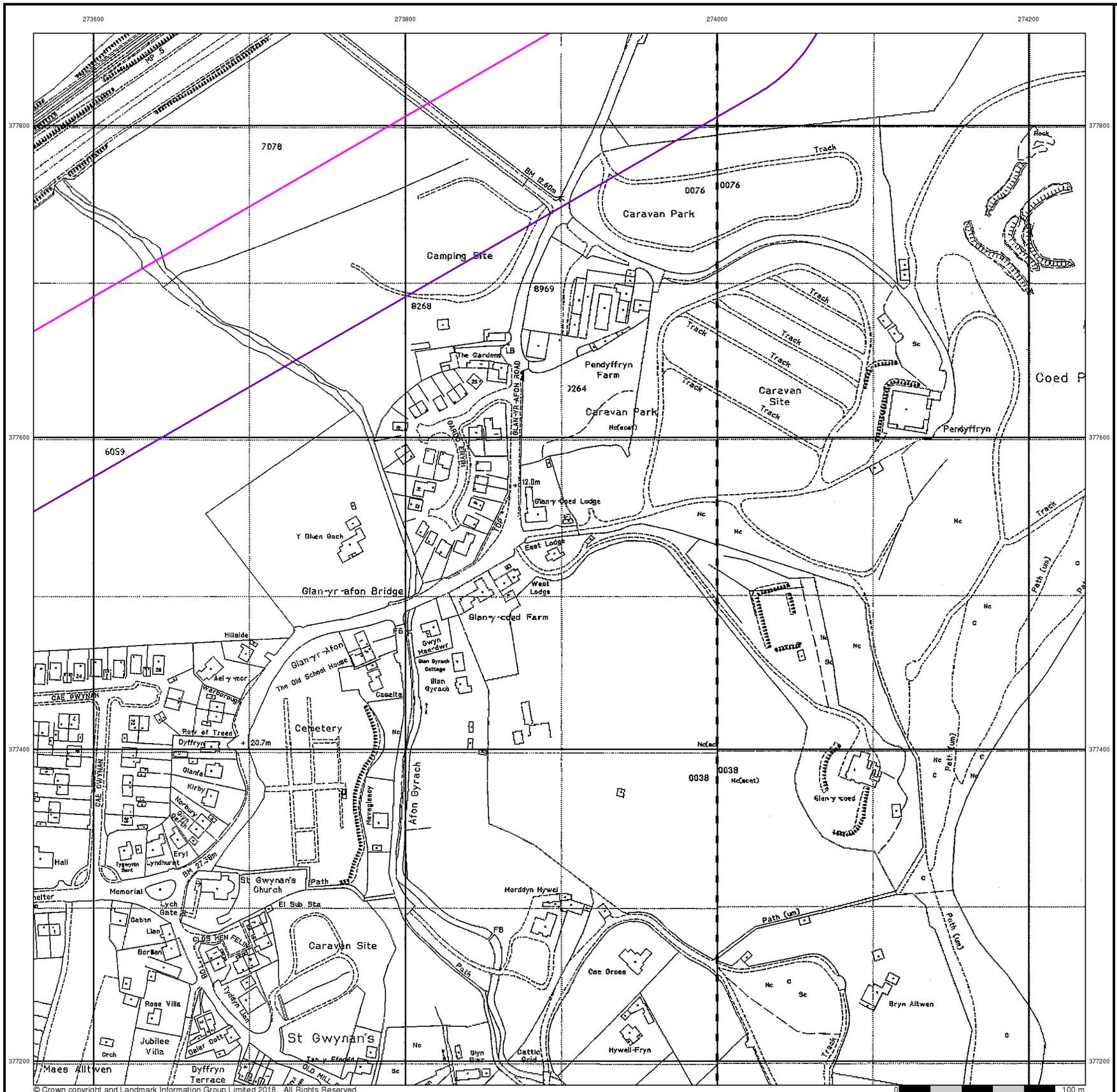
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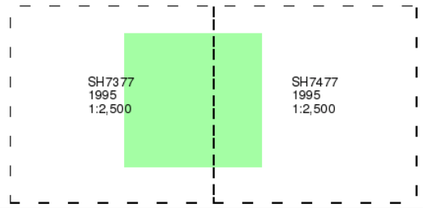
Large-Scale National Grid Data

Published 1995

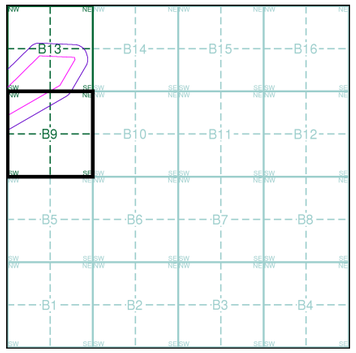
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B9



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

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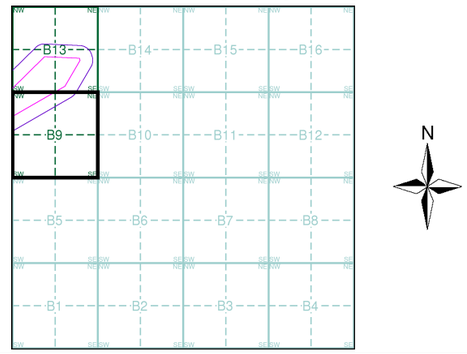


Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment B9



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	100

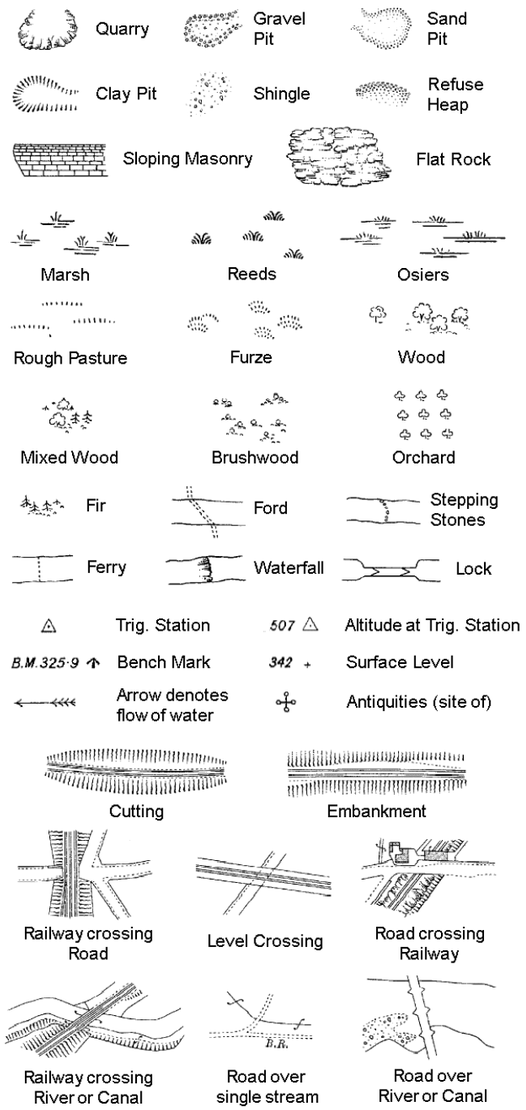
Site Details

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Historical Mapping Legends

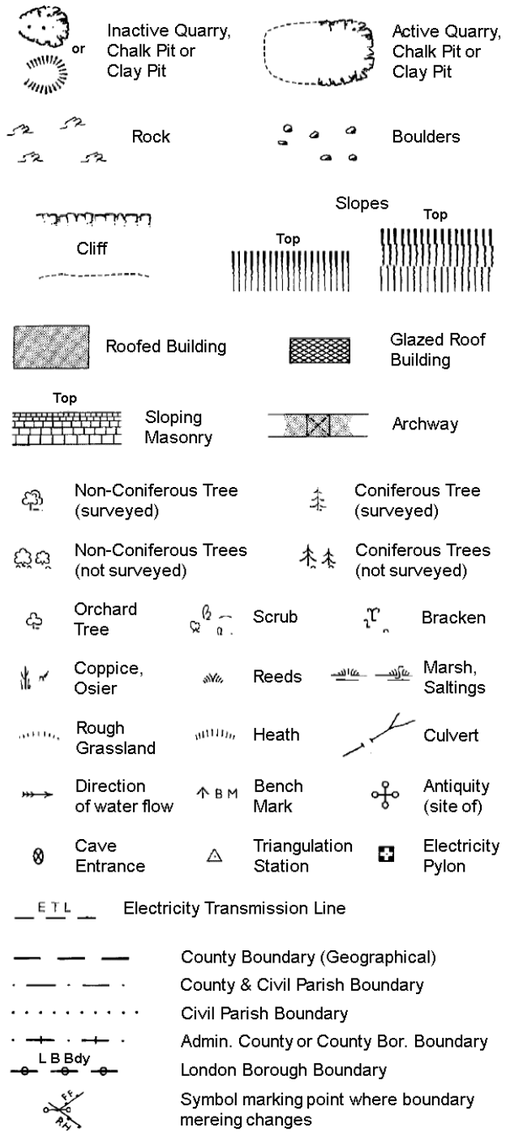
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

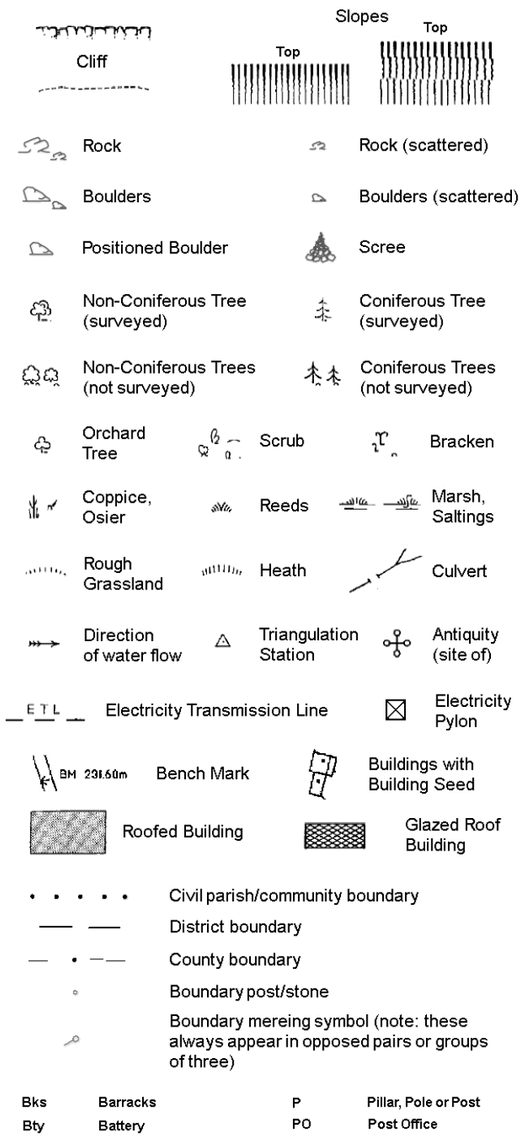
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

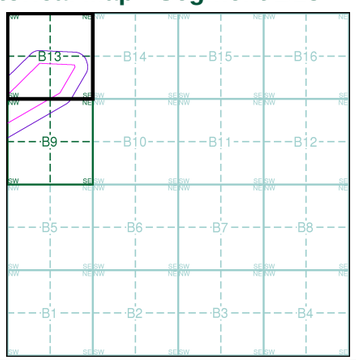
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:2,500	1889	2
Caernarvonshire	1:2,500	1900	3
Caernarvonshire	1:2,500	1913	4
Ordnance Survey Plan	1:2,500	1959 - 1966	5
Supply of Unpublished Survey Information	1:2,500	1973	6
Additional SIMs	1:2,500	1977 - 1991	7
Ordnance Survey Plan	1:2,500	1992	8
Large-Scale National Grid Data	1:2,500	1995	9
Large-Scale National Grid Data	1:2,500	1995	10
Historical Aerial Photography	1:2,500	2000	11

Historical Map - Segment B13



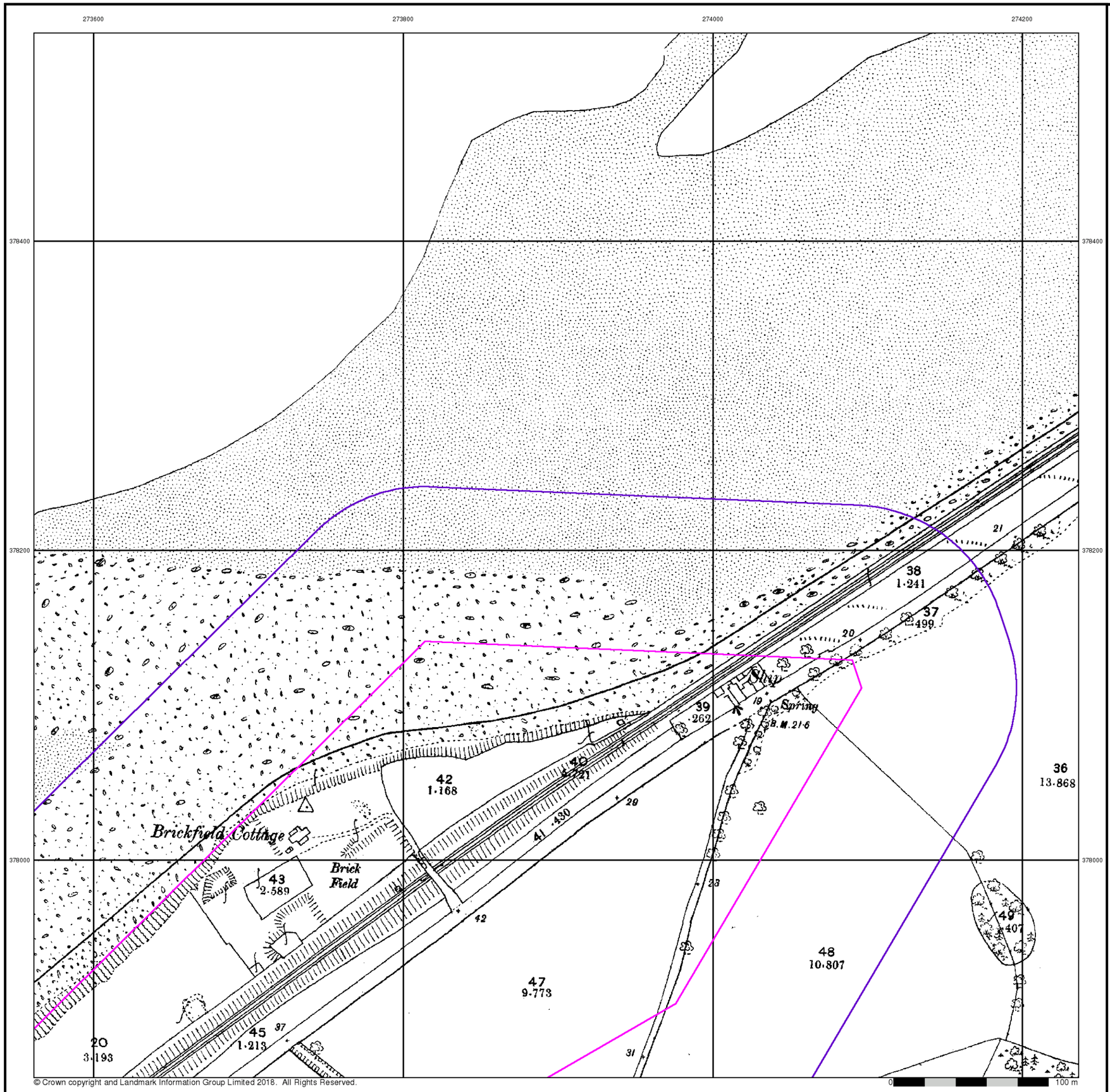
Order Details

Order Number: 175417398_1_1
Customer Ref: 1620004796 - J16
National Grid Reference: 274210, 377710
Slice: B
Site Area (Ha): 28.4
Search Buffer (m): 100

Site Details

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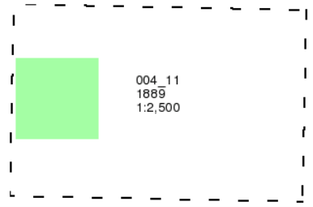
Caernarvonshire

Published 1889

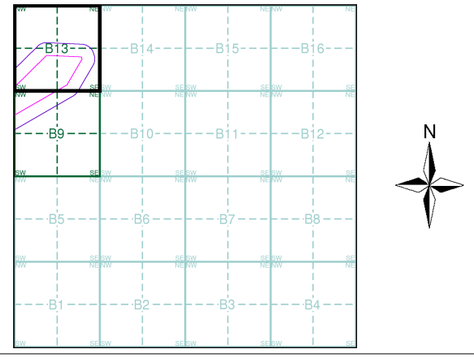
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment B13



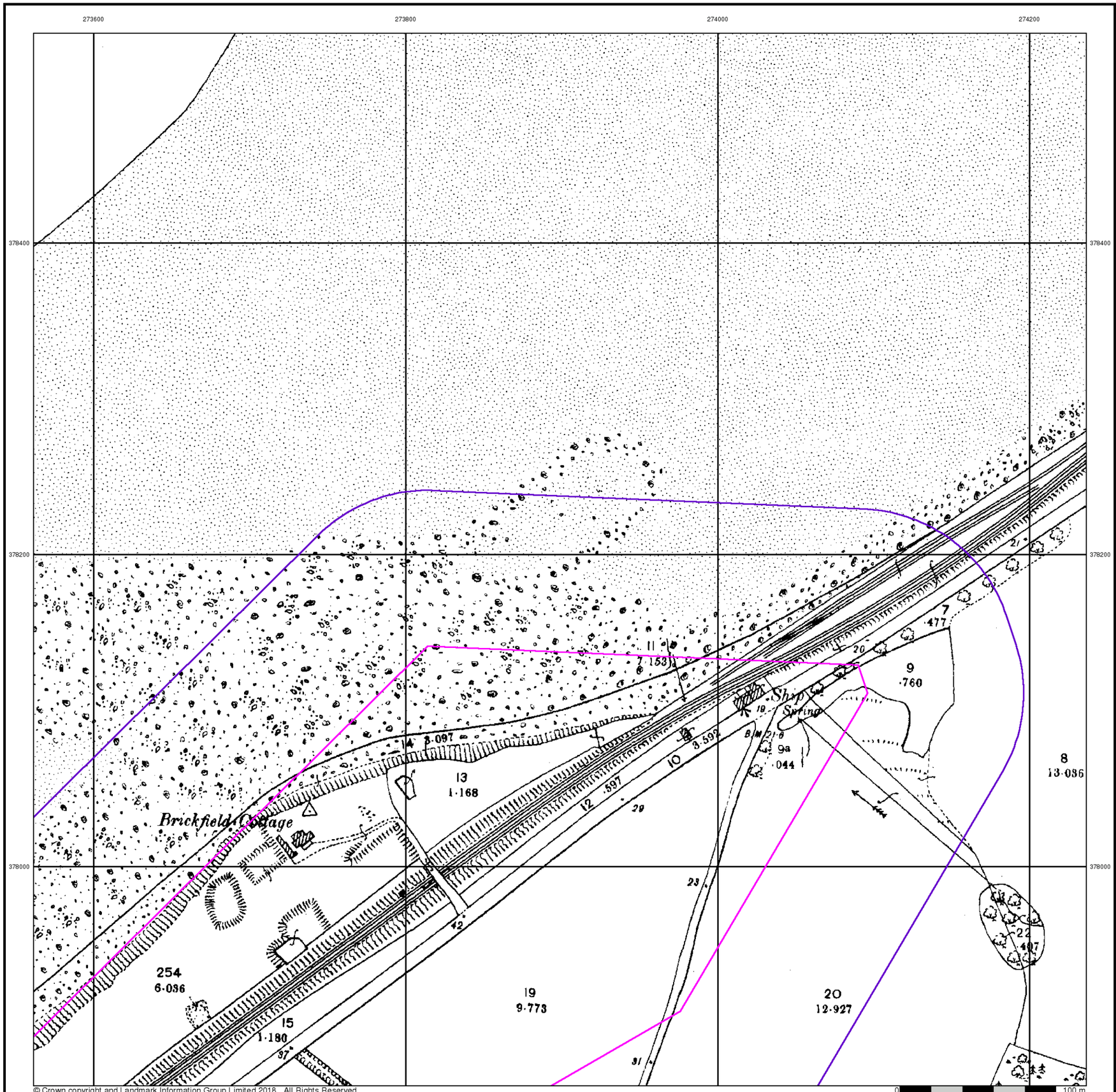
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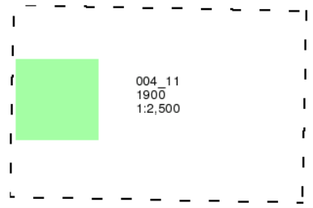
Caernarvonshire

Published 1900

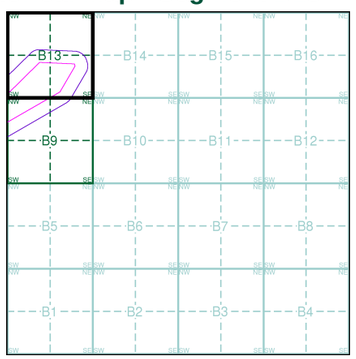
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment B13



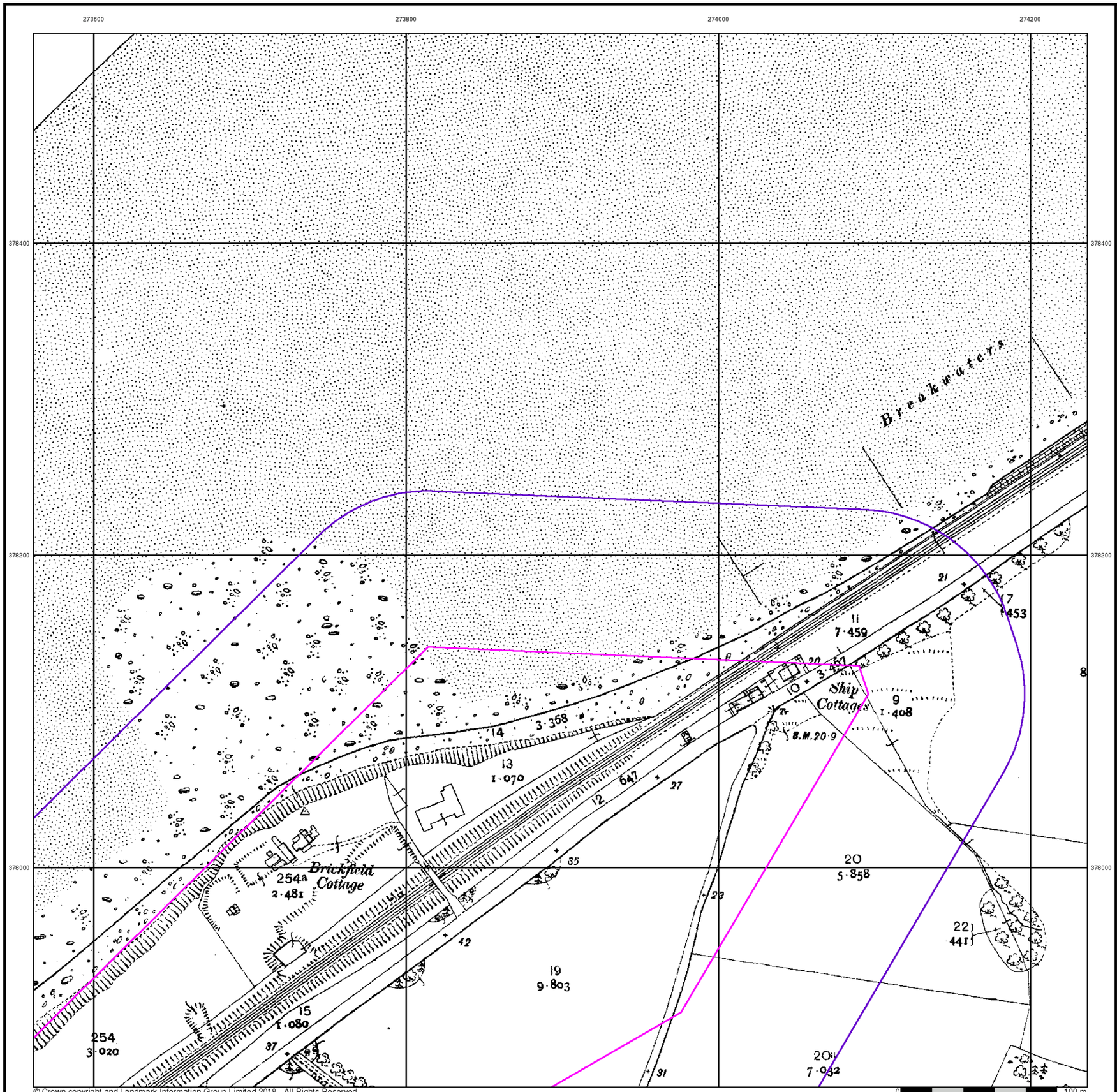
Order Details

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Caernarvonshire

Published 1913

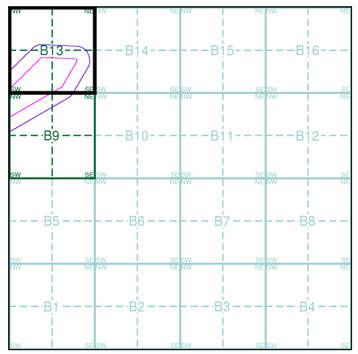
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

004_11
1913
1:2,500

Historical Map - Segment B13



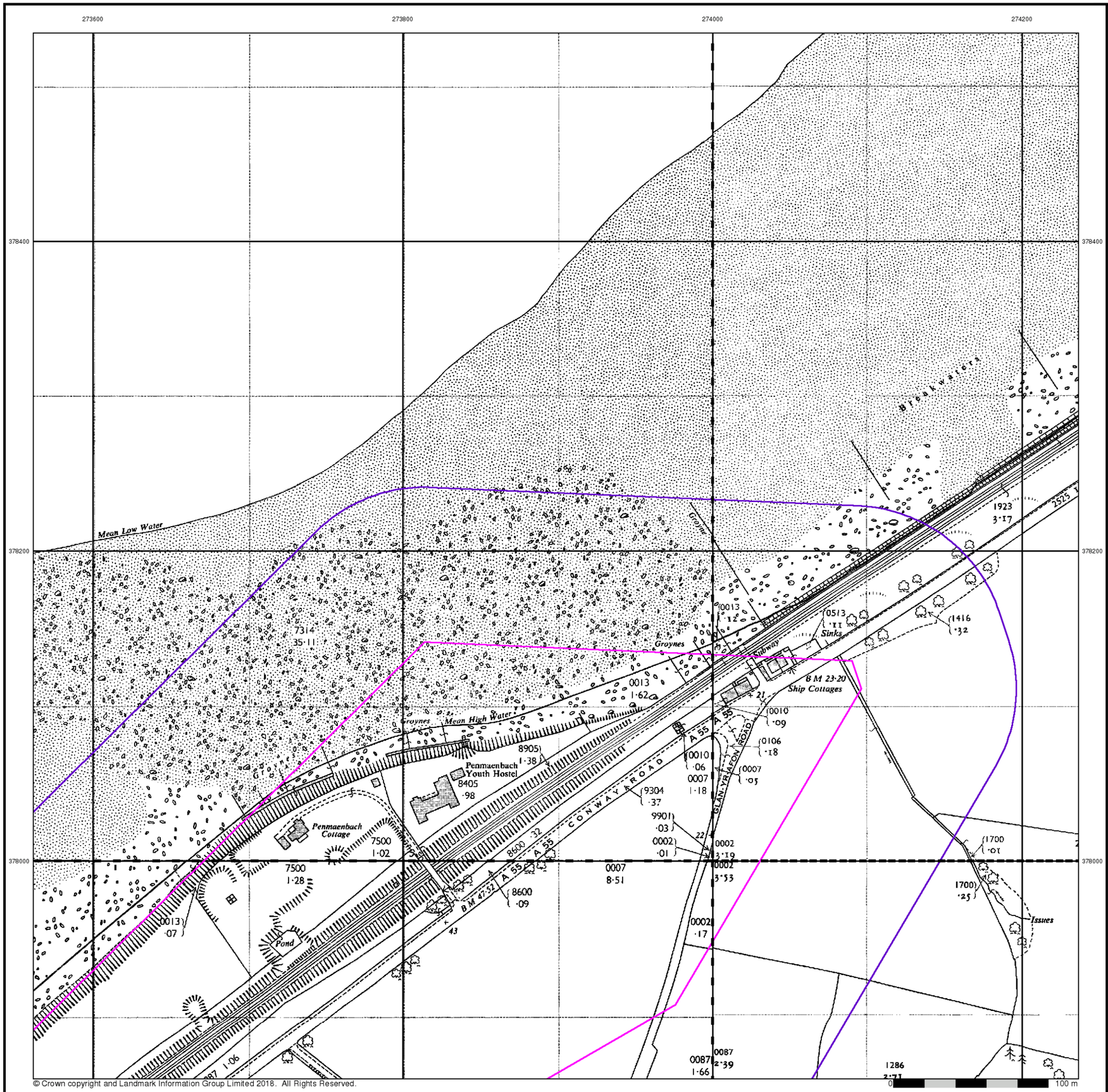
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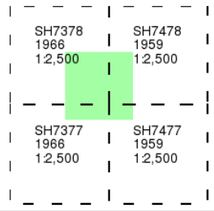
Ordnance Survey Plan

Published 1959 - 1966

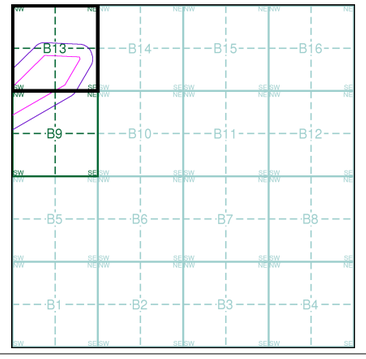
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment B13



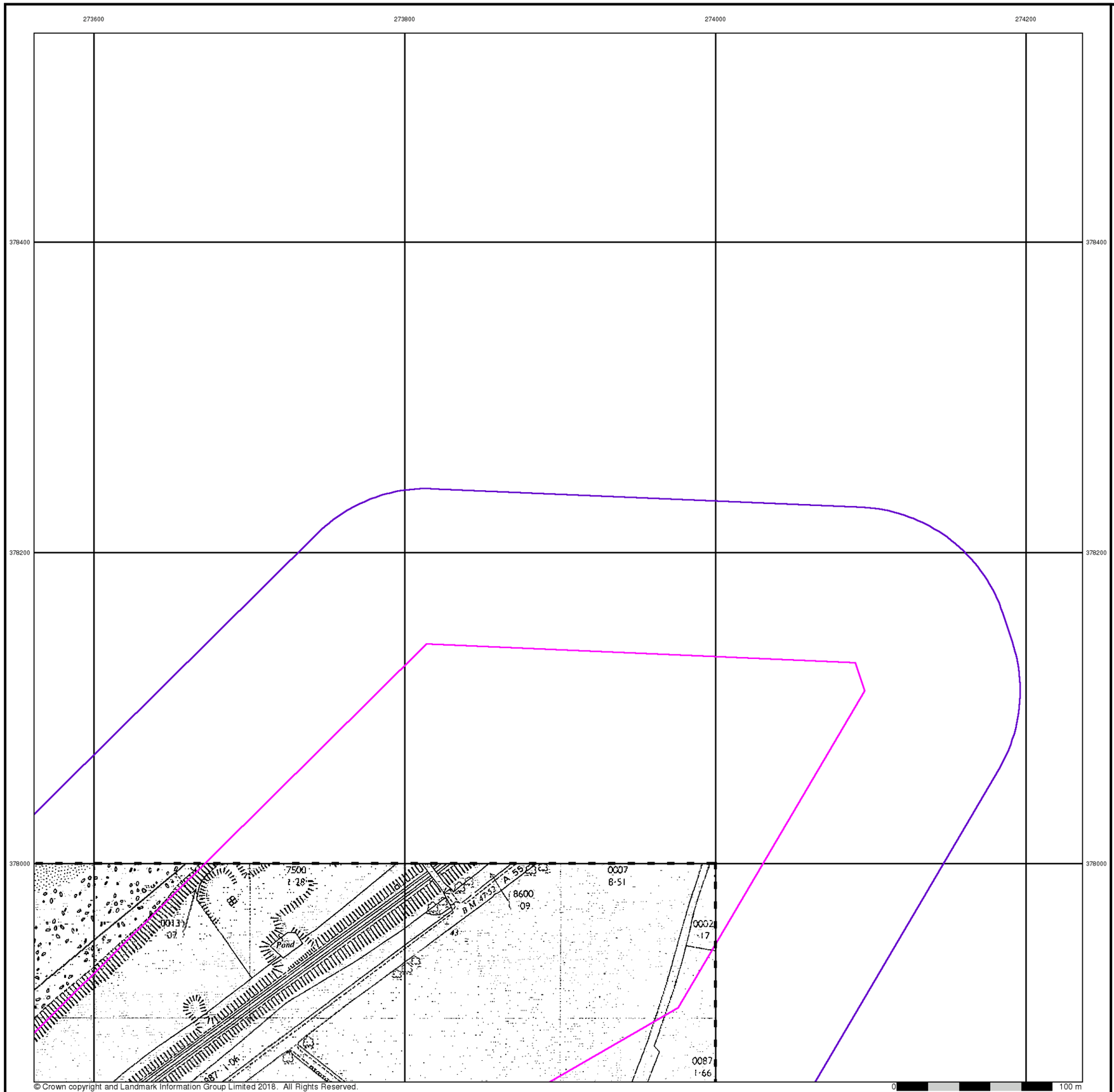
Order Details

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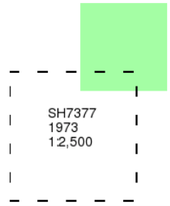
Supply of Unpublished Survey Information

Published 1973

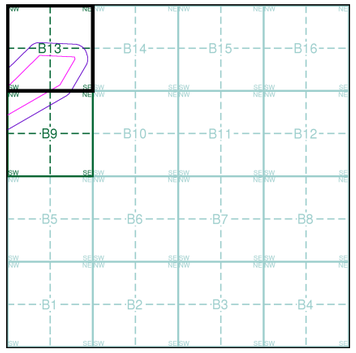
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B13



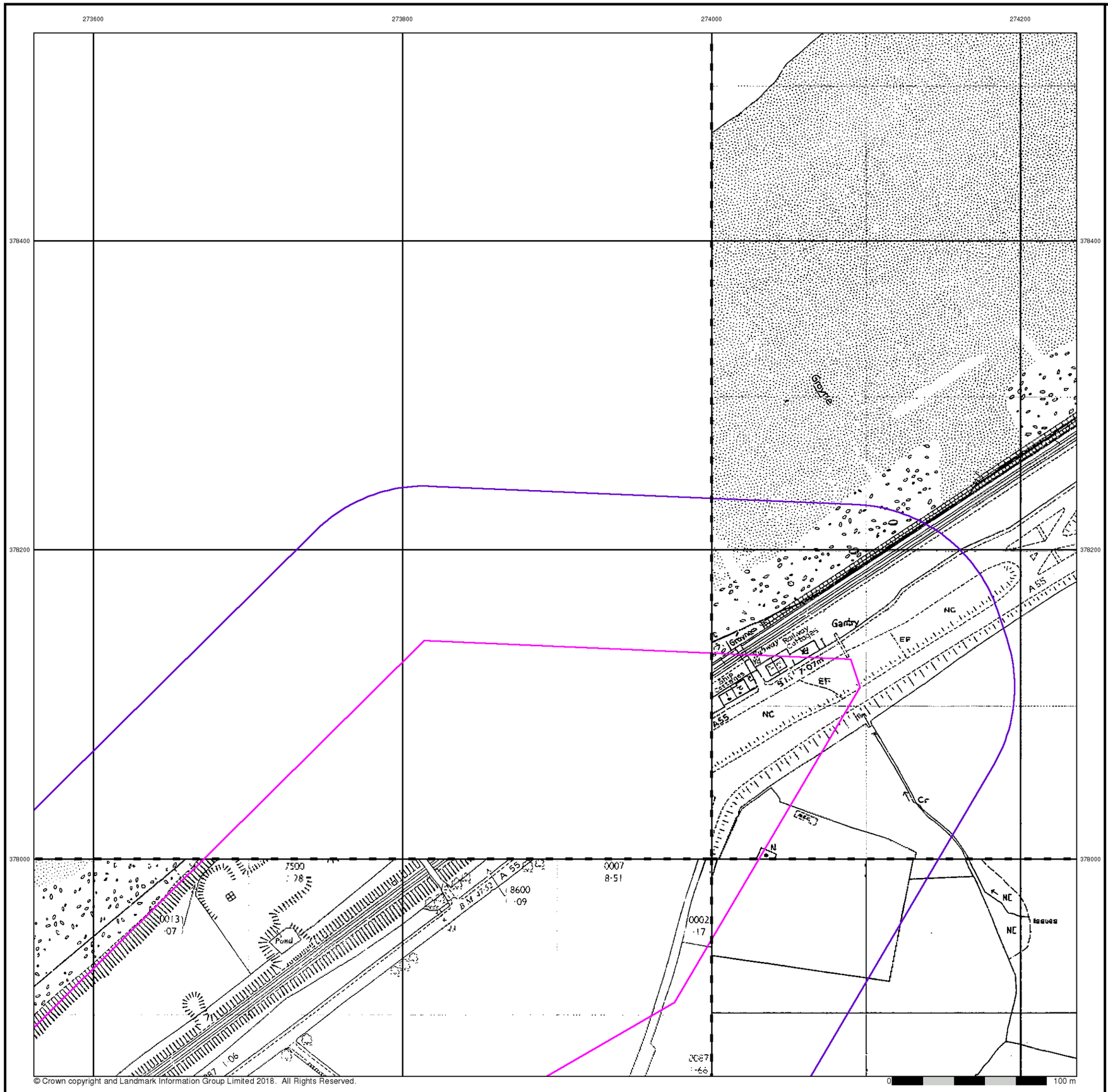
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Slice:	B
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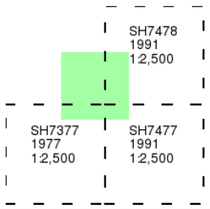
Additional SIMs

Published 1977 - 1991

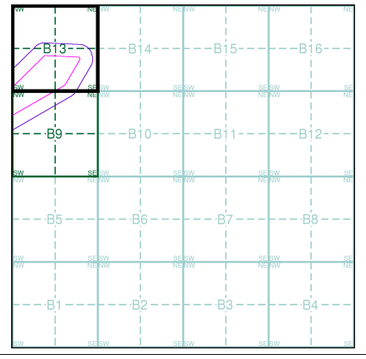
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B13



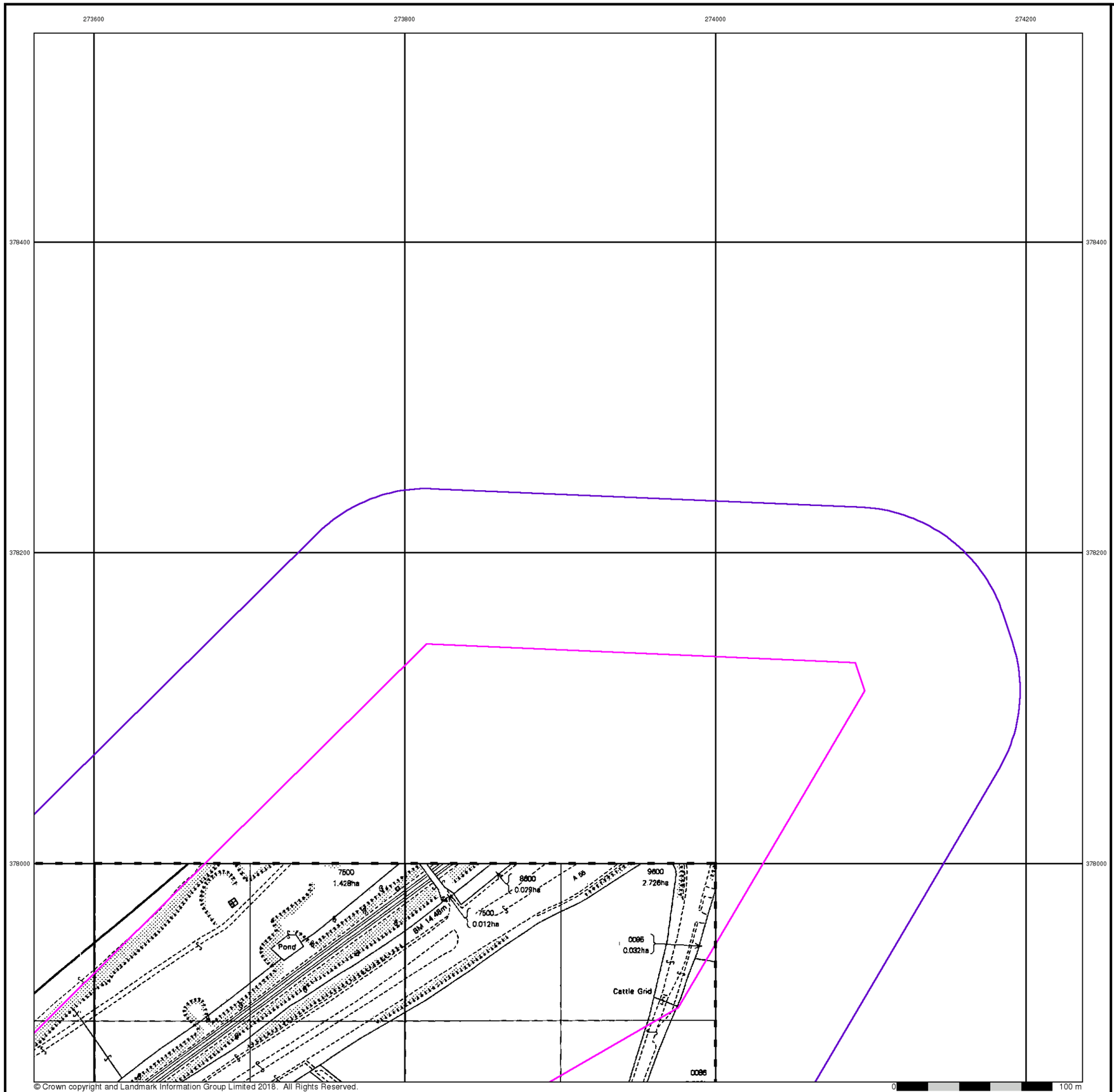
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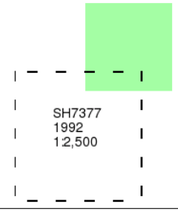
Ordnance Survey Plan

Published 1992

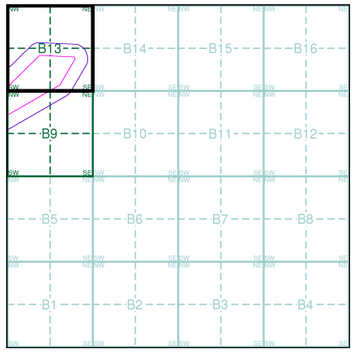
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment B13



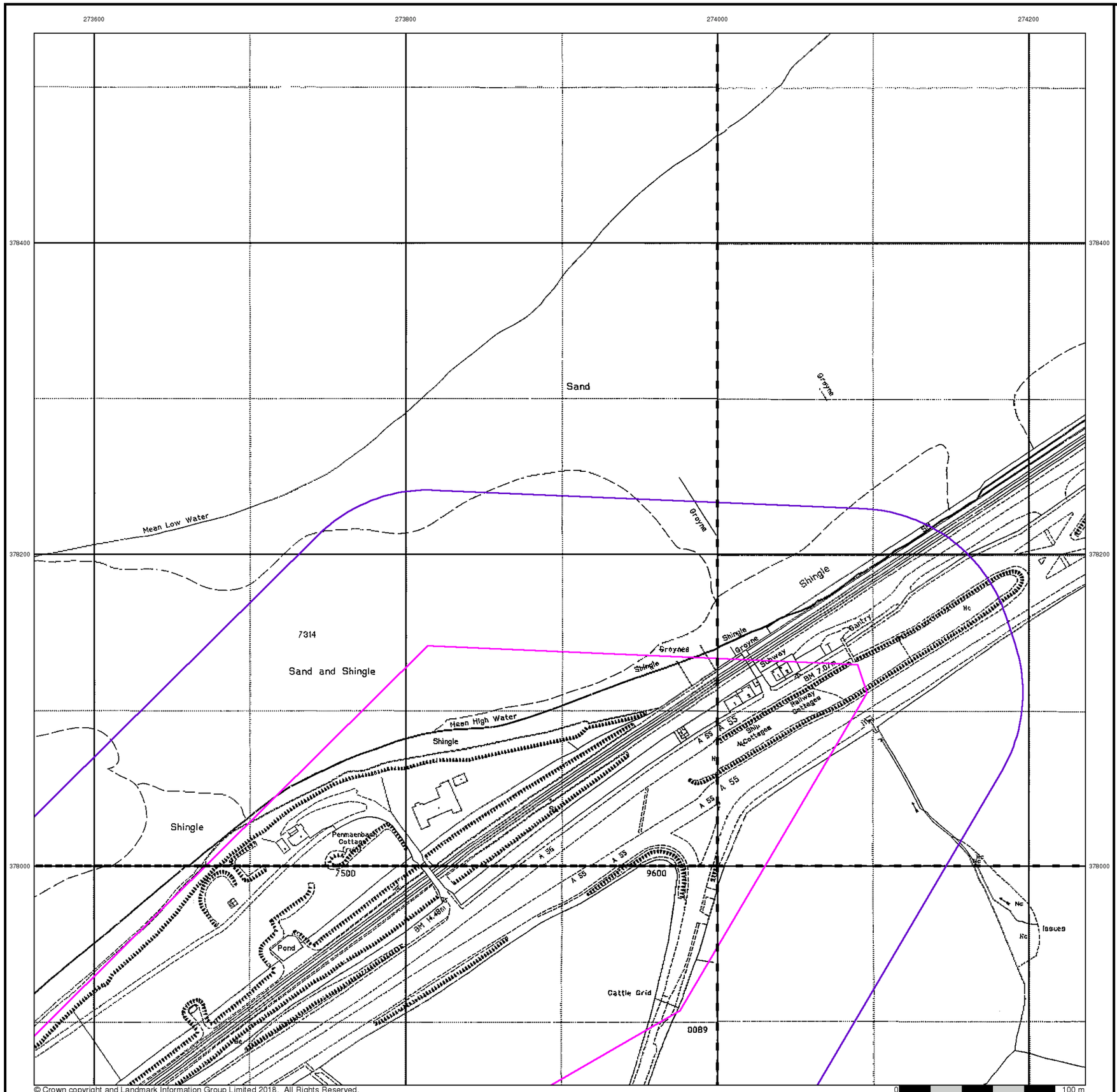
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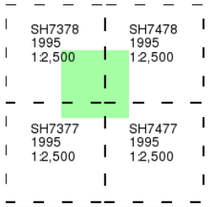
Large-Scale National Grid Data

Published 1995

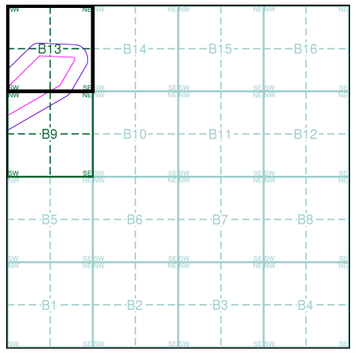
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment B13



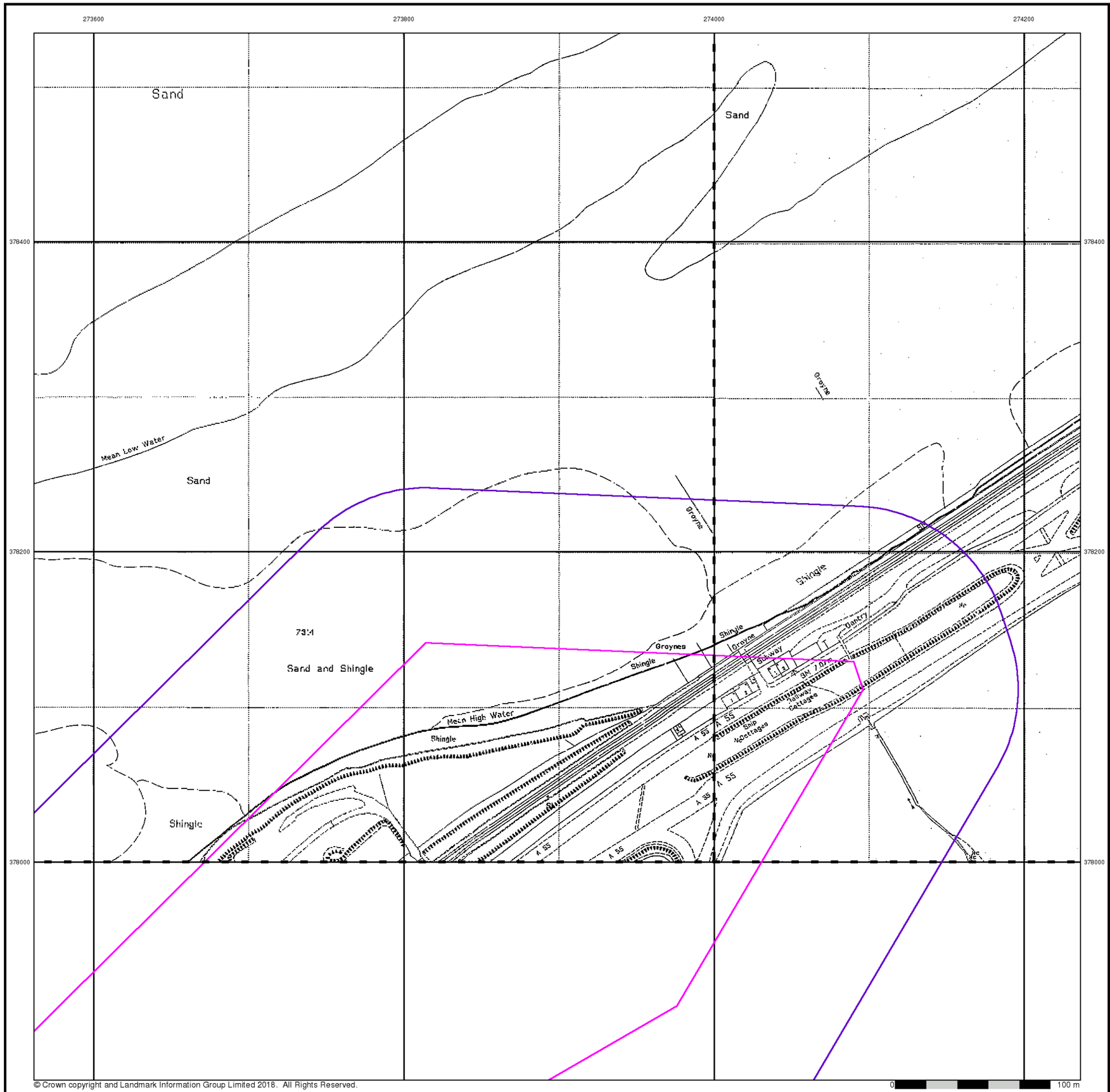
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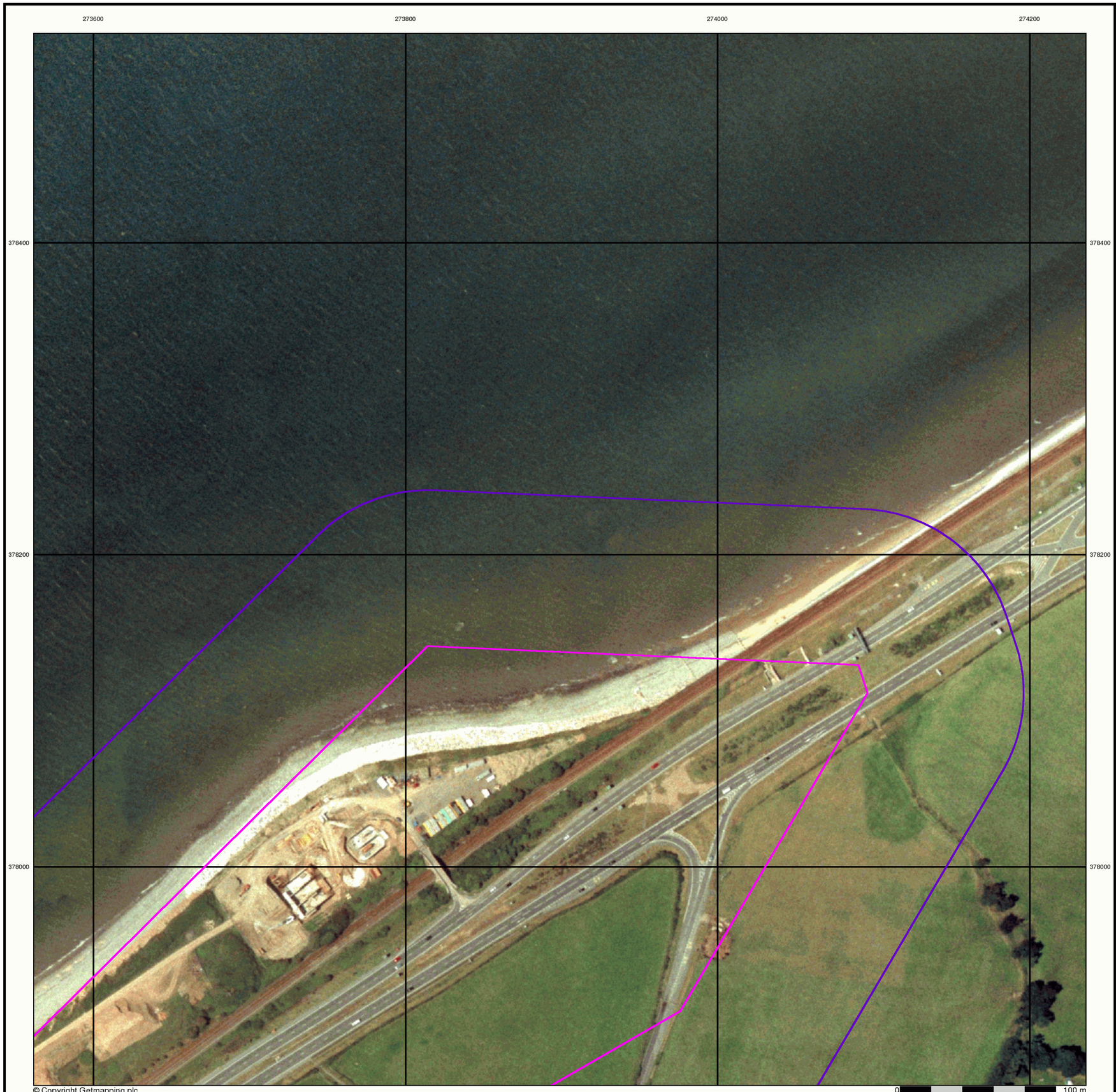
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk


273600
273800
274000
274200
378400
378200
378000
Sand
Sand
Sand
Mean Low Water
Groyne
Groyne
Shingle
Shingle
Groynes
Shingle
Mean High Water
Shingle
Shingle
Sand and Shingle
Dairy
Railway Cottages
Ship Aberdaron
A 55
A 55
A 55



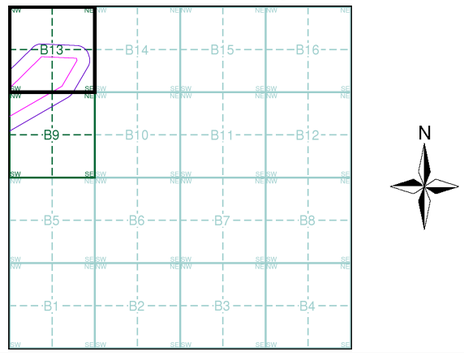
RAMBOLL

Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment B13



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274210, 377710
Slice:	B
Site Area (Ha):	28.4
Search Buffer (m):	100

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
273290, 378750

Slice:
C

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	2
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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Contents

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes		n/a
Contaminated Land Register Entries and Notices					
Discharge Consents					
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 1			Yes	
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability	pg 1	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 1	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 1	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 2	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology			n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 3		Yes		
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards				n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards				n/a	n/a
Potential for Running Sand Ground Stability Hazards				n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards				n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries					
Fuel Station Entries					
Points of Interest - Commercial Services					
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production					
Points of Interest - Public Infrastructure					
Points of Interest - Recreational and Environmental					
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks	pg 4	1			
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 4				1
Special Areas of Conservation	pg 4		1		
Special Protection Areas	pg 4		2		
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	1	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	(S)	0	1	273450 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	0	1	273750 378100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	0	1	273750 378000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	1	273550 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SE)	0	1	273750 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	19	1	274050 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	93	1	274150 378250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	104	1	274200 378150
	Nearest Surface Water Feature	(SE)	286	-	273431 378465
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	C4SE (SE)	0	2	273288 378750
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	(SE)	0	2	273717 378049
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	(S)	0	1	273484 378192
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	(SE)	0	1	273667 378195
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	(SE)	0	1	273730 378053
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
	OS Water Network Lines None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Conwy County Borough Council - Has supplied landfill data		0	3	273288 378750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: 100 - 200 mg/kg Nickel Concentration: no data	C4SE (E)	132	1	273500 378750
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards No Hazard				
	Potential for Compressible Ground Stability Hazards No Hazard				
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards No Hazard				
	Potential for Running Sand Ground Stability Hazards No Hazard				
	Potential for Shrinking or Swelling Clay Ground Stability Hazards No Hazard				
	Radon Potential - Radon Affected Areas No Data Available				
	Radon Potential - Radon Protection Measures No Data Available				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**National Parks** Name: Snowdonia Multiple Area: N Area (m2): 2139330937.98 Source: Natural Resources Wales **Status: Fully Designated - designated as a National Park** Designation Date: 31st December 1951	(SE)	0	4	274039 378095
2	**Sites of Special Scientific Interest** Name: Aber Afon Conwy Multiple Areas: N Total Area (m2): 13007686.27 Source: Natural Resources Wales Reference: 254531wlz Designation Details: Biological Designation Date: 11th December 2003 Date Type: Notified	(NE)	661	4	273821 379499
3	**Special Areas of Conservation** Name: Y Fenai A Bae Conwy / Menai Strait And Conwy Bay Multiple Areas: N Total Area (m2): 265017352.03 Source: Natural Resources Wales Reference: Uk0030202 **Status: Designated**	C4SE (SE)	184	4	273288 378750
4	**Special Protection Areas** Name: Liverpool Bay / Bae Lerpwl (Wales) Multiple Areas: N Total Area (m2): 786840845.92 Source: Natural Resources Wales Reference: UK9020294 Designation Date: 31st October 2017	C4SE (SE)	184	4	273288 378750
5	**Special Protection Areas** Name: Liverpool Bay Multiple Areas: N Total Area (m2): 1696797358.7 Source: Natural England Reference: UK9020294 Designation Date: Not Supplied	C4SE (SE)	186	5	273288 378750

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Conwy County Borough Council - Environmental Health Department	August 2013	Annual Rolling Update
Isle Of Anglesey Council - Environmental Health Department	October 2017	Annual Rolling Update
Discharge Consents		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	August 2014	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Welsh Region	October 2008	Variable
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Isle Of Anglesey Council - Environmental Health Department	October 2014	Variable
Local Authority Pollution Prevention and Controls		
Conwy County Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
Isle Of Anglesey Council - Environmental Health Department	October 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Isle Of Anglesey Council - Environmental Health Department	October 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	September 2017	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Registered Radioactive Substances		
Natural Resources Wales	January 2015	As notified
Environment Agency - Welsh Region	January 2015	
Substantiated Pollution Incident Register		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Industry Act Referrals		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	October 2017	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified
Superficial Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified

Agency & Hydrological	Version	Update Cycle
Source Protection Zones Natural Resources Wales	November 2016	As notified
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Natural Resources Wales	April 2018	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	January 2018	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Landfill Coverage		
Conwy County Borough Council - Environmental Health Department	May 2000	Not Applicable
Isle Of Anglesey Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Conwy County Borough Council - Environmental Health Department	July 2003	Not Applicable
Isle Of Anglesey Council - Environmental Health Department	May 2000	Not Applicable
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - North Area	March 2003	Not Applicable
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Conwy County Borough Council - Planning Department	February 2016	Variable
Isle Of Anglesey Council - Planning Department	February 2016	Variable
Planning Hazardous Substance Consents		
Conwy County Borough Council - Planning Department	February 2016	Variable
Isle Of Anglesey Council - Planning Department	February 2016	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2018	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	May 2018	Quarterly
Fuel Station Entries Catalist Ltd - Experian	April 2018	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural Resources Wales	October 2017	Bi-Annually
Areas of Outstanding Natural Beauty		
Natural Resources Wales	February 2018	Bi-Annually
Environmentally Sensitive Areas		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Conwy County Borough Council	February 2018	Bi-Annually
Isle Of Anglesey Council	February 2018	Bi-Annually
Marine Nature Reserves		
Natural Resources Wales	October 2017	Bi-Annually
National Nature Reserves		
Natural Resources Wales	February 2018	Bi-Annually
National Parks		
Natural Resources Wales	February 2018	Annually
Nitrate Vulnerable Zones		
Natural Resources Wales	July 2017	Bi-Annually
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	October 2005	
Ramsar Sites		
Natural Resources Wales	February 2018	Bi-Annually
Sites of Special Scientific Interest		
Natural Resources Wales	February 2018	Bi-Annually
Special Areas of Conservation		
Natural Resources Wales	February 2018	Bi-Annually
Special Protection Areas		
Natural England	February 2018	Bi-Annually
Natural Resources Wales	February 2018	Bi-Annually

Data Suppliers

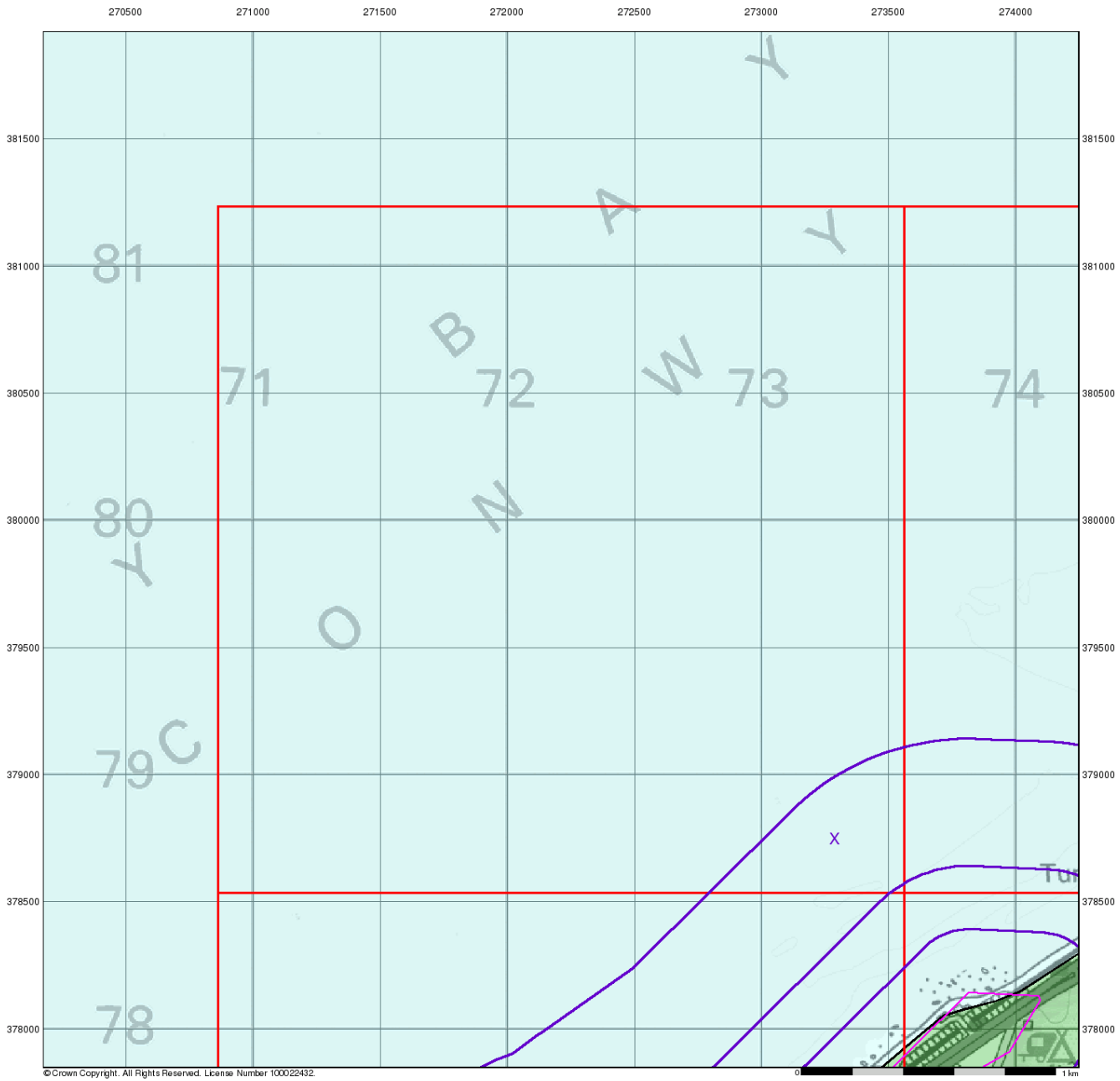
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Conwy County Borough Council - Environmental Health Department** Civic Offices, Colwyn Bay, Gwynedd, LL29 8AR	Telephone: 01492 575187 Fax: 01492 575204 Website: www.conwy.gov.uk
4	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
5	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



RAMBOLL

Groundwater Vulnerability

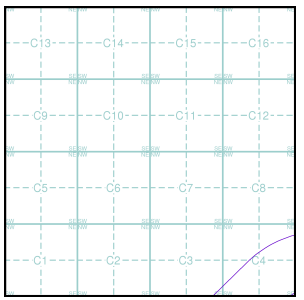
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice C



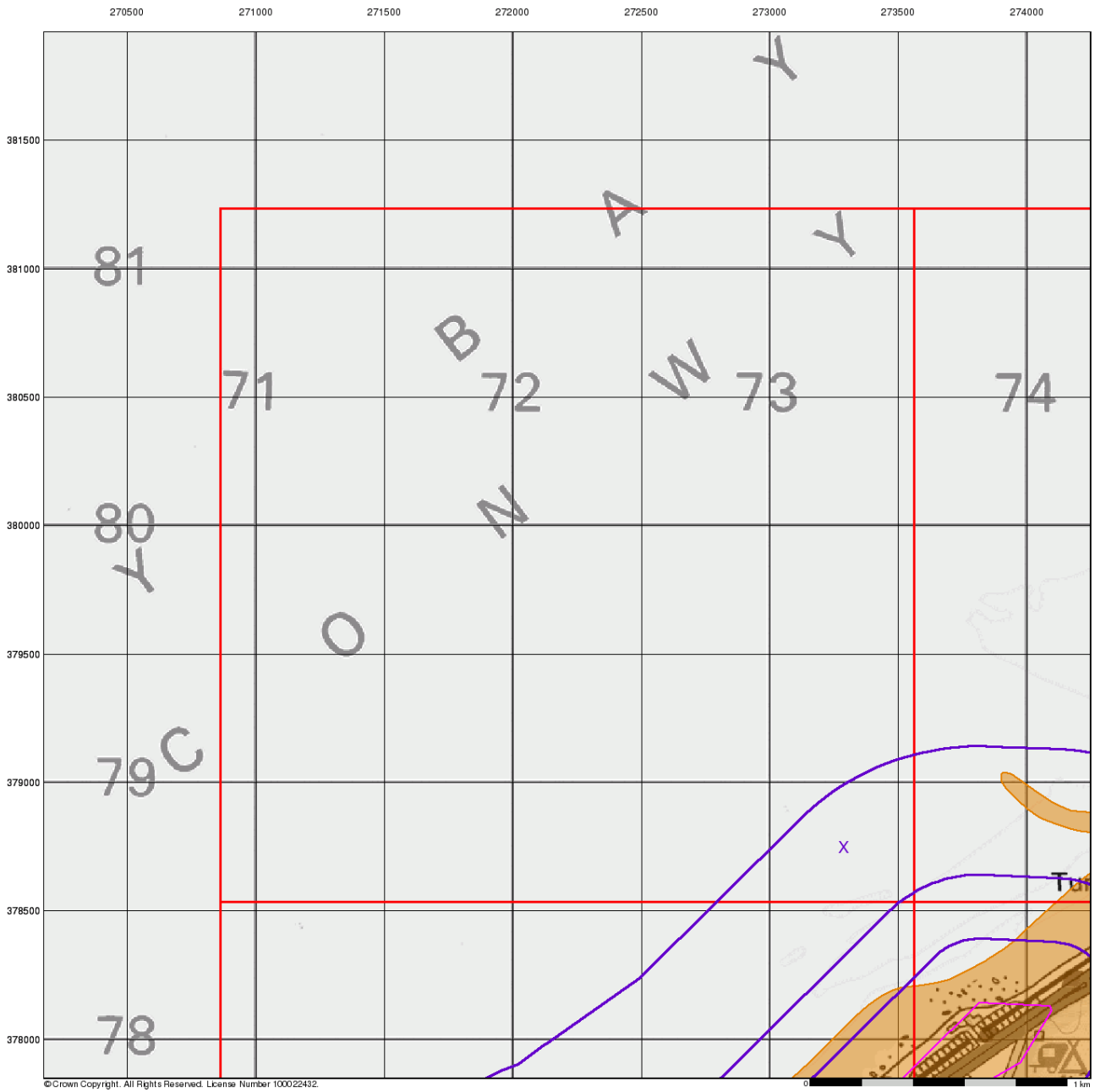
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

Bedrock Aquifer Designation

General

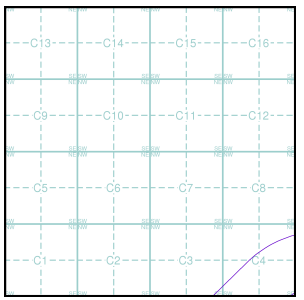
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice C



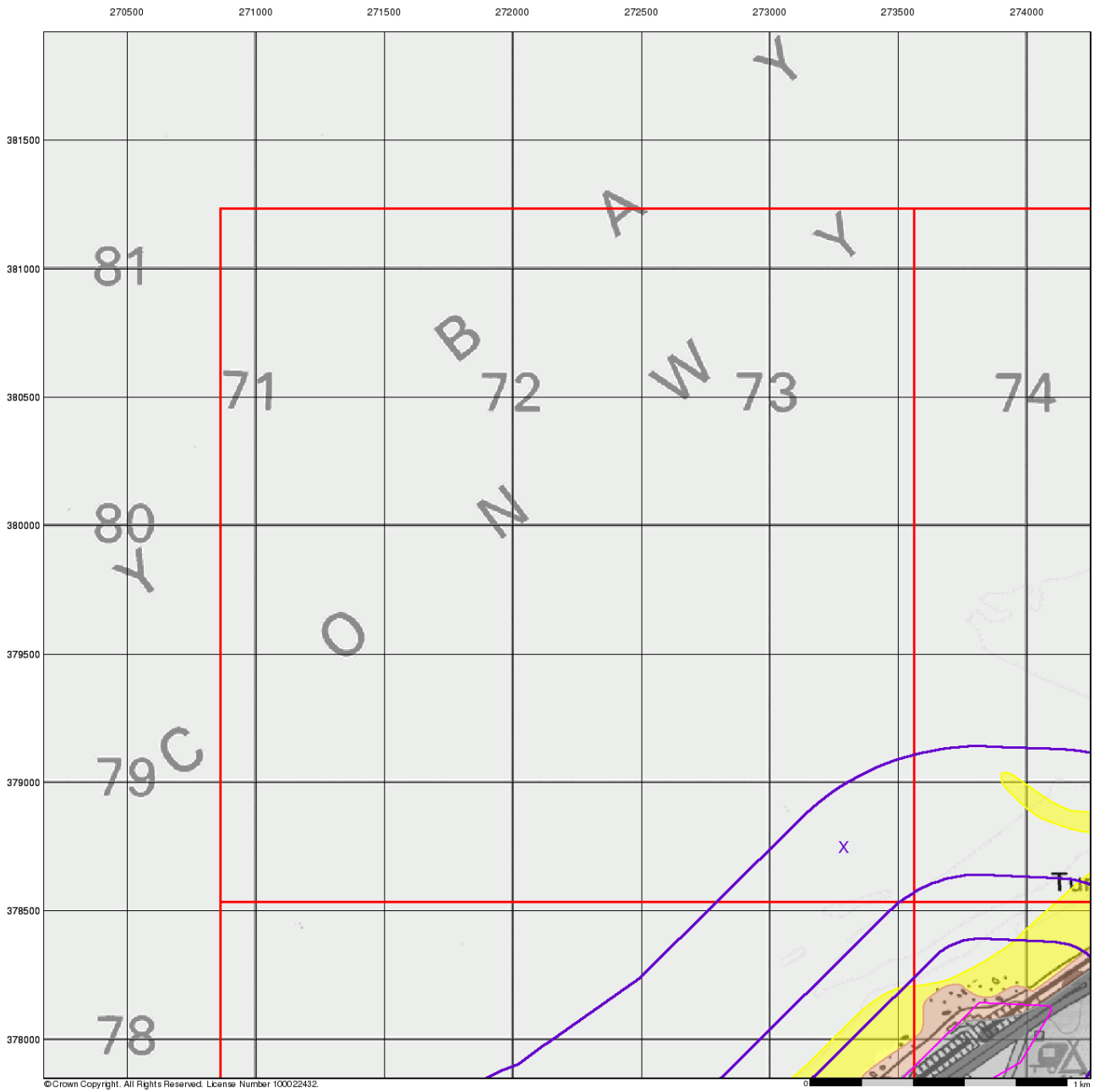
Order Details

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RAMBOLL

Superficial Aquifer Designation

General

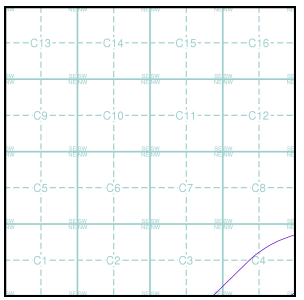
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice C



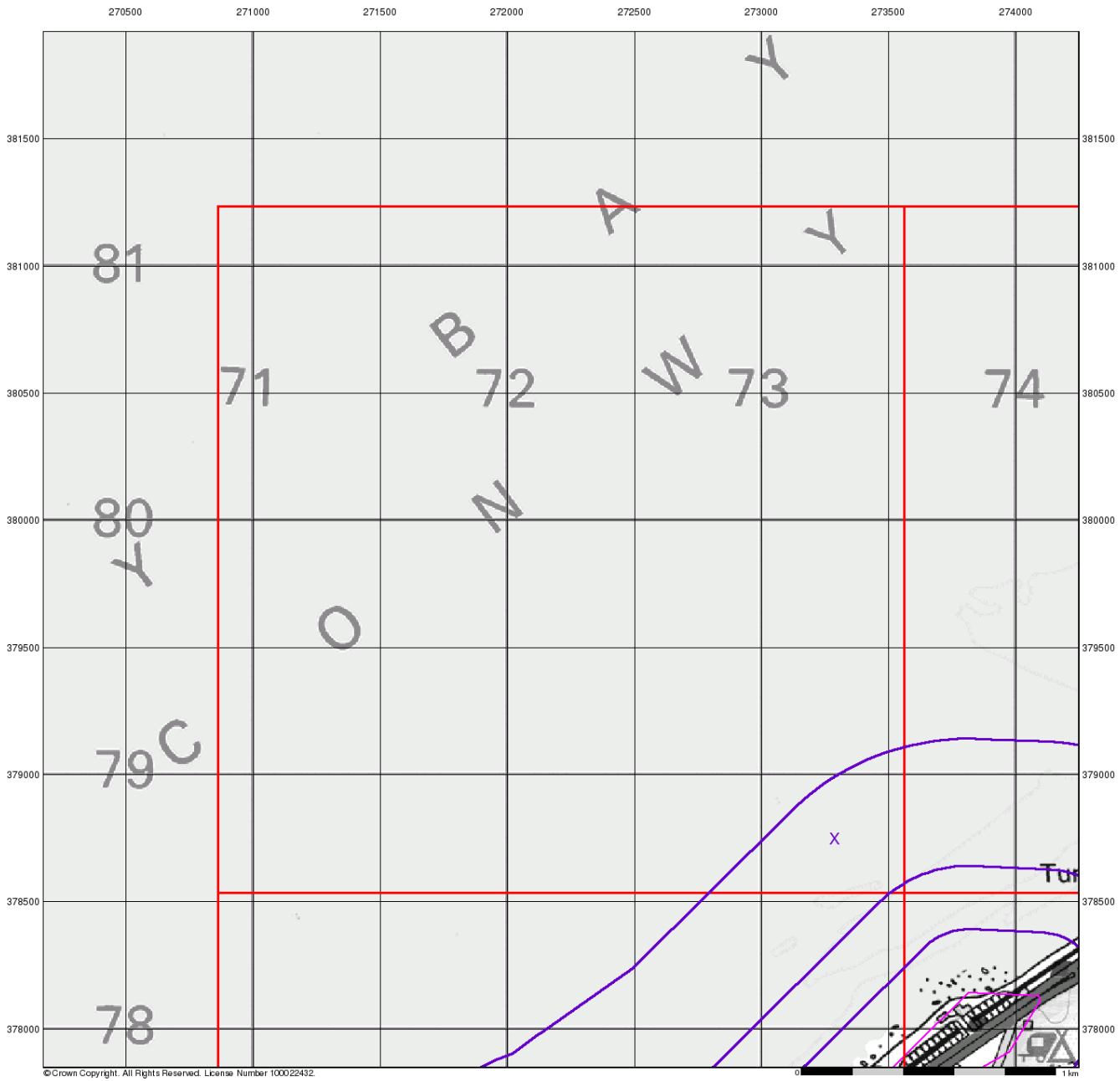
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Source Protection Zones

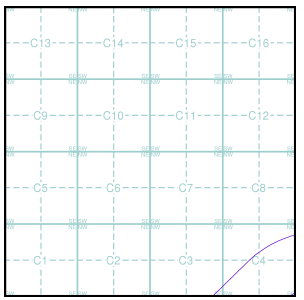
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice C



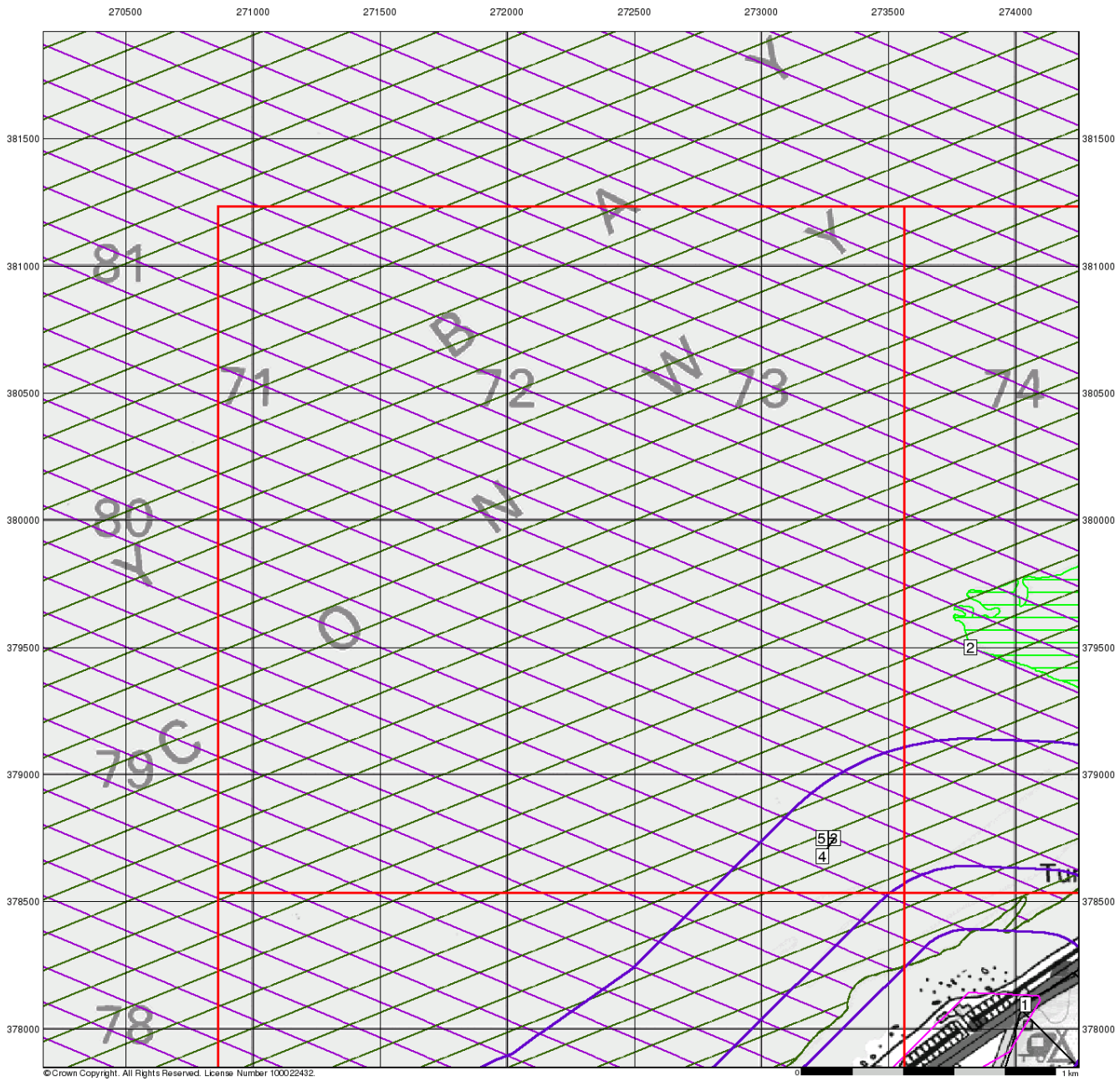
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Customer Ref:	1620004796 - J16
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Site Area (Ha):	28.4
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Sensitive Land Uses

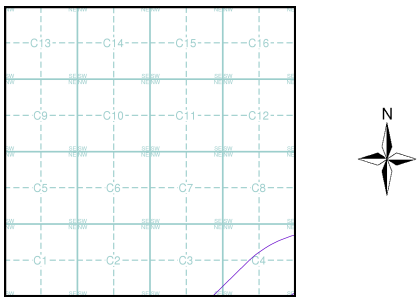
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice C



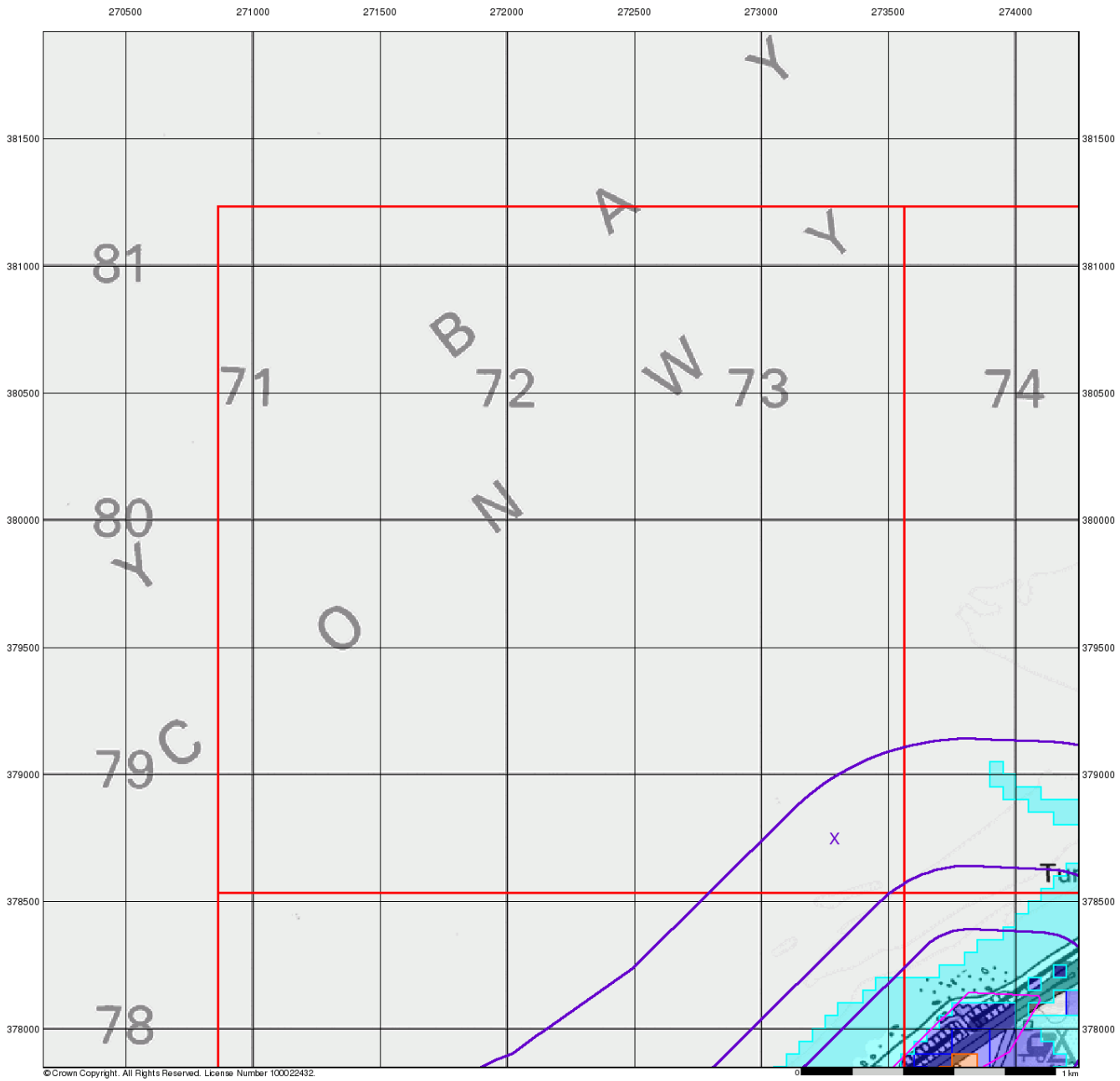
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
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Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
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RAMBOLL

BGS Flood GFS Data

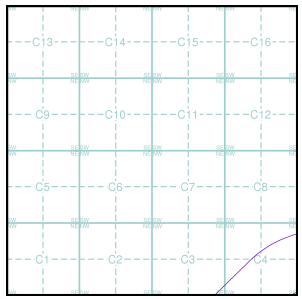
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice C



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Envirocheck® Report:

Flood Screening Report Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
273290, 378750

Slice:
C

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer(s) selected. For ease of reference, the report is broken down into seven sections of data.	
EA / NRW / CEH Flood Data	-
This section details data from the Environment Agency/Natural Resources Wales and the Centre for Ecology and Hydrology. The EA/NRW data is reported to a distance of 250m from the edge of the site polygon and details both Zone 2 (extreme) and Zone 3 flood extents, as well as flood defences, flood water storage areas and areas benefiting from flood defences. The CEH data is reported to a distance of 250m from the edge of the site polygon and covers flood data for Scotland, divided into levels based on the frequency and magnitude of a predicted 100 year term. All data sets within this section are plotted and feature on the EA / NRW / CEH Flood Data (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
JBA Flood Data	1
This section contains the Comprehensive Flood Map ("CFM") data from JBA Risk Management Limited. The data is based upon the likelihood of a flood occurrence for up to 4 flood return periods depending on the type of flooding; these being 75 years, 100 years, 200 years and 1000 years. Each layer being modelled at a 5m cell resolution. Each return period is depicted on a separate 1:10,000 scale map and reports features to a distance of 250m in the datasheet from the edge of the site polygon. For each return period the following three sources of flooding are identified, surface water or pluvial flooding, undefended river flooding or fluvial flooding and undefended coastal flooding. In each case the extent of the flooding source is displayed with the associated depth range. In addition, a 1:10,000 scale map depicting flooding from a Canal Failure and a coverage check for this dataset is included. Where coverage exists, information is reported in the datasheet where the site could be affected by flooding that results from a dam breach. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
BGS Flood Data	2
This section contains two BGS data sets; namely Geological Indicators of Flooding and Groundwater Flooding Susceptibility, both of which report features out to a possible 1000m, with coverage in England, Wales and Scotland. Each data set is plotted on a seperate BGS Flood Data (1:50,000) map.	
GeoSmart Information Groundwater Flood Data	3
This section contains data provided by GeoSmart Information who, building on their expertise, have developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in Great Britain. The resulting map, classifies groundwater flood risk for each 5m x 5m into four categories, negligible, low, moderate and high. These classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 200 years.	
OS Water Network Data	-
This section details the MasterMap Water Network data sourced from the Ordnance Survey. The OS MasterMap Water Network data details a network representing the watercourse within Great Britain. The OS Water Network Lines data set details the approximate central alignment of a watercourse, including rivers, lakes and canals. The OS Water Network Nodes data set details features that represent a river's source, end, a junction where three of more links meet, and places where the real world related attribution changes; for example a watercourse becoming tidal. The data sets within this section are plotted and feature on the OS Water Network Map (1:10,000) . For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	

Contents

EA/NRW Historic Flood Events Data	**-**

This section details Historic Flood data sourced from the Environment Agency/Natural Resources Wales and from data held by Landmark. The EA/NRW Historic Flood Events data is reported to a distance of 1000m from the edge of the site polygon and details recorded historic flood events from 1703 to October 2008. The data also contains information on the source and cause of the flood, and how the flood outline was established.

Also included in this section is Landmark's Historical Flood Liabilities data set, which identifies areas that are liable to flood based on systematic analysis of historical mapping dating back to the mid 19th century.

Both data sets within this section are plotted and feature on the EA/NRW Historical Flood (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.

EA/NRW RoFRS Data	**4**

This section details the Risk of Flooding from Rivers and Sea (RoFRS) data sourced from the Environment Agency/Natural Resources Wales and is reported to a distance of 1000m from the edge of the site polygon. The RoFRS data provides an indication of areas of land at risk of flooding from rivers and the sea. These areas of land, called impacted cells, are represented as 50 metre squares, or smaller areas where a square is intersected by a river or coastline.

The average height information of the impacted cell, modelled river and sea levels and information about over 200,000 flood defences are used as inputs to a computer flood model run by the Environment Agency/Natural Resources Wales. The model compares the probability that the flood defences will overtop or breach and the distance of the impact cell from the river or the sea for 40 scenarios for probabilities of between 100% to 0.1%.

The results are then consolidated to calculate a single probability category for each impacted cell. These results have been validated by local staff using their local knowledge and expertise. RoFRS is a national flood risk assessment and does not contain information about property thresholds. Due to variations in the input data and the performance of the computer flood model at particular locations, the resulting category of an impacted cell should only be used at a specific study scale. In certain areas it would only be appropriate to compare risks between towns and counties whereas in other areas they would be more suitable for understanding risk at a street level. The level of suitability for a particular cell is indicated by the cell's suitability scale.

The data within this section is plotted and feature on the EA/NRW RoFRS Data (1:50,000) map. This dataset is not available in Scotland.

Flood Insurance Risk Data	**-**

This section contains flood risk data from Crawford and Company. This dataset is not plotted on any of the associated Flood maps.

Crawford & Co have generated an Insurance Claims rating for Flood Risk. The risk is determined by comparing the number of flood insurance claims made to the number of properties in the postcode sector. The data will also include flood claims from domestic accidents or blocked drains, as well as flooding from river or tidal events. Flood insurance claim ratings are reported for the site only.

Data Currency	**5**
Data Suppliers	**8**
Useful Contacts	**9**

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
EA / NRW / CEH Flood Data					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
JBA Flood Data					
JBA 75 Year Return (undefended) - Pluvial				n/a	n/a
JBA 75 Year Return (undefended) - Fluvial				n/a	n/a
JBA 75 Year Return (undefended) - Coastal	pg 1	1		n/a	n/a
JBA 100 Year Return (undefended) - Fluvial				n/a	n/a
JBA 100 Year Return (undefended) - Coastal	pg 1	1		n/a	n/a
JBA 200 Year Return (undefended) - Pluvial				n/a	n/a
JBA 200 Year Return (undefended) - Fluvial				n/a	n/a
JBA 200 Year Return (undefended) - Coastal	pg 1	1		n/a	n/a
JBA 1000 Year Return (undefended) - Pluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Fluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Coastal	pg 1	1		n/a	n/a
JBA Canal Failure					
JBA Dam Break					
BGS Flood Data					
BGS Geological Indicators of Flooding	pg 2	5	1		
BGS Groundwater Flooding Susceptibility	pg 2	6	3		
GeoSmart Information Groundwater Flood					
GeoSmart Information Groundwater Flood Risk	pg 3	4	2		8
OS Water Network Data					
OS Water Network Lines					
OS Water Network Nodes					
EA/NRW Historic Flood Events Data					
Historic Flood Events					
Historical Flood Liabilities					
EA/NRW RoFRS Data					
RoFRS - Risk of Flooding from Rivers and Sea	pg 4	7	4		
Flood Insurance Risk Data					
Postcode Sector Flood Insurance Claim Ratings			n/a	n/a	n/a

Report Version v53.0

JBA Flood Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial None				
	JBA 75 Year Return (undefended) - Fluvial None				
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	C4SE (SE)	0	1	273288 378750
	JBA 100 Year Return (undefended) - Fluvial None				
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	C4SE (SE)	0	1	273288 378750
	JBA 200 Year Return (undefended) - Pluvial None				
	JBA 200 Year Return (undefended) - Fluvial None				
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	C4SE (SE)	0	1	273288 378750
	JBA 1000 Year Return (undefended) - Pluvial None				
	JBA 1000 Year Return (undefended) - Fluvial None				
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	C4SE (SE)	0	1	273288 378750
	JBA Canal Failure Coverage Coverage: This area has not been mapped for risk of flooding from canal or aqueduct failure or breach.	C4SE (SE)	0	1	273374 378567
	JBA Canal Failure None				
	JBA Dam Break Coverage Coverage: This area has not been mapped for flooding from dam or reservoir embankment failure or breach.	C4SE (SE)	188	1	273374 378567
	JBA Dam Break None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	(S)	0	2	273484 378192
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	0	2	273703 378040
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	0	2	273724 378050
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	0	2	273860 378090
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	(SE)	0	2	274049 378066
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	1	2	273693 378035
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	2	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	(S)	0	2	273450 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	0	2	273750 378100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	0	2	273750 378000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	2	273550 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SE)	0	2	273750 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	19	2	274050 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	93	2	274150 378250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SE)	104	2	274200 378150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	0	1	273840 378080
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	0	1	273485 378195
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	0	1	274025 378130
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	(SE)	0	1	273730 378055
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	118	1	274170 378220
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	125	1	274175 378225
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	690	1	274125 378830
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(NE)	706	1	273900 379005
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	707	1	274115 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	725	1	274085 378855
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	734	1	274065 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	739	1	274155 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	747	1	274130 378875
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(E)	755	1	274085 378885

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	273851 378080
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	273912 378090
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	273924 378095
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	274000 378134
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	0	3	273445 378315
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	273670 377995
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	0	3	273665 377990
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	5	3	273556 377900
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	67	3	274100 378196
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	113	3	274150 378228
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	145	3	274176 378245

EA / NRW / CEH Flood Data	Version	Update Cycle
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
EA / NRW Surface Water Flood Data	**Version**	**Update Cycle**
Surface Water 1 in 30 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified

JBA Flood Data	Version	Update Cycle
JBA 75 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA Canal Failure JBA Risk Management Limited	October 2017	Annually
JBA Dam Break JBA Risk Management Limited	October 2017	Annually
BGS Flood Data	**Version**	**Update Cycle**
BGS Geological Indicators of Flooding British Geological Survey - National Geoscience Information Service	February 2011	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
GeoSmart Information Groundwater Flooding Data	**Version**	**Update Cycle**
GeoSmart Information Groundwater Flood Risk GeoSmart Information Ltd	November 2017	Bi-Annually
OS Water Network Data	**Version**	**Update Cycle**
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
OS Water Network Nodes Ordnance Survey	May 2018	Quarterly
EA/NRW Historic Flood Events Data	**Version**	**Update Cycle**
Historical Flood Liabilities Landmark Information Group Limited	December 1999	Not Applicable
EA/NRW Risk of Flooding from Rivers and Sea (RoFRS)	**Version**	**Update Cycle**
RoFRS - Risk of Flooding from Rivers and Sea Natural Resources Wales	May 2015	Not Applicable

Flood Insurance Risk Data	Version	Update Cycle
Postcode Sector Flood Insurance Claim Ratings Crawford and Company	July 2018	Quarterly

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Natural Resources Wales	
Centre for Ecology and Hydrology	
British Geological Survey	
GeoSmart Information	
JBA Risk Management	

Useful Contacts

Contact	Name and Address	Contact Details
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2	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
3	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk

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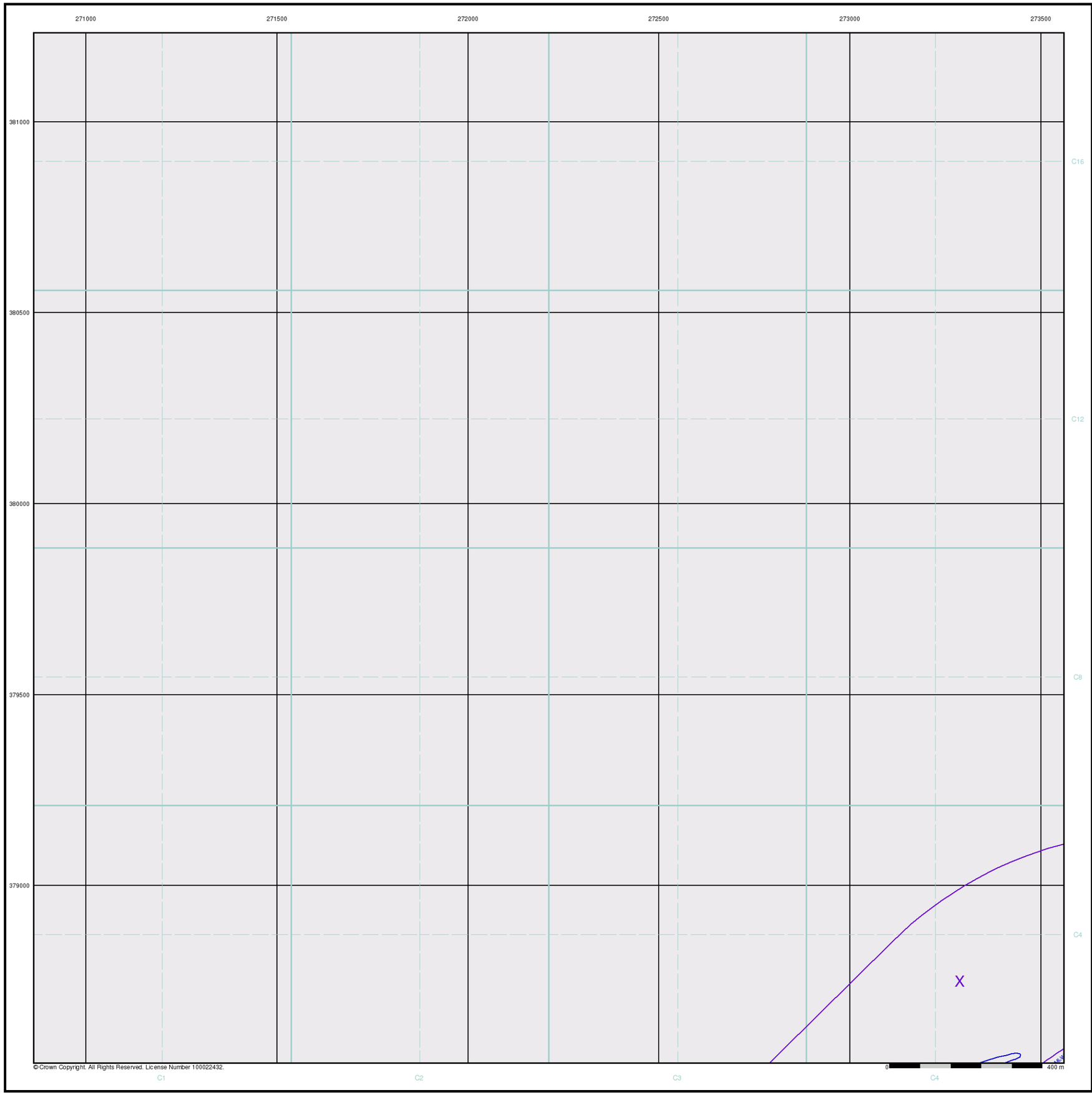
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RAMBOLL

EA/NRW Flood Data Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Flood Data

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

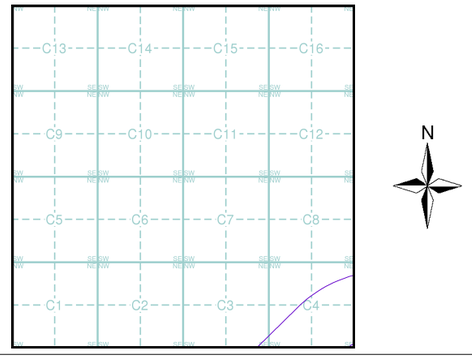
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height * 167.8

EA/NRW Flood Data Map - Slice C



Order Details

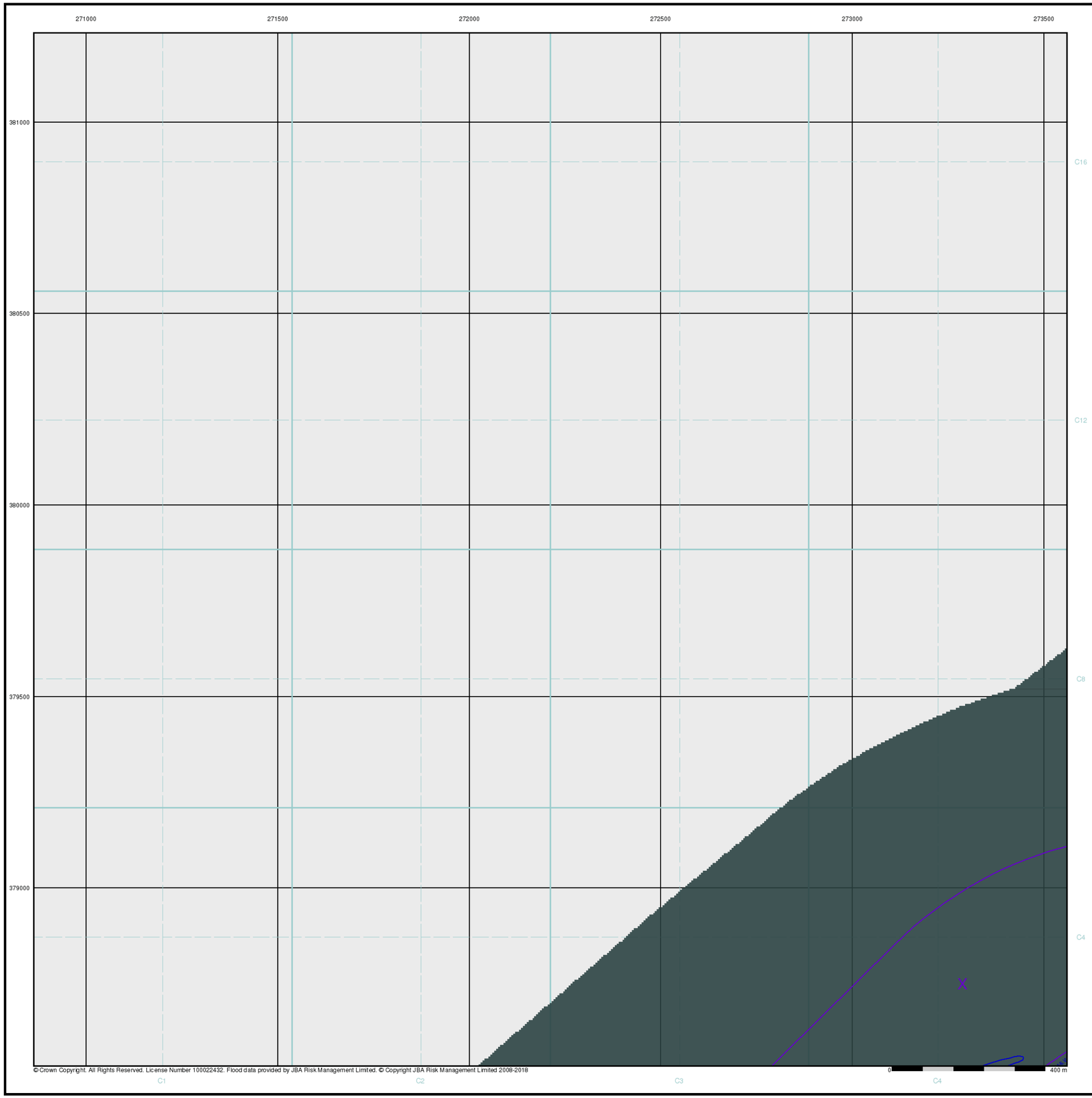
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Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

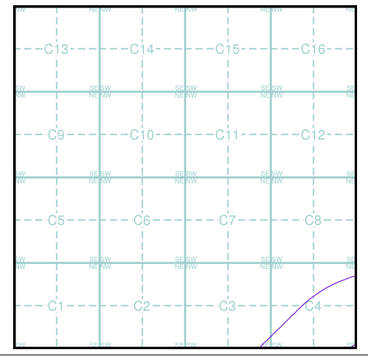
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 75 Year Return Flood Map (Undefended) - Slice C



Order Details

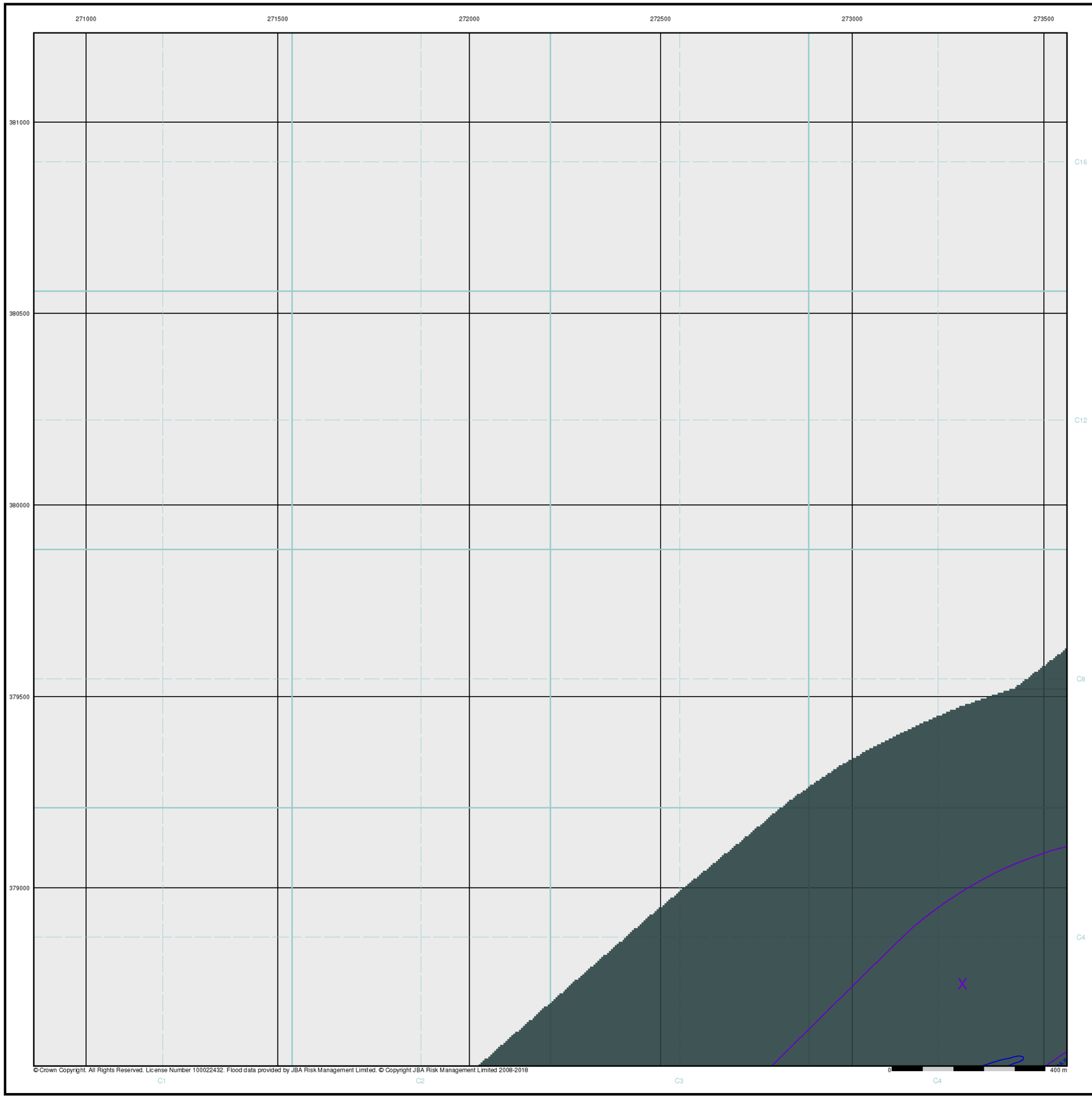
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Fluvial Depth	Coastal Depth
0.01m - 0.05m	0.01m - 0.05m
0.05m - 0.1m	0.05m - 0.1m
0.1m - 0.3m	0.1m - 0.3m
0.3m - 1m	0.3m - 1m
>1m	>1m

Contours (height in metres)

Standard Contour 105

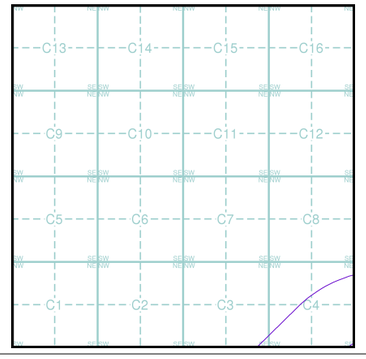
Master Contour 100 95

Spot Height 167.8

MLW Mean Low Water

MHW Mean High Water

JBA 100 Year Return Flood Map (Undefended) - Slice C



Order Details

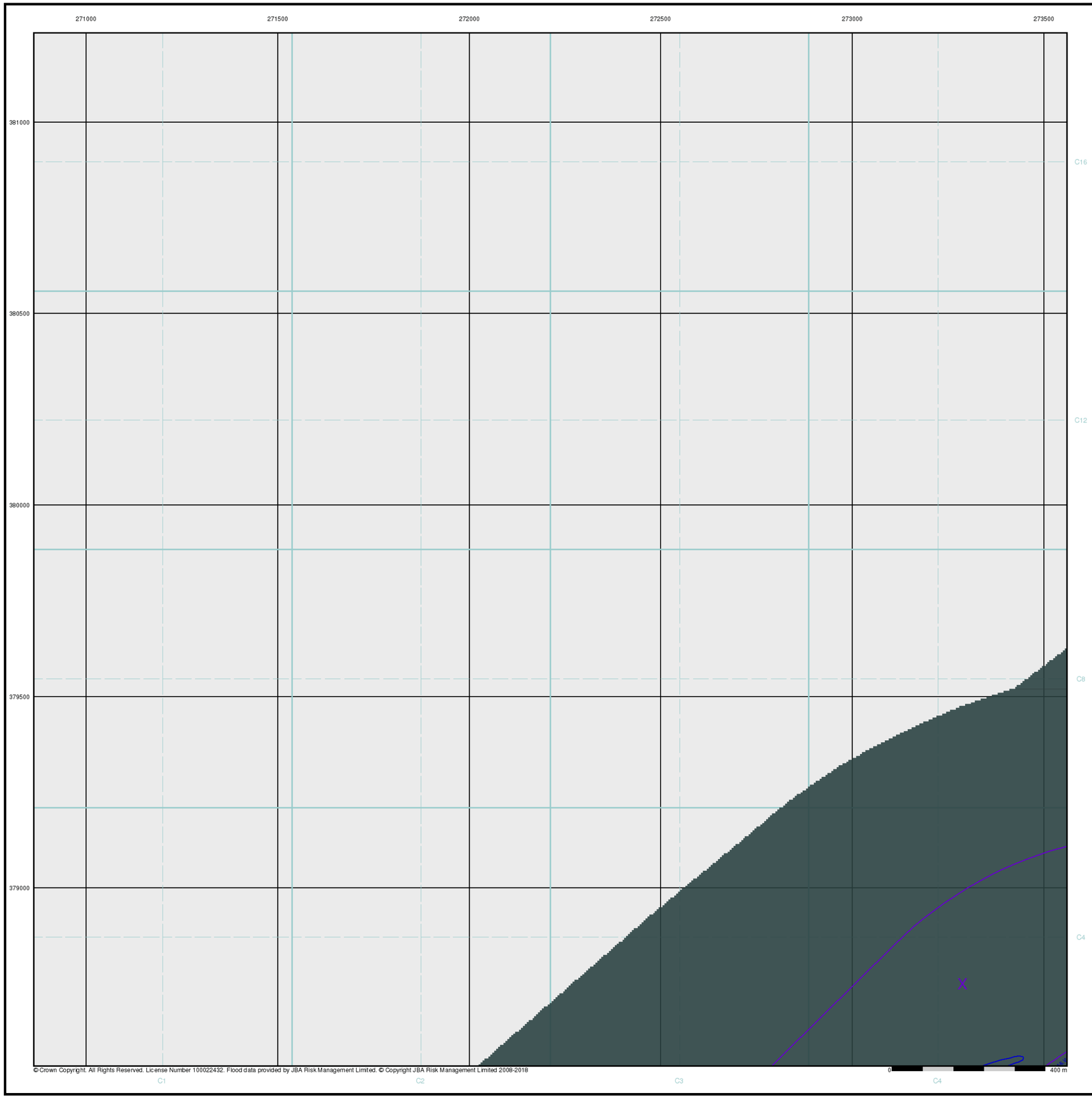
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Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

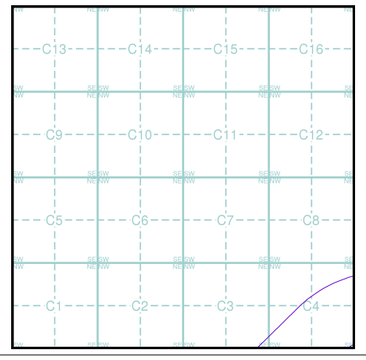
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 200 Year Return Flood Map (Undefended) - Slice C



Order Details

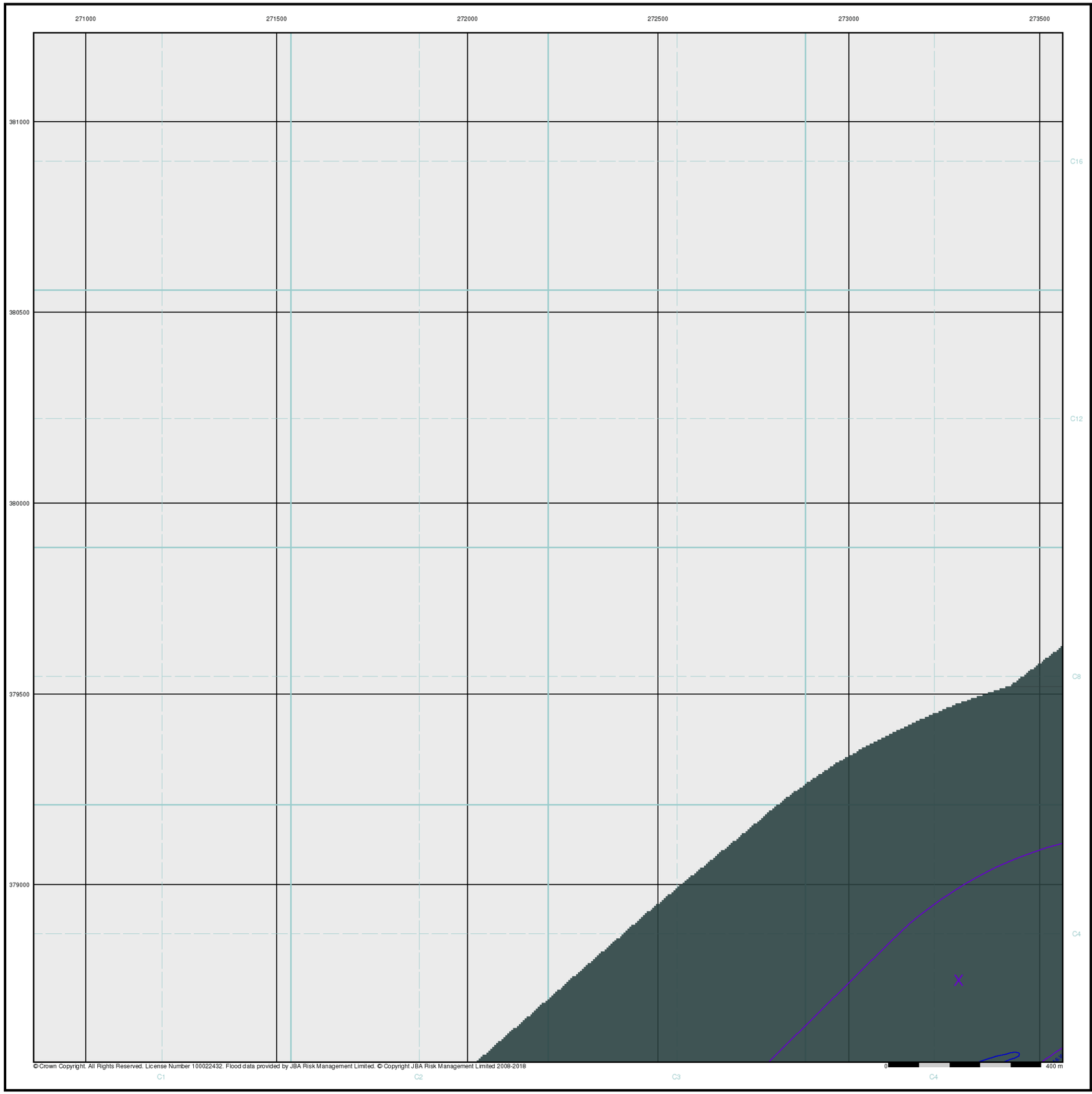
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Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

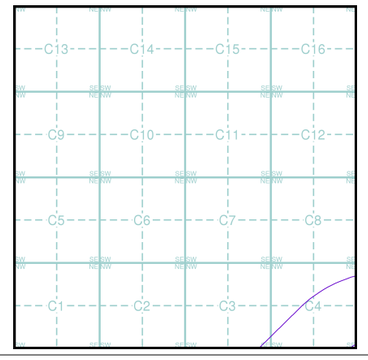
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 1000 Year Return Flood Map (Undefended) - Slice C



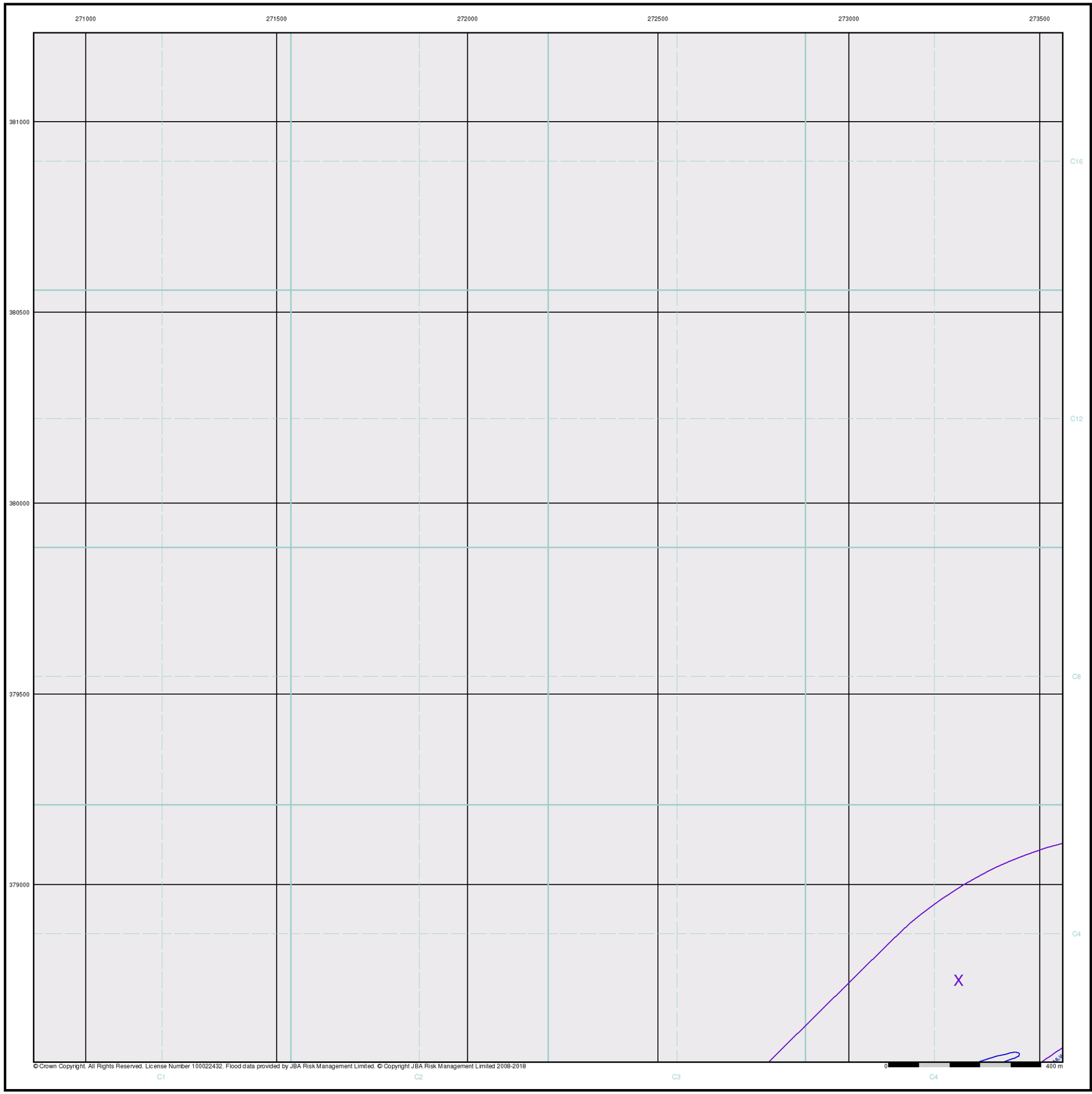
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Web: www.envirocheck.co.uk



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RAMBOLL

JBA Canal Failure Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

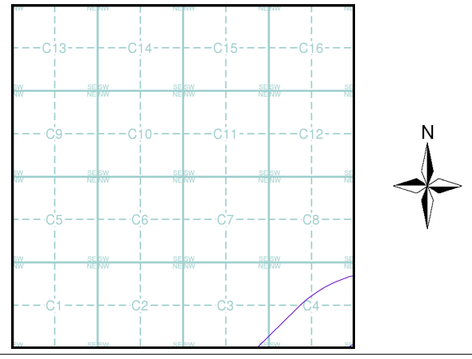
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height *167.8
- MLWV Mean Low Water
- MHWV Mean High Water

JBA Canal Failure Flood Map - Slice C



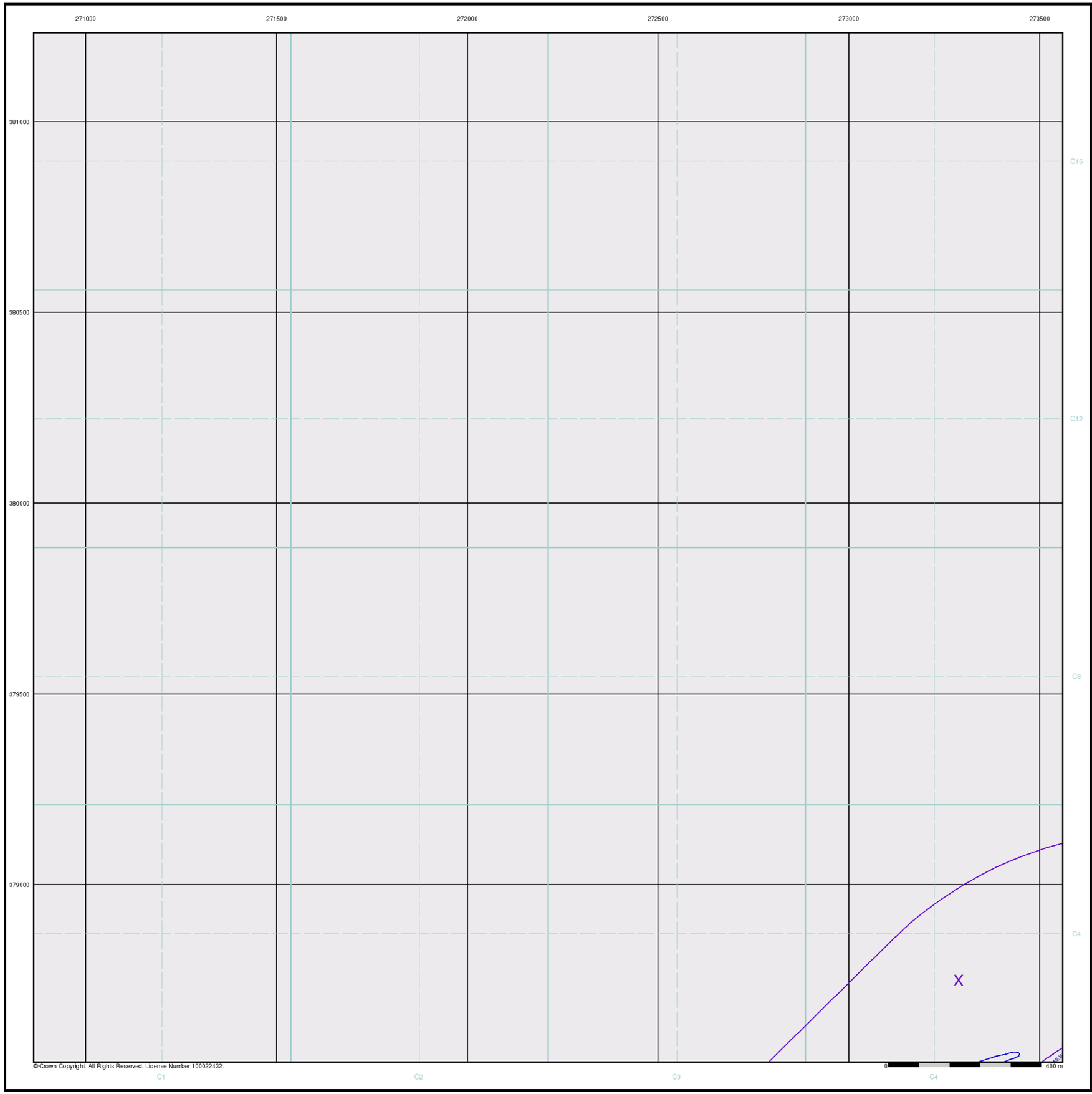
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Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

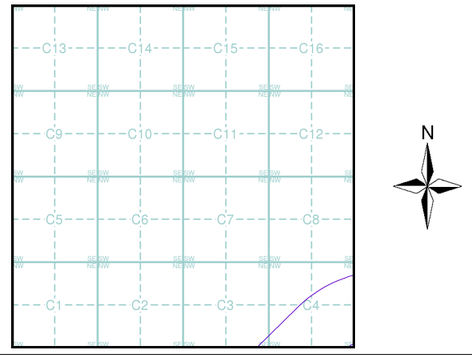
Standard Contour 105
Master Contour 100 95
Spot Height * 167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



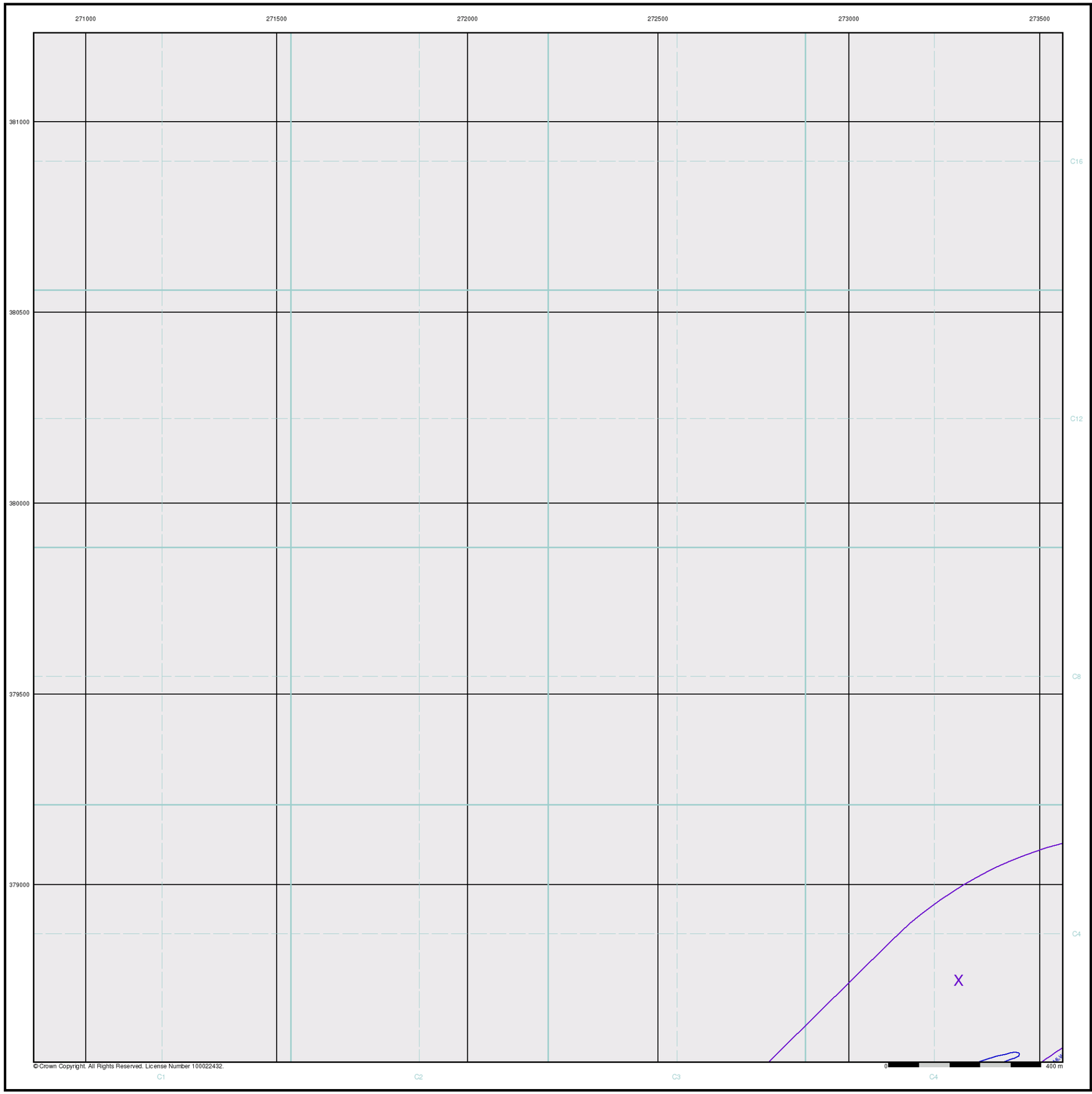
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

EA/NRW Surface Water 100 Year Return Depth Map

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

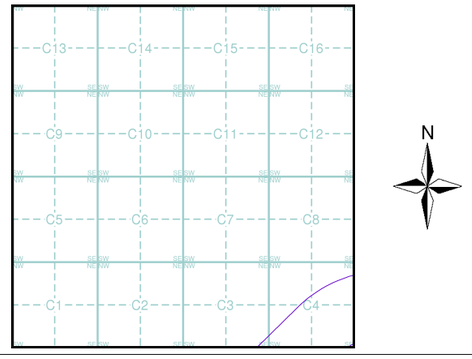
Standard Contour 105
Master Contour 100 95
Spot Height * 167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



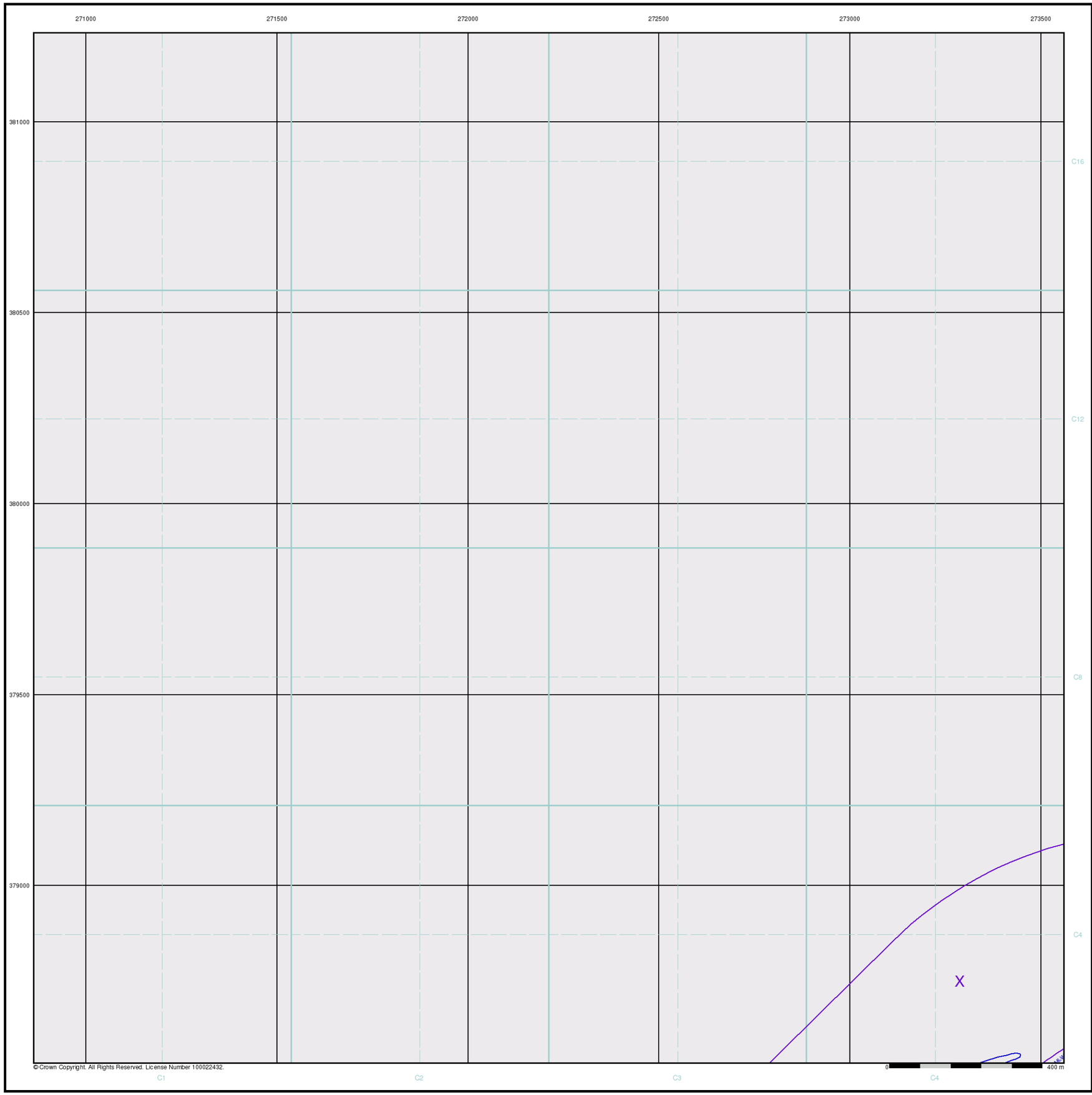
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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Web: www.envirocheck.co.uk



RAMBOLL

EA/NRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

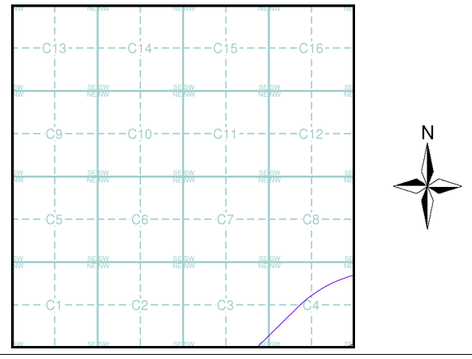
Standard Contour 105
Master Contour 100 95
Spot Height * 167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



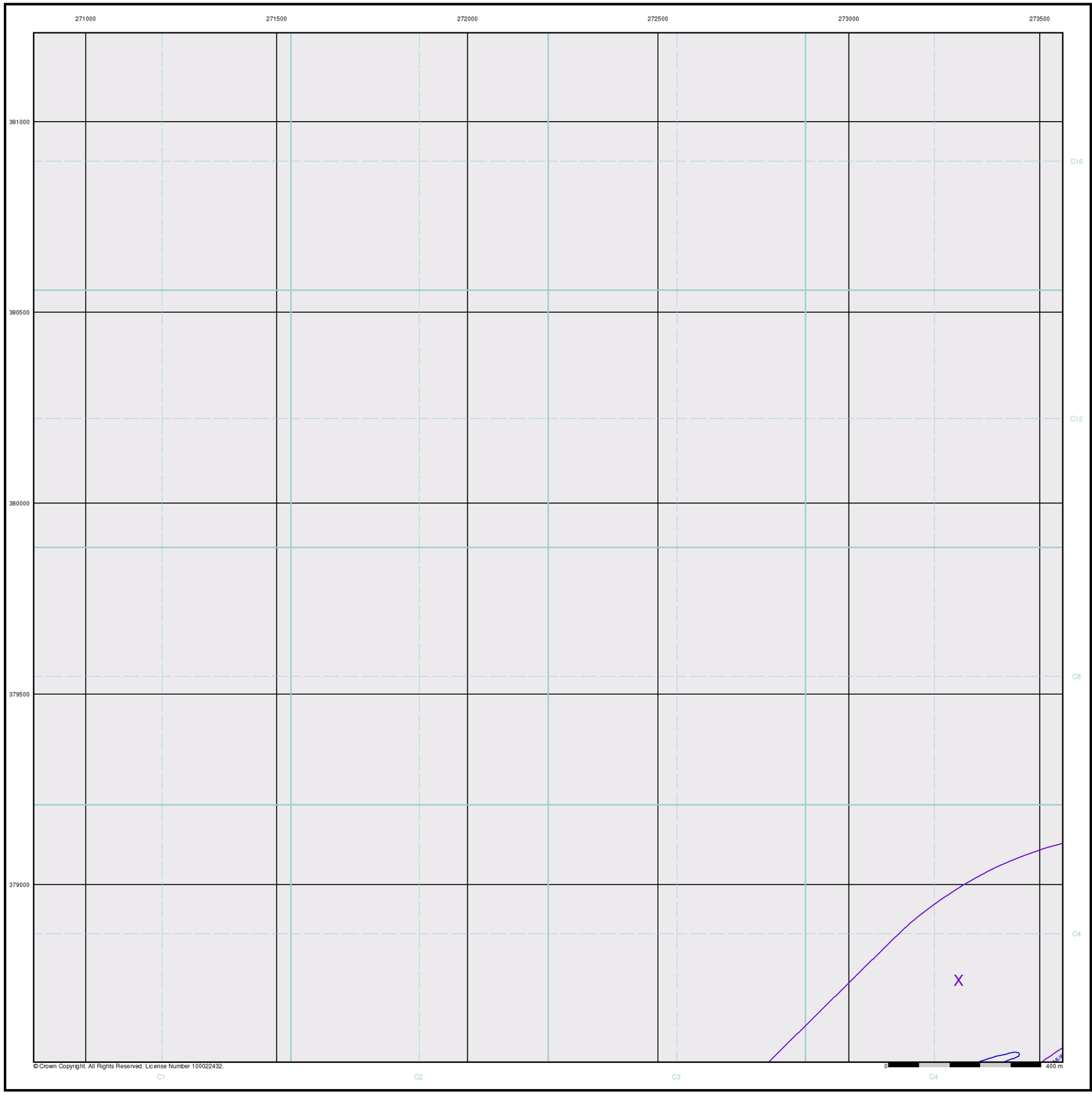
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National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

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Web: www.envirocheck.co.uk



RAMBOLL

EA/NRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
0.25 - 0.50m/s
0.50 - 1.00m/s
1.00 - 2.00m/s
> 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height *167.8

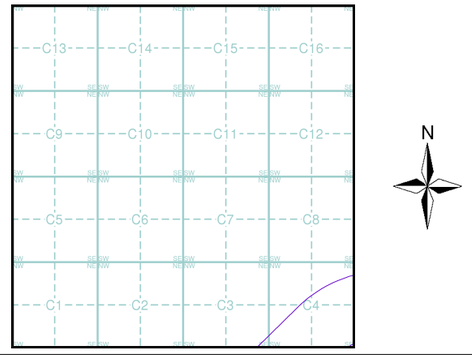
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice C



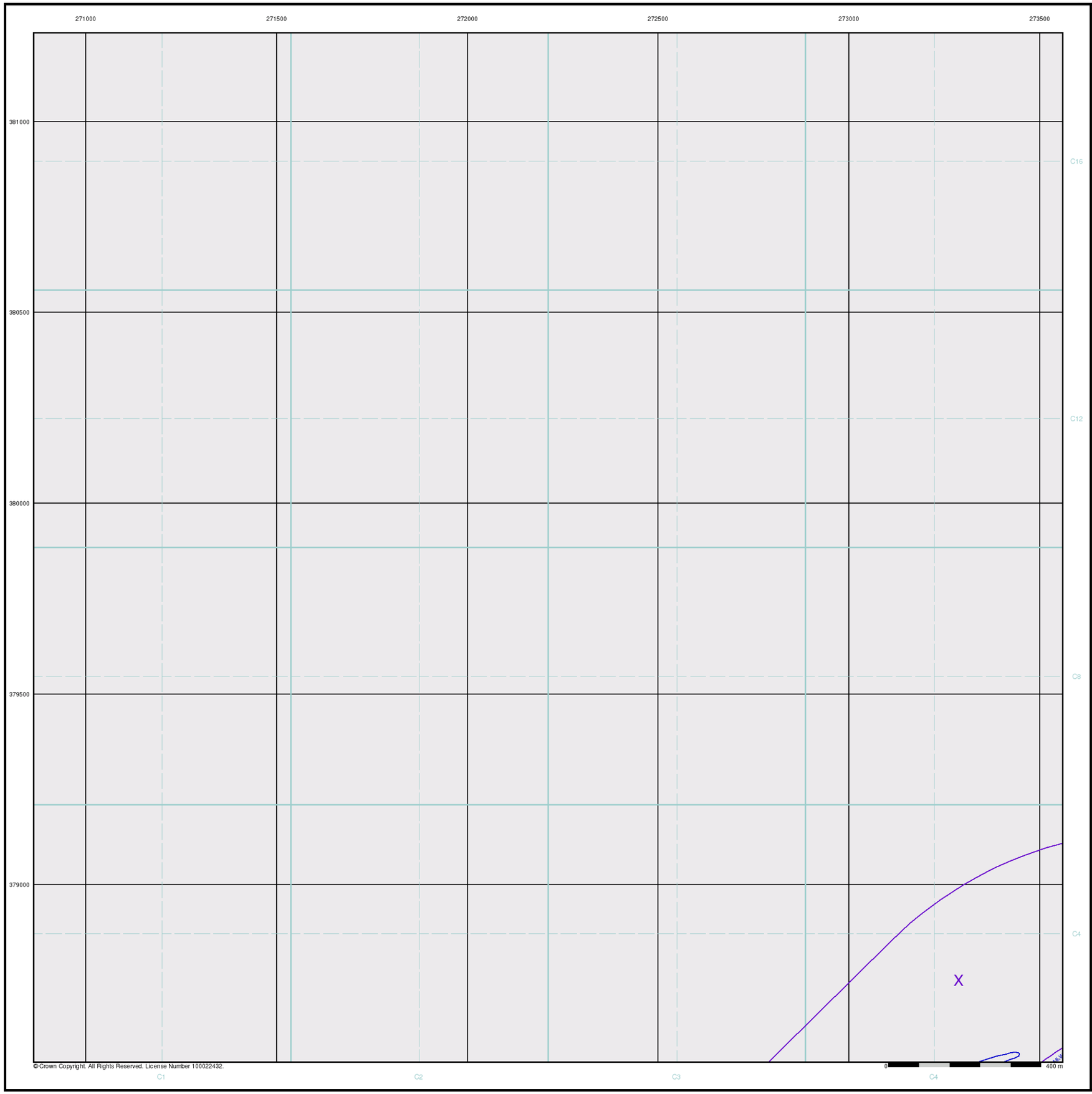
Order Details

Order Number:	175417398_1_1
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National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

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RAMBOLL

EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
0.25 - 0.50m/s
0.50 - 1.00m/s
1.00 - 2.00m/s
> 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height *167.8

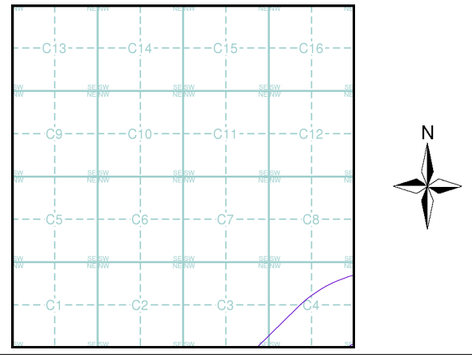
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice C



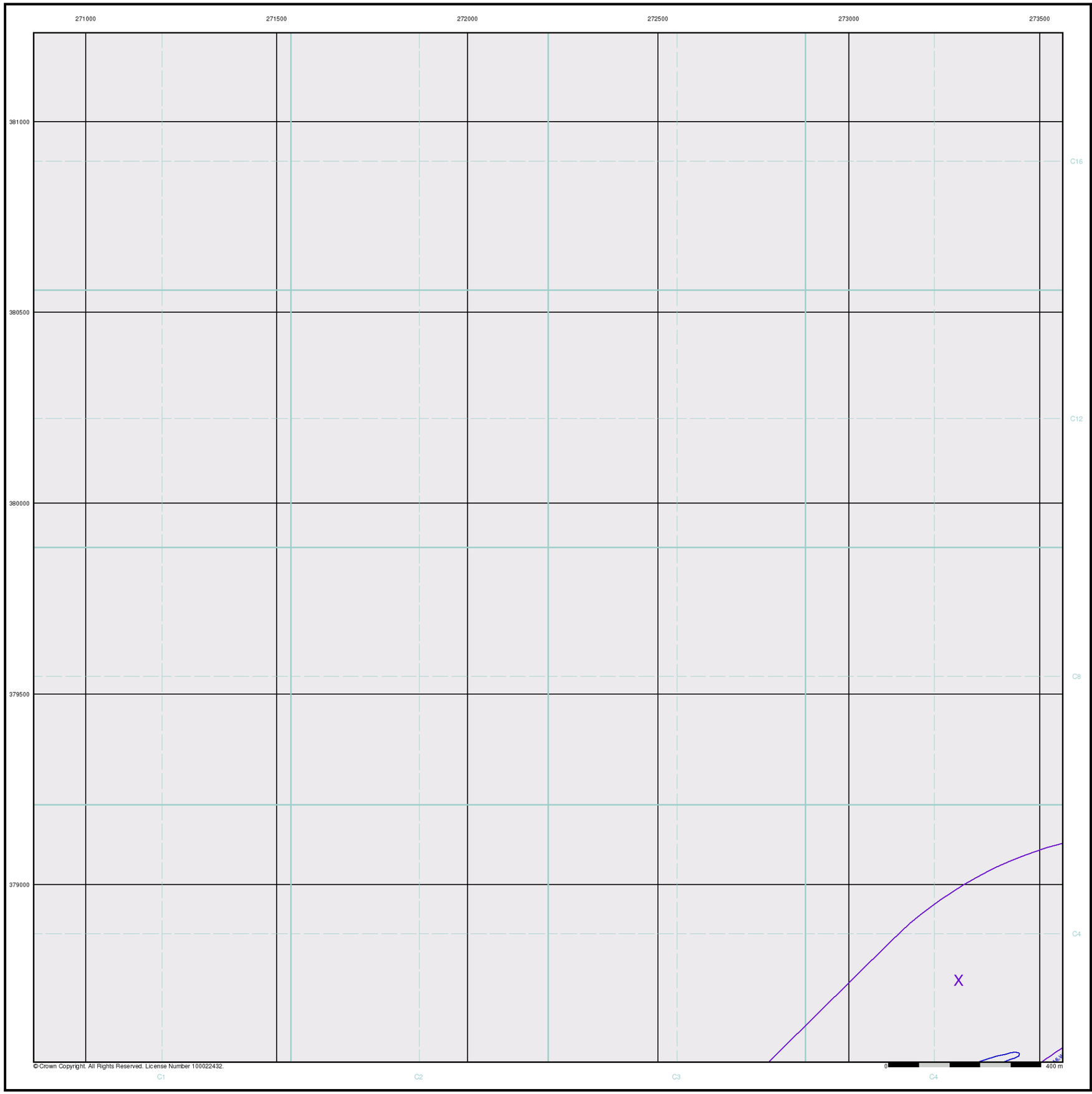
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

EA/NRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
0.25 - 0.50m/s
0.50 - 1.00m/s
1.00 - 2.00m/s
> 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height *167.8

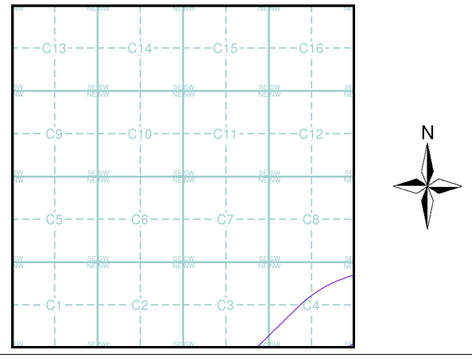
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
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Property

EA/NRW Suitability Map - Slice C



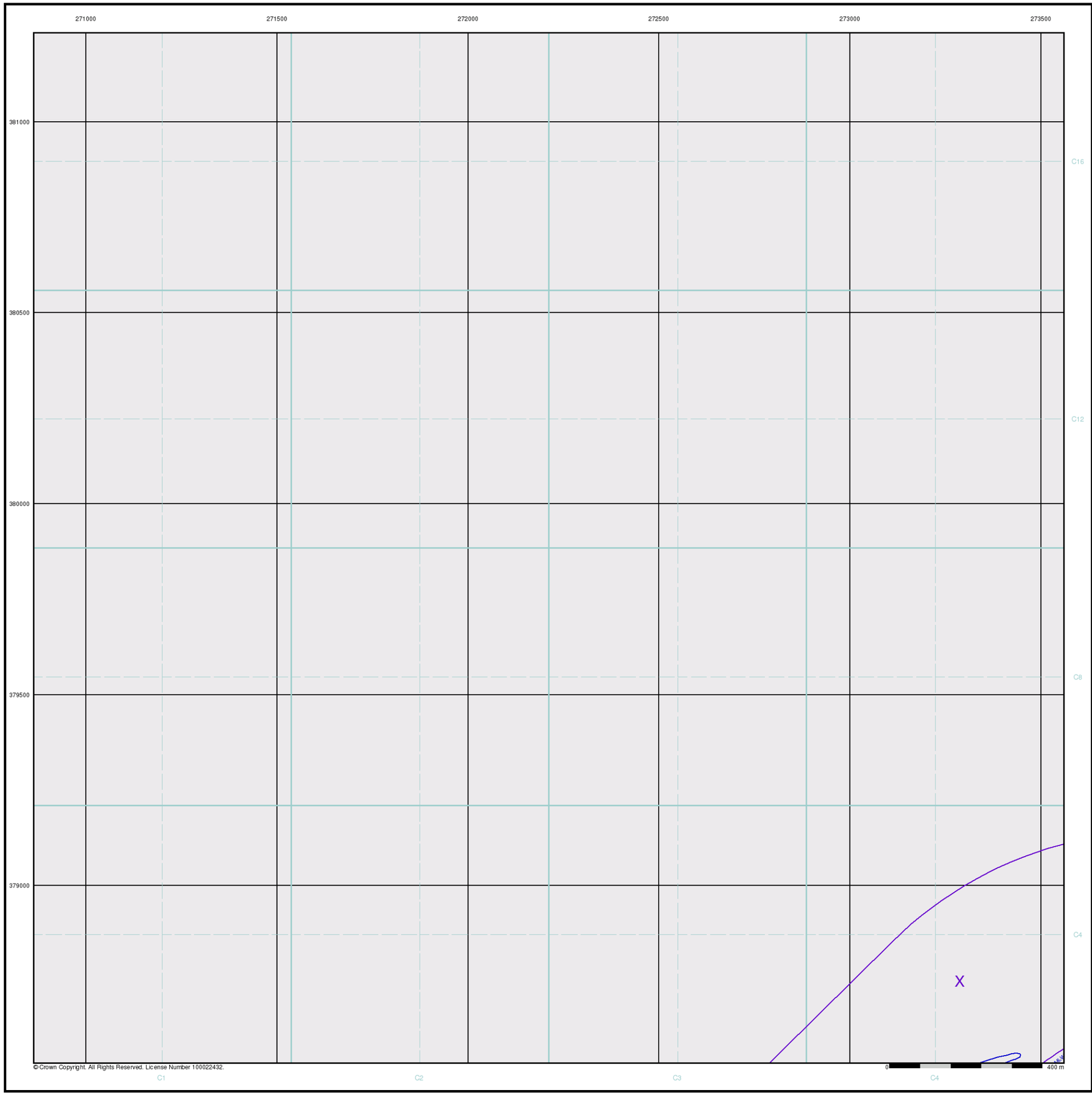
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RAMBOLL

EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

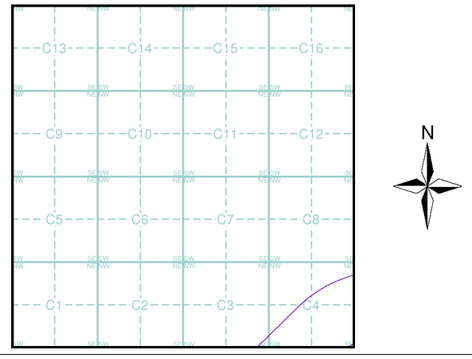
Spot Height *167.8

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



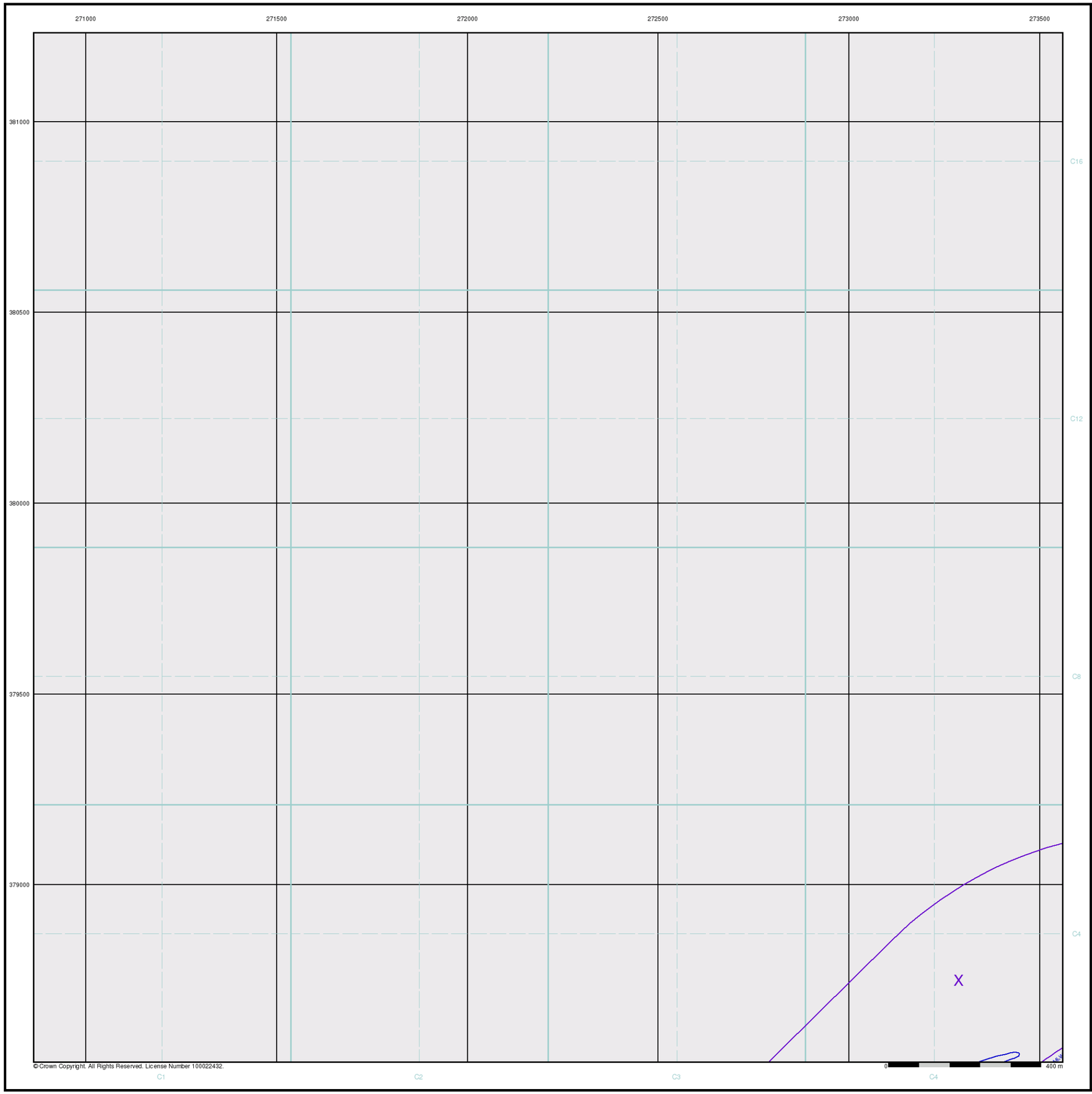
Order Details

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RAMBOLL

EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

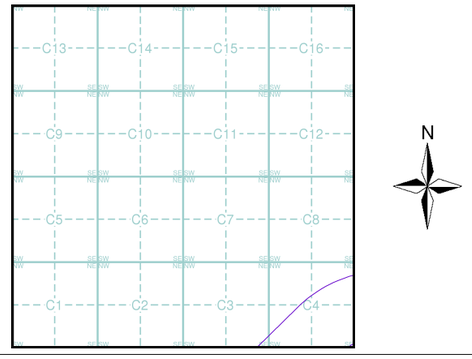
Spot Height *167.8

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



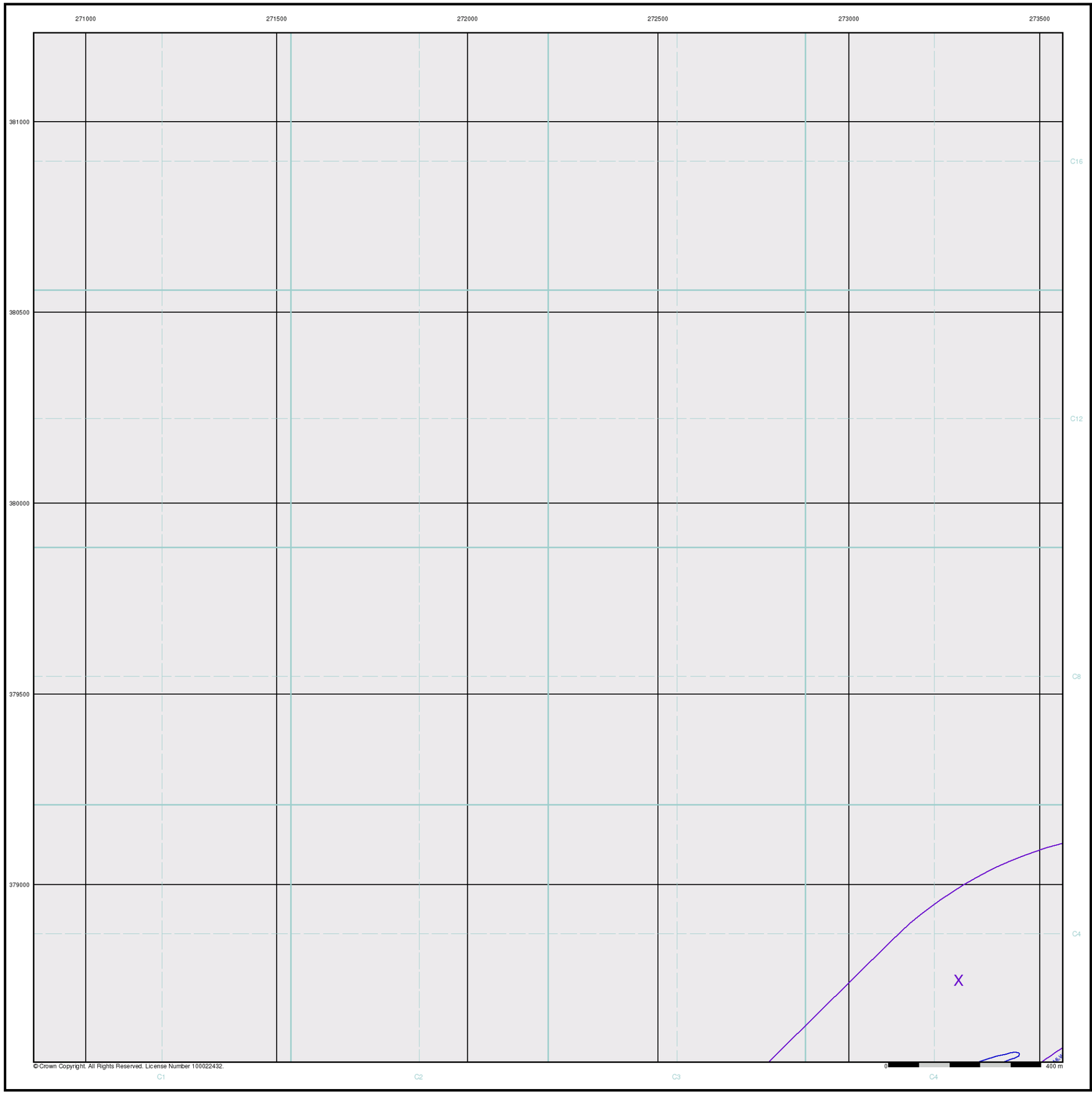
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EA/NRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

General

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Master Contour — MHW Mean High Water

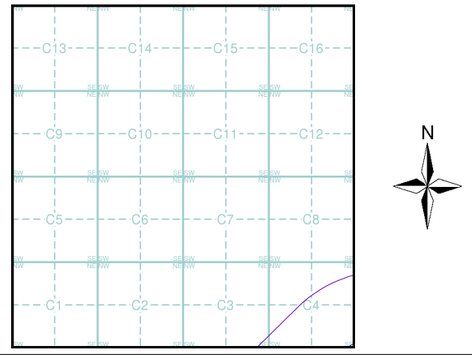
Spot Height *167.8

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EA/NRW Suitability Map - Slice C



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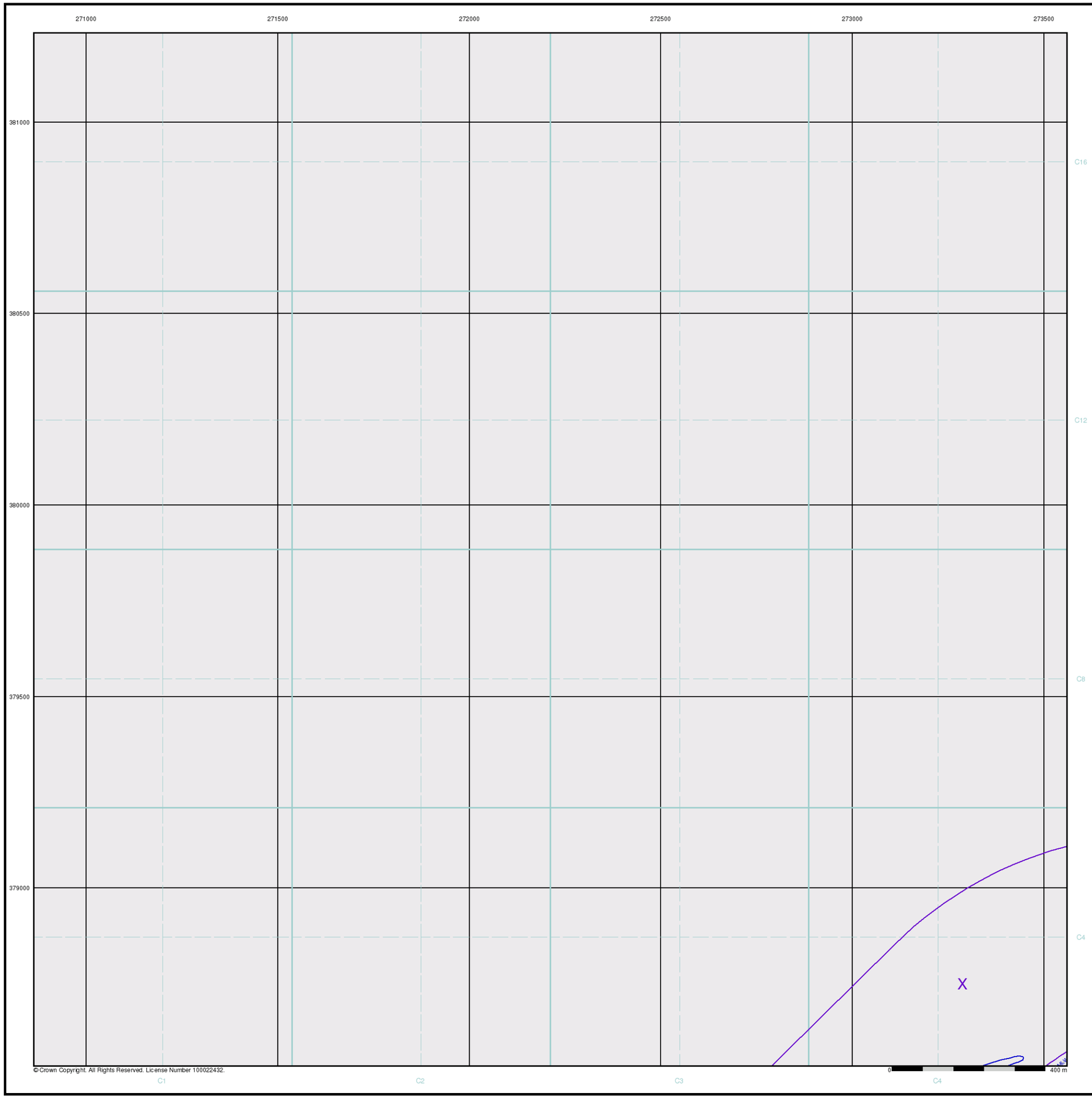
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RAMBOLL

OS Water Network Lines Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

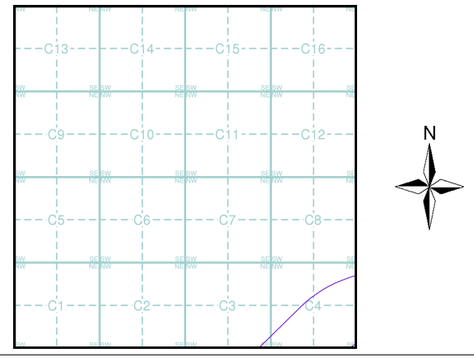
OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea
- Junction
- Outlet
- Pseudo
- Source
- Other

Contours (height in meters)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height *167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice C



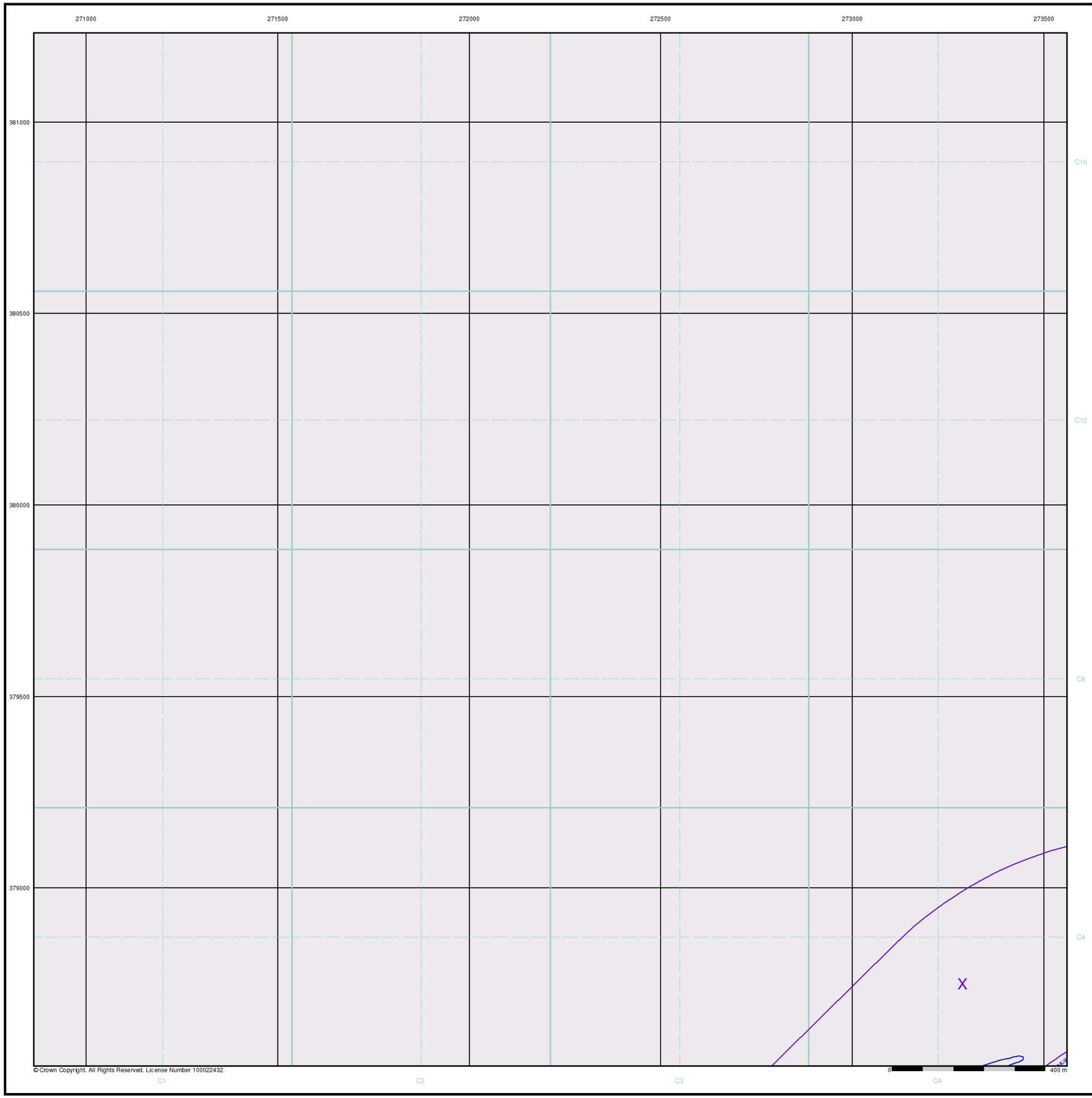
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RAMBOLL

EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

Historic Flood Events Data

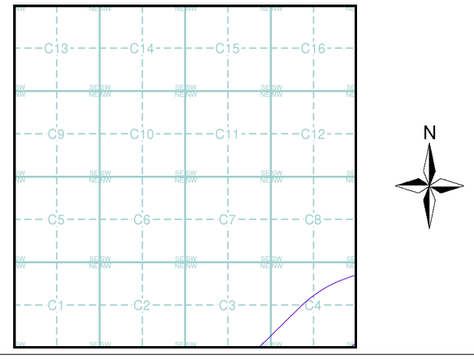
- Channel Capacity Exceeded (no raised defences)
- Channel Capacity Exceeded /Surface Water
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Historical Flood Liabilities
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Surface Water
- Unknown

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height * 167.8

MLW Mean Low Water
MHW Mean High Water

EA/NRW Historic Flood Map - Slice C



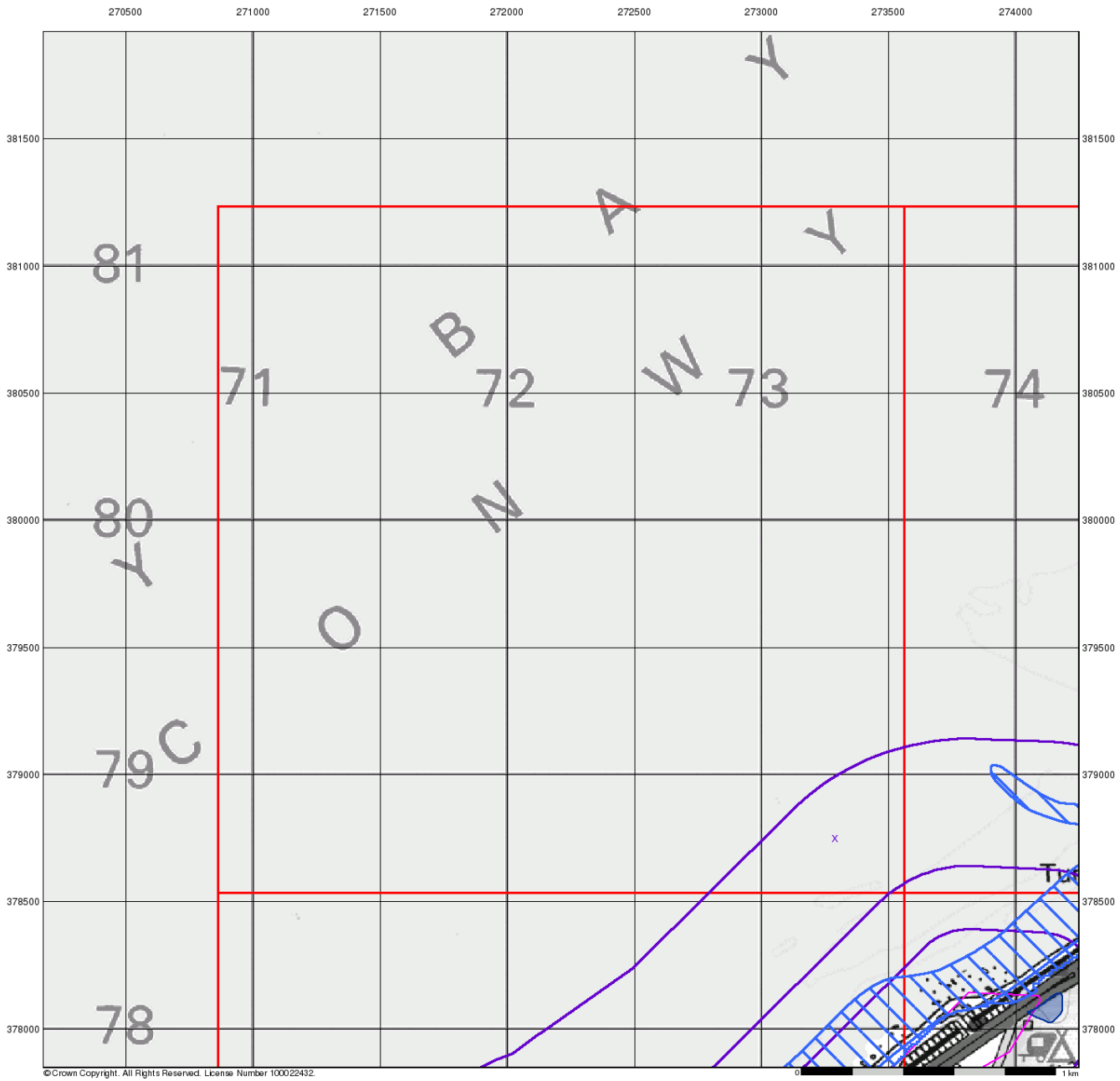
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BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

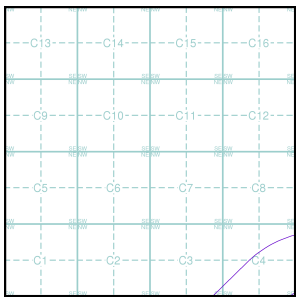
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice C



Order Details

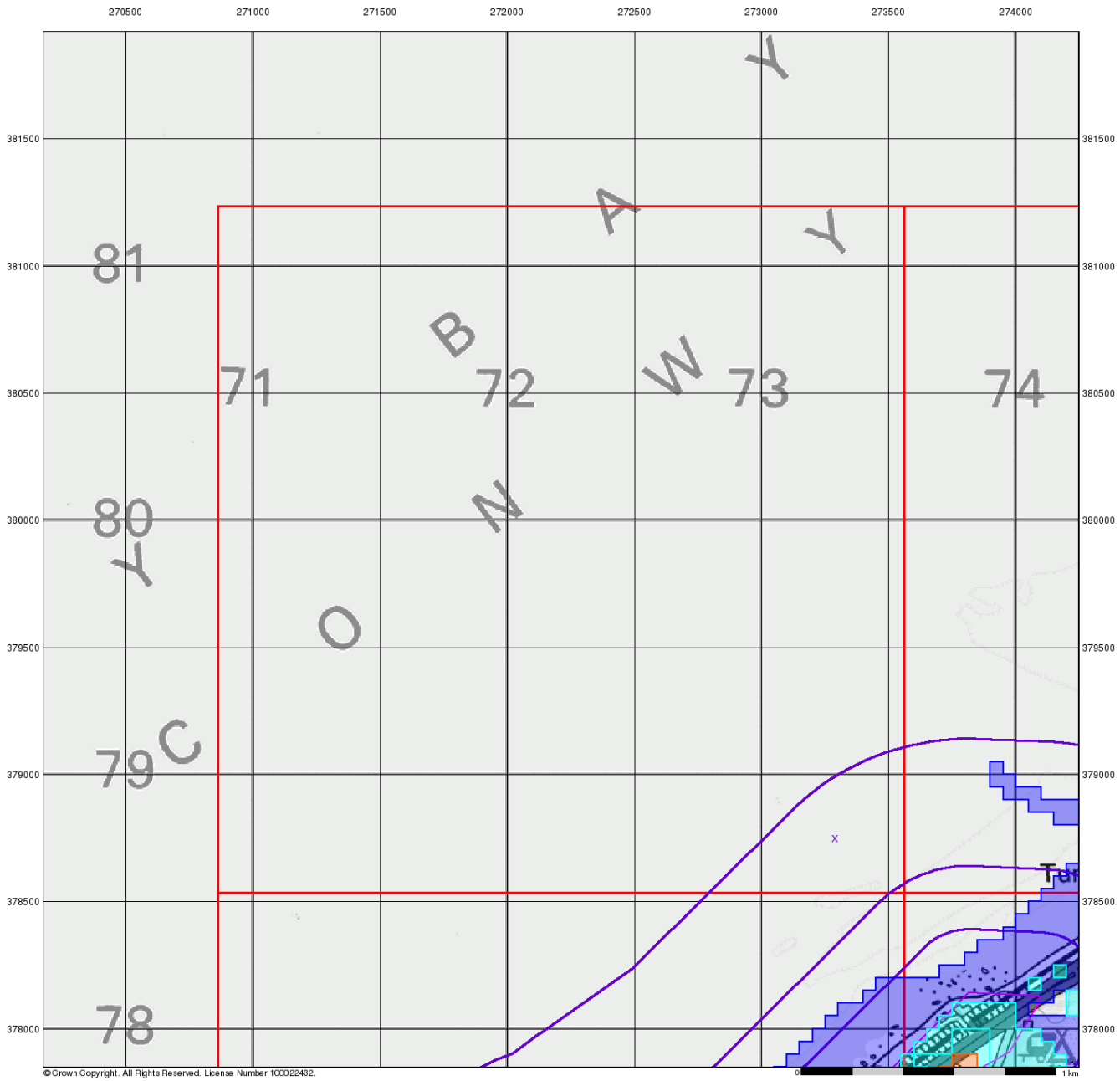
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BGS Flood Data (1:50,000)

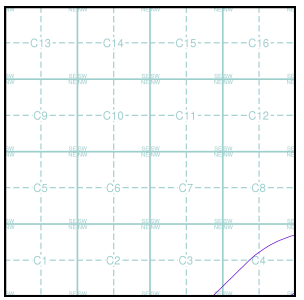
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

BGS Groundwater Flooding Susceptibility

- Potential for Groundwater Flooding to Occur at Surface
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice C



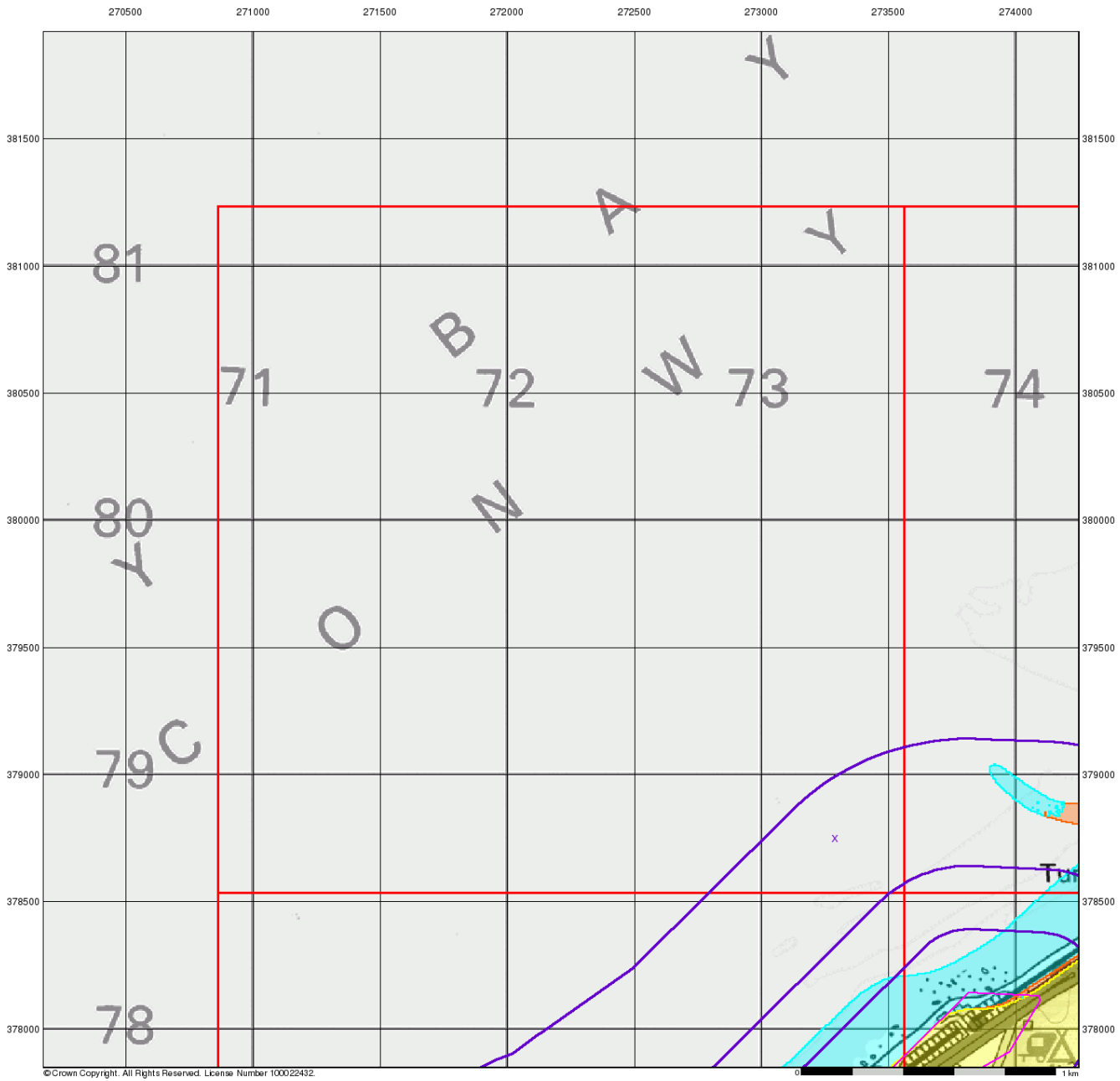
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GeoSmart Information Groundwater Flood Map (1:50,000)

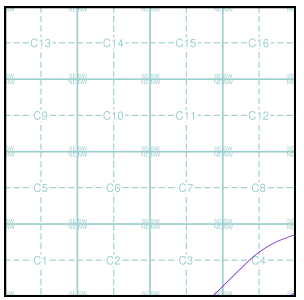
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

GeoSmart Information Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice C



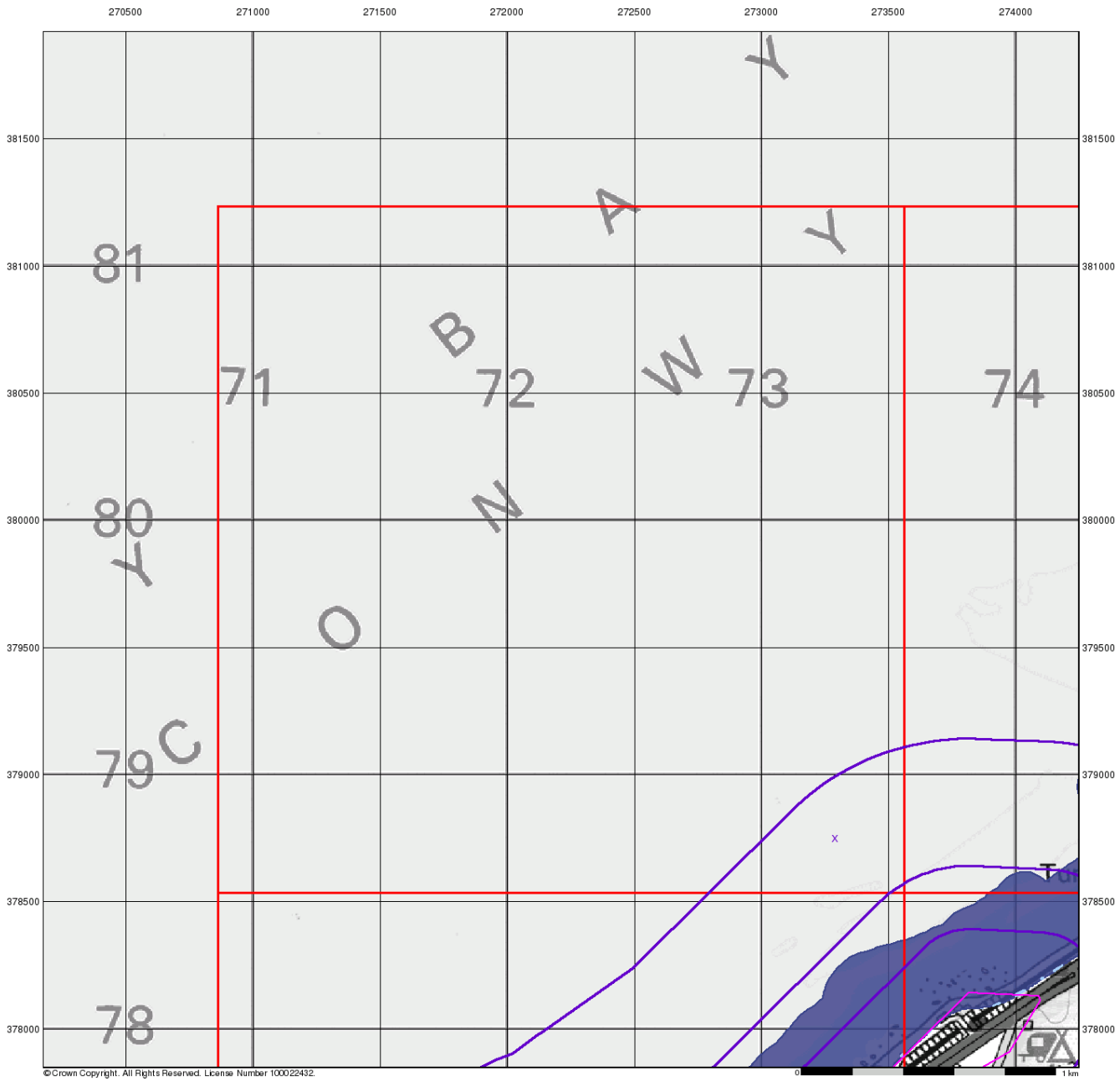
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EA/NRW RoFRS Data (1:50,000)

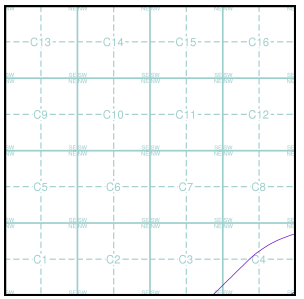
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice C



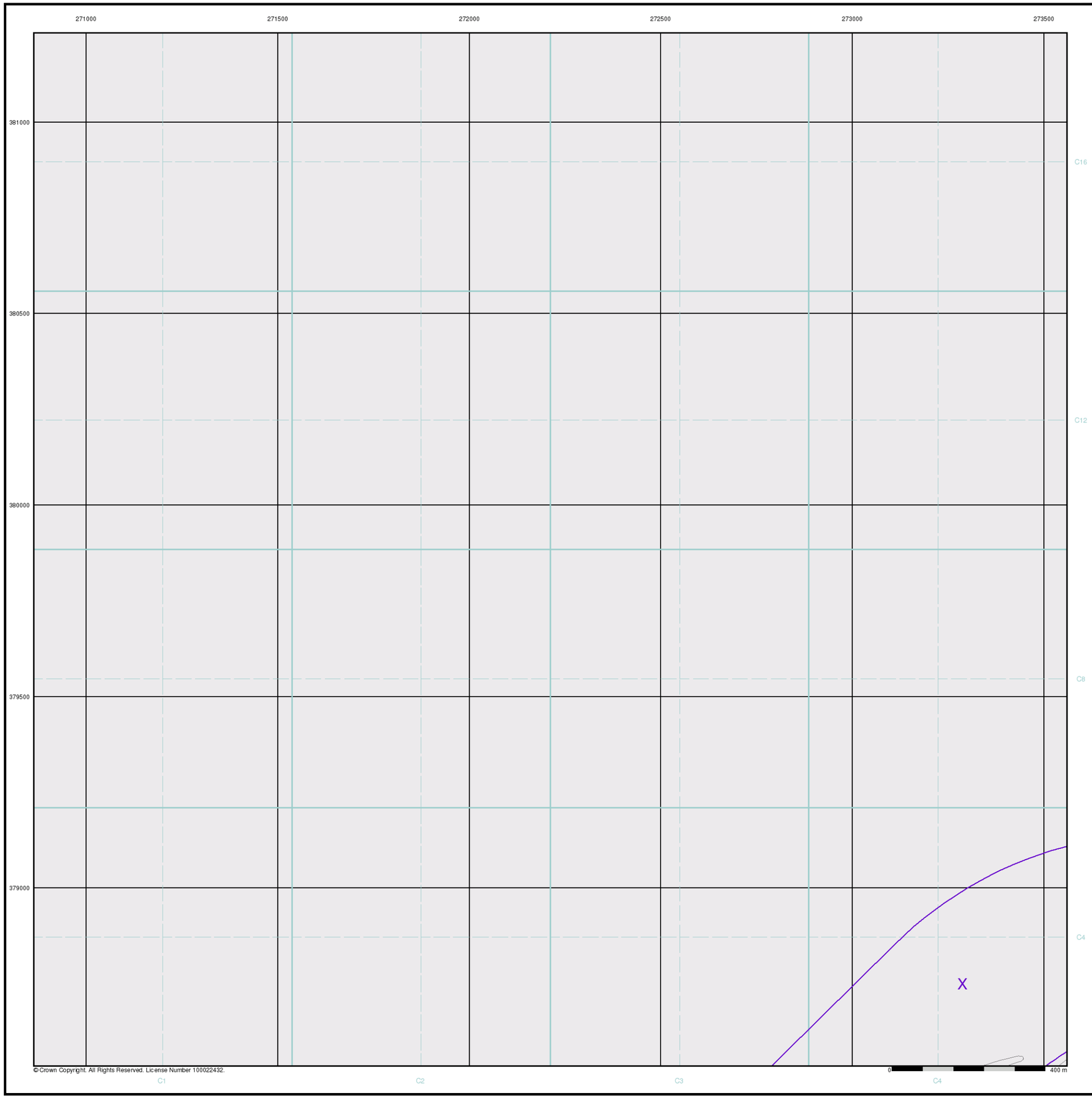
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General

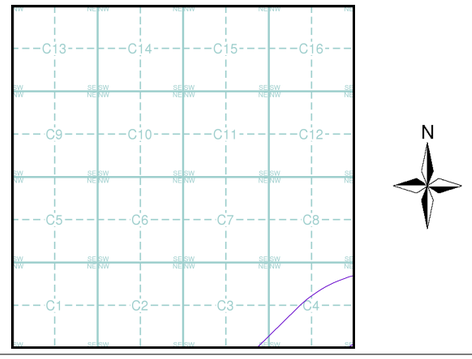
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice C



Order Details

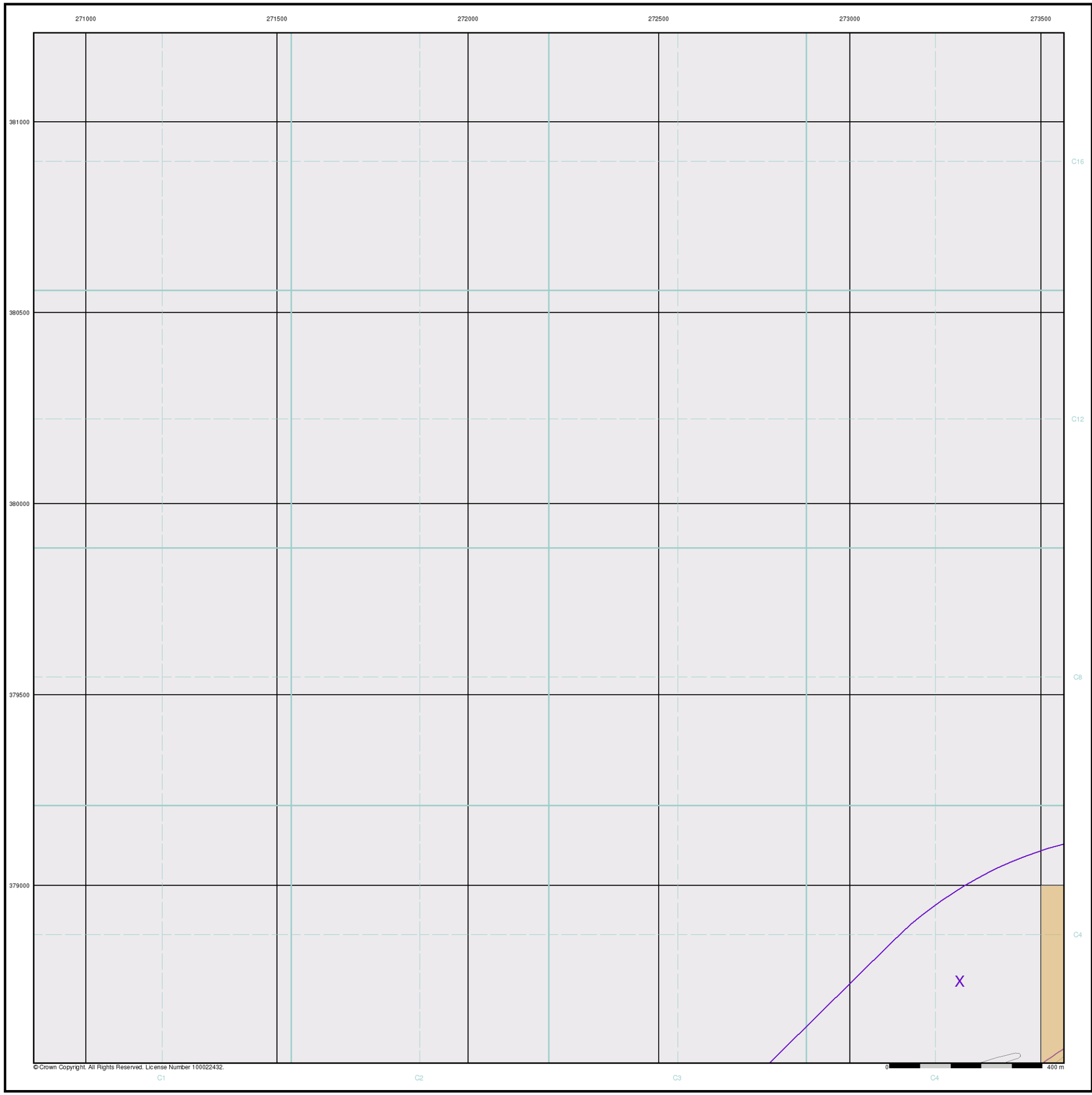
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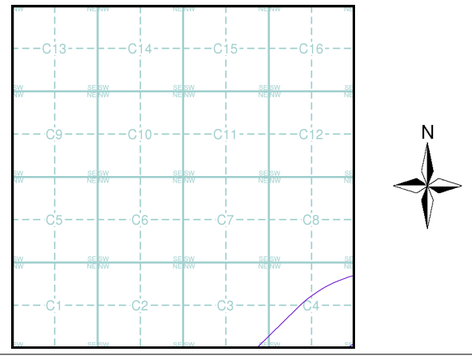
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice C



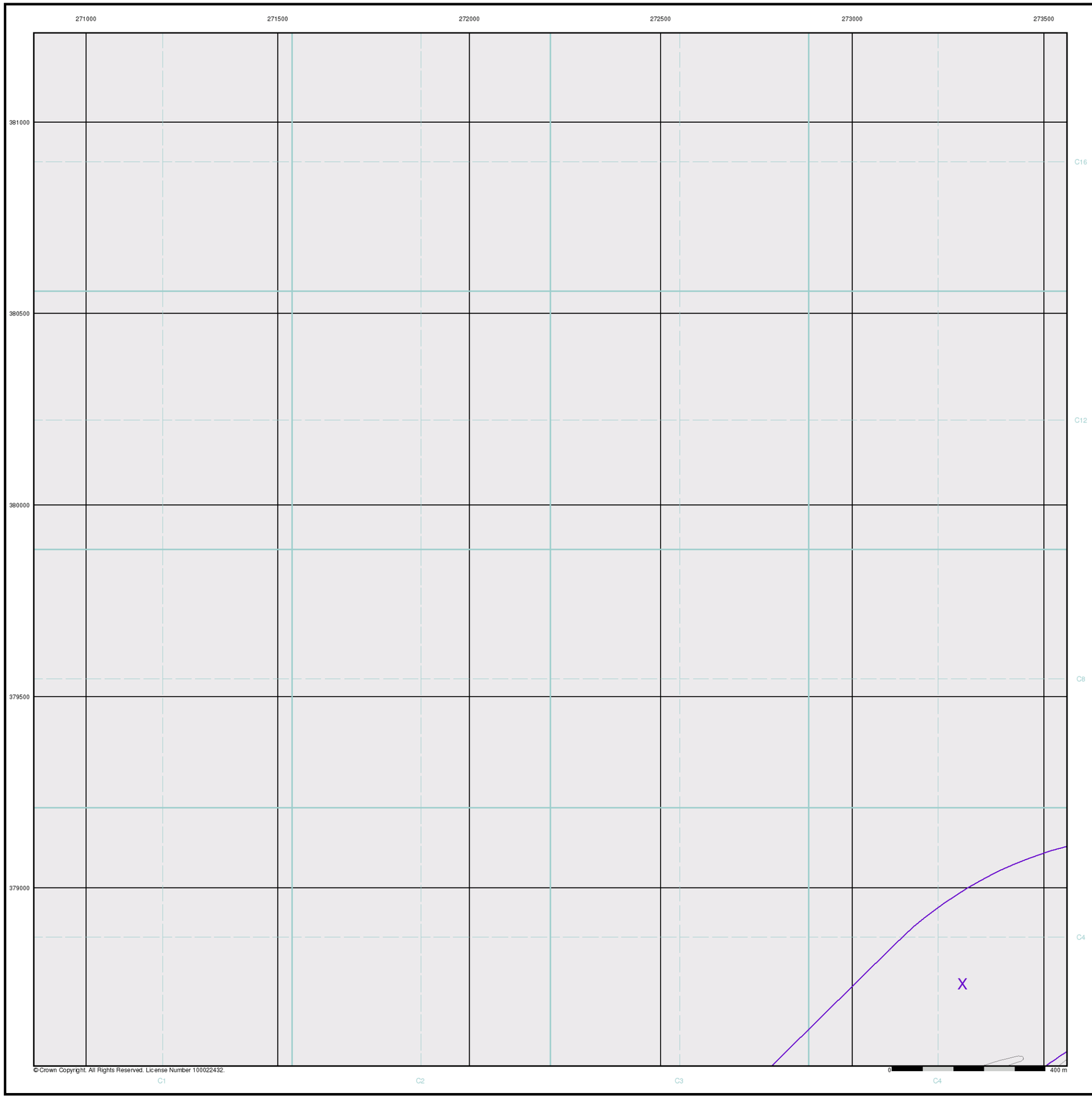
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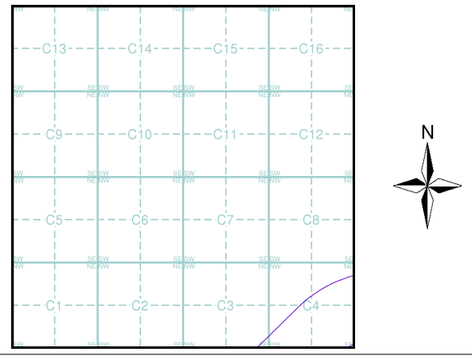
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice C



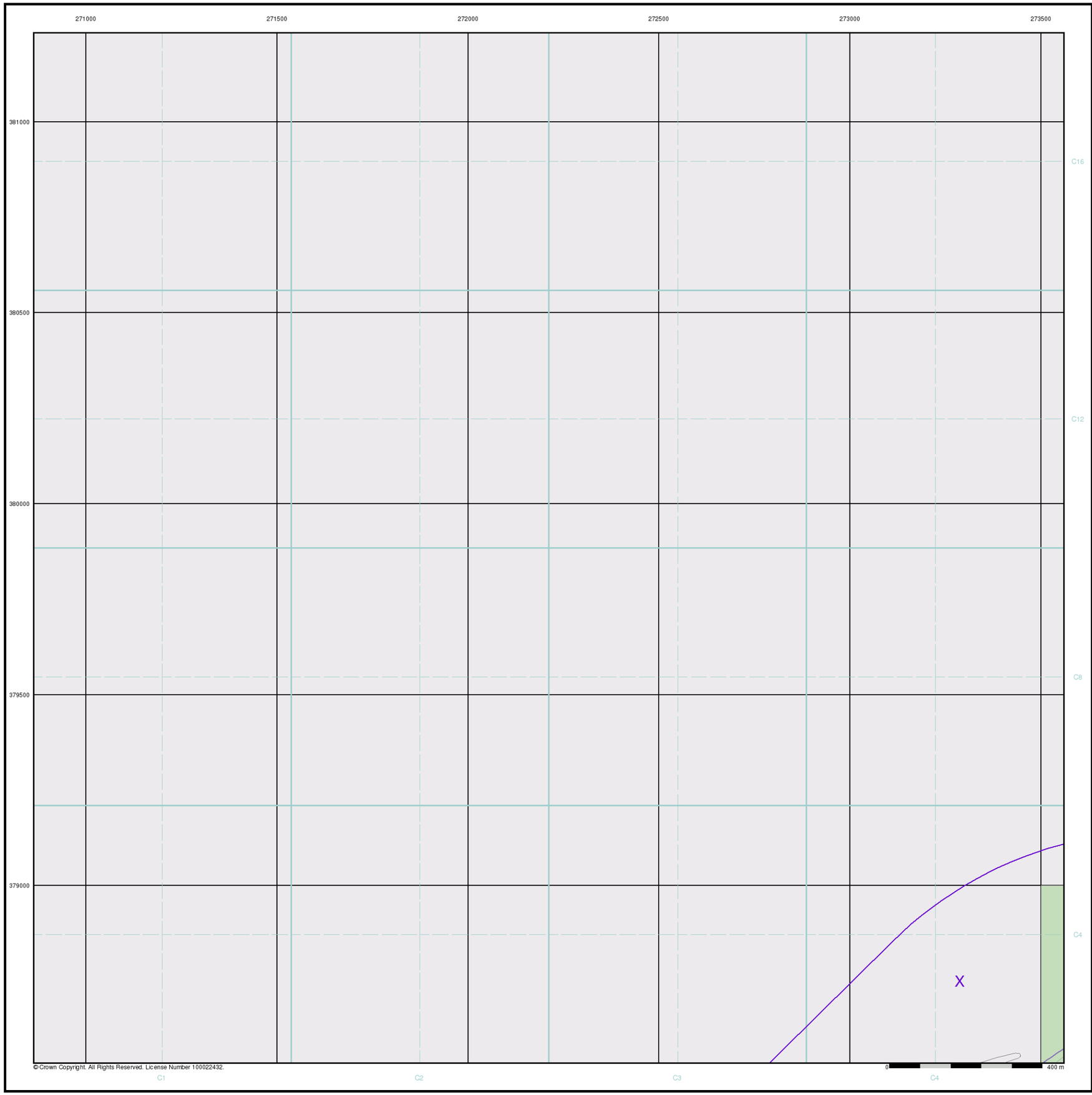
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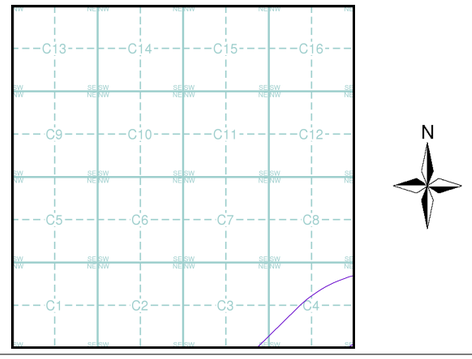
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice C



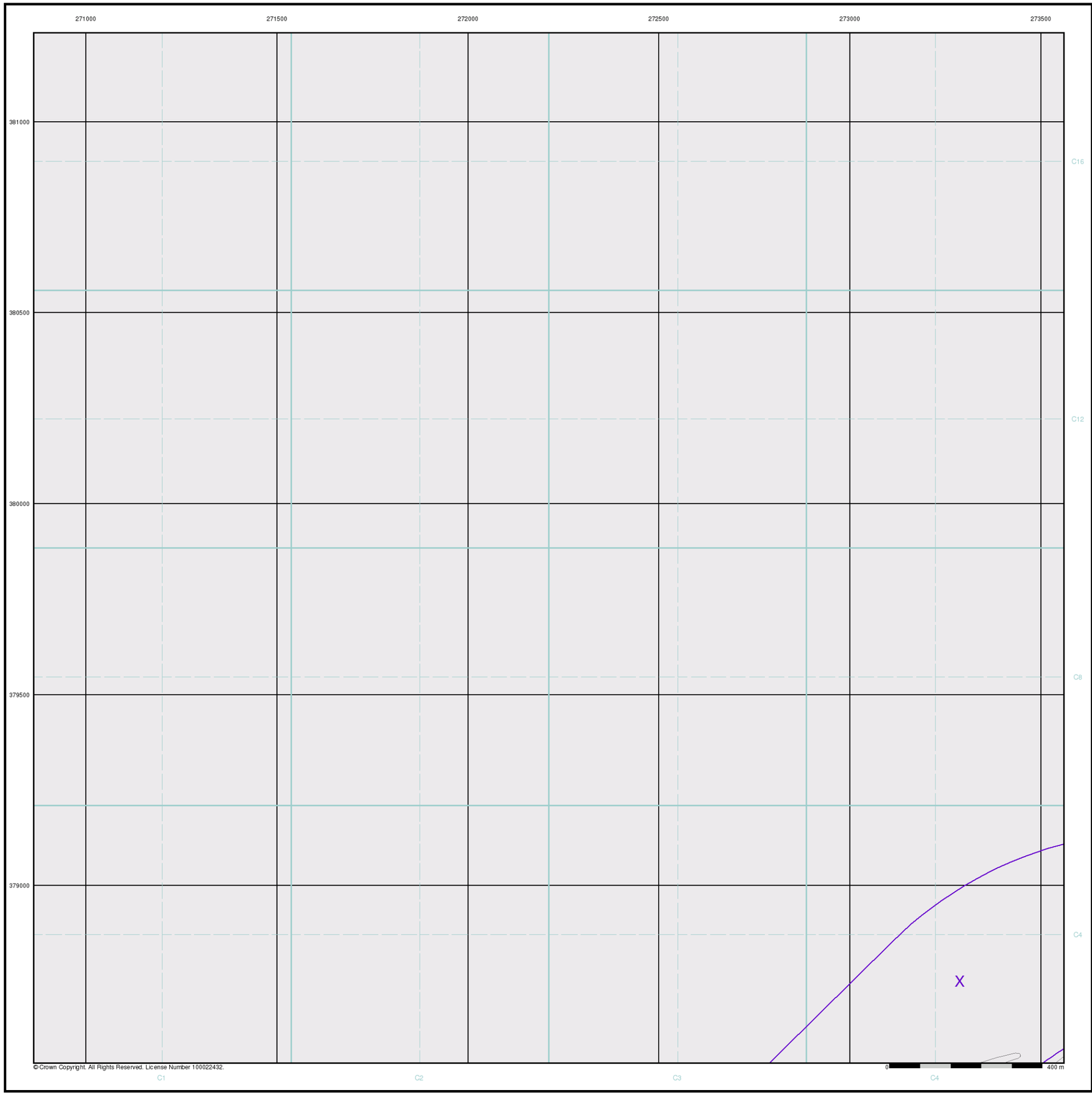
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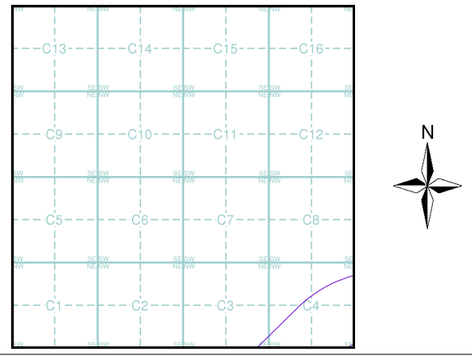
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice C



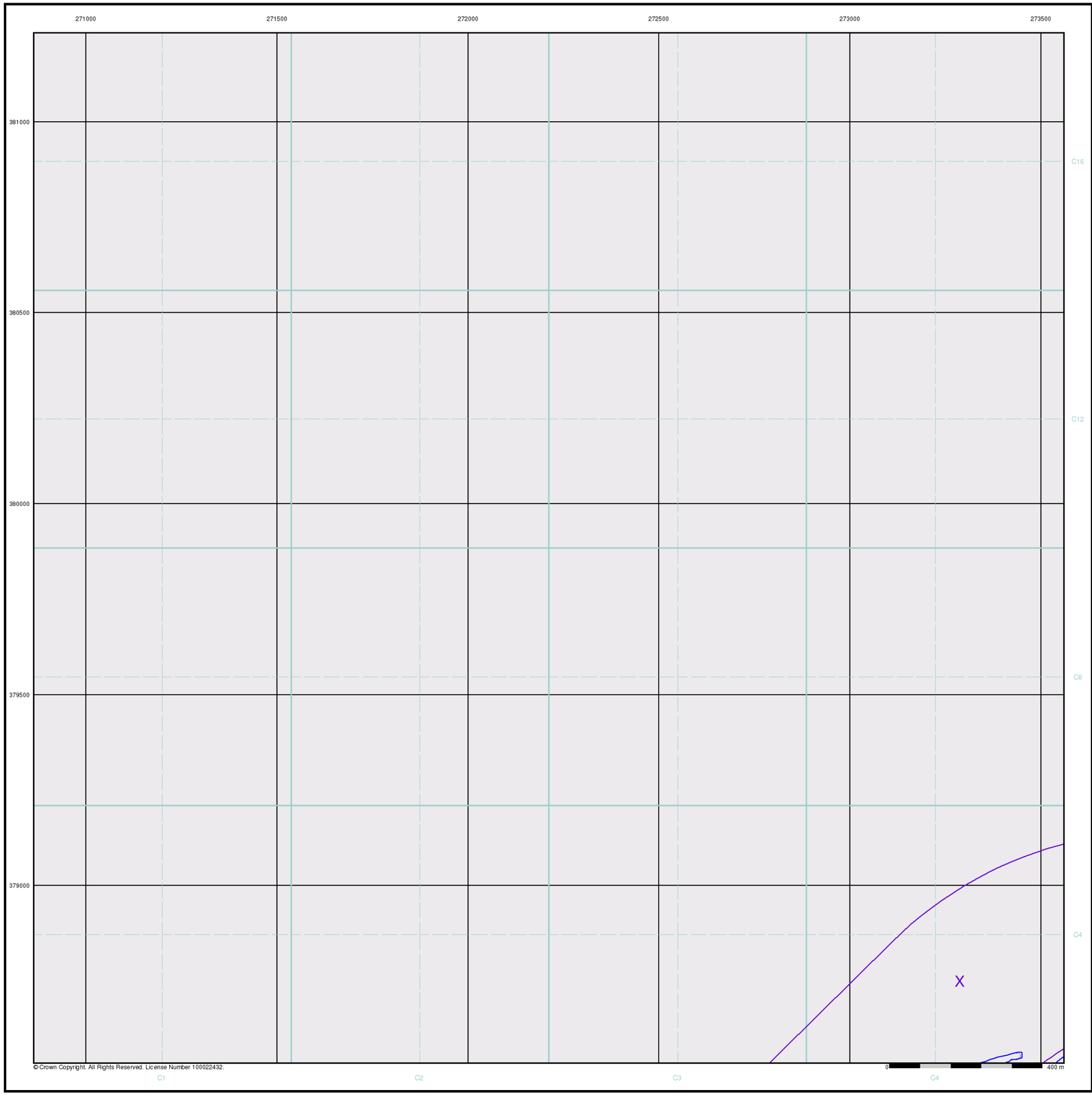
Order Details

Order Details:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
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Web: www.envirocheck.co.uk



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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

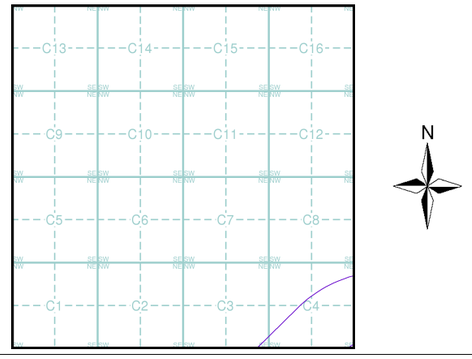
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice C



Order Details

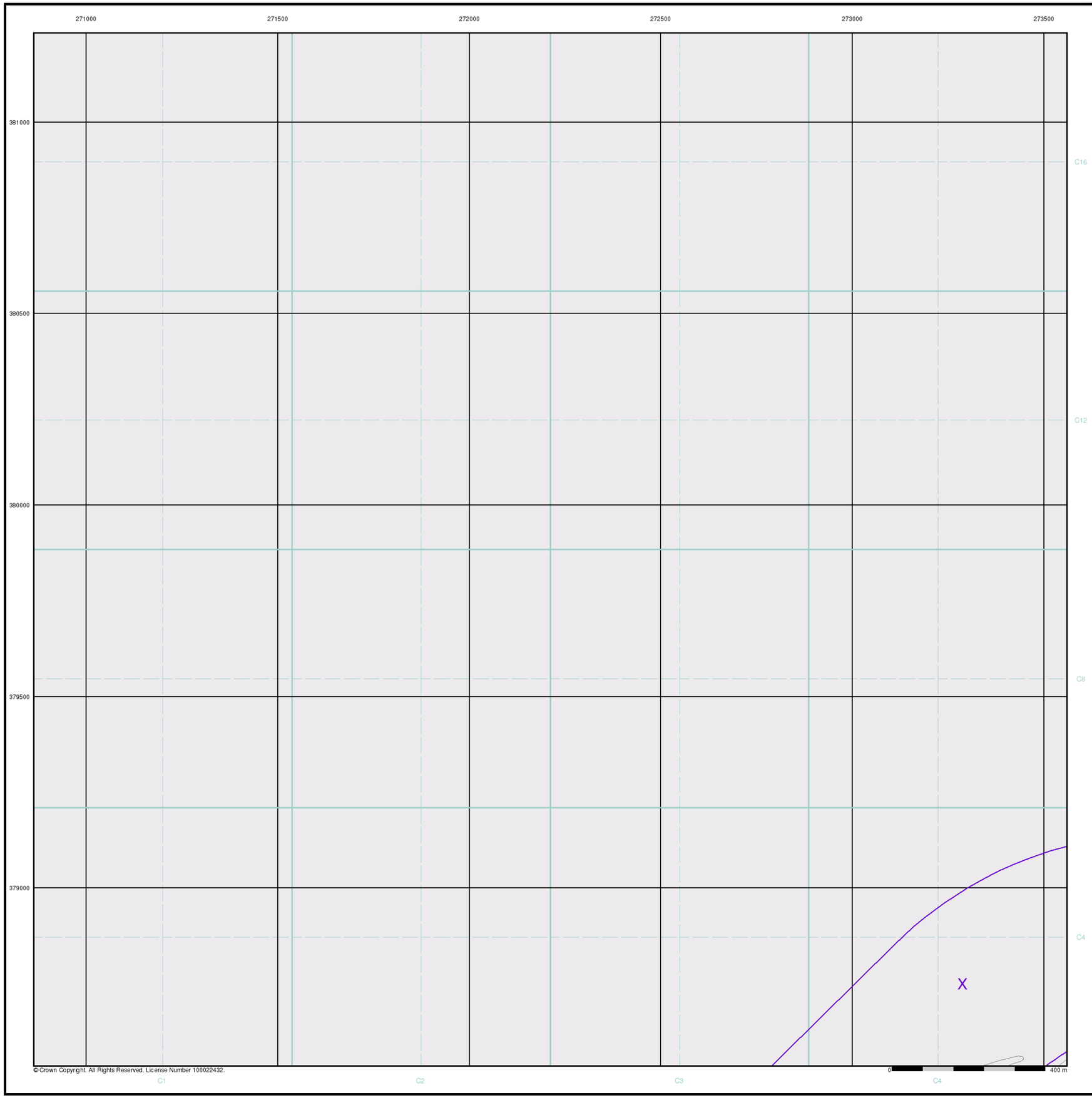
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Industrial Land Use Map

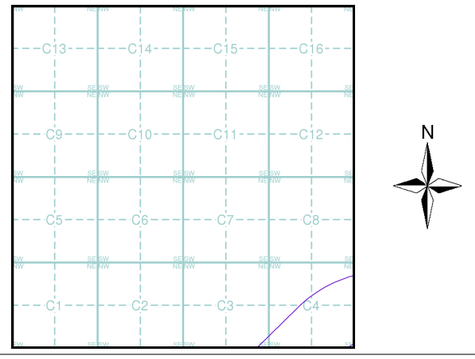
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Industrial Land Use

Contemporary Trade Directory Entry
Fuel Station Entry
Gas Pipeline
Points of Interest - Commercial Services
Points of Interest - Education and Health
Points of Interest - Manufacturing and Production
Points of Interest - Public Infrastructure
Points of Interest - Recreational and Environmental
Underground Electrical Cables

Industrial Land Use Map - Slice C



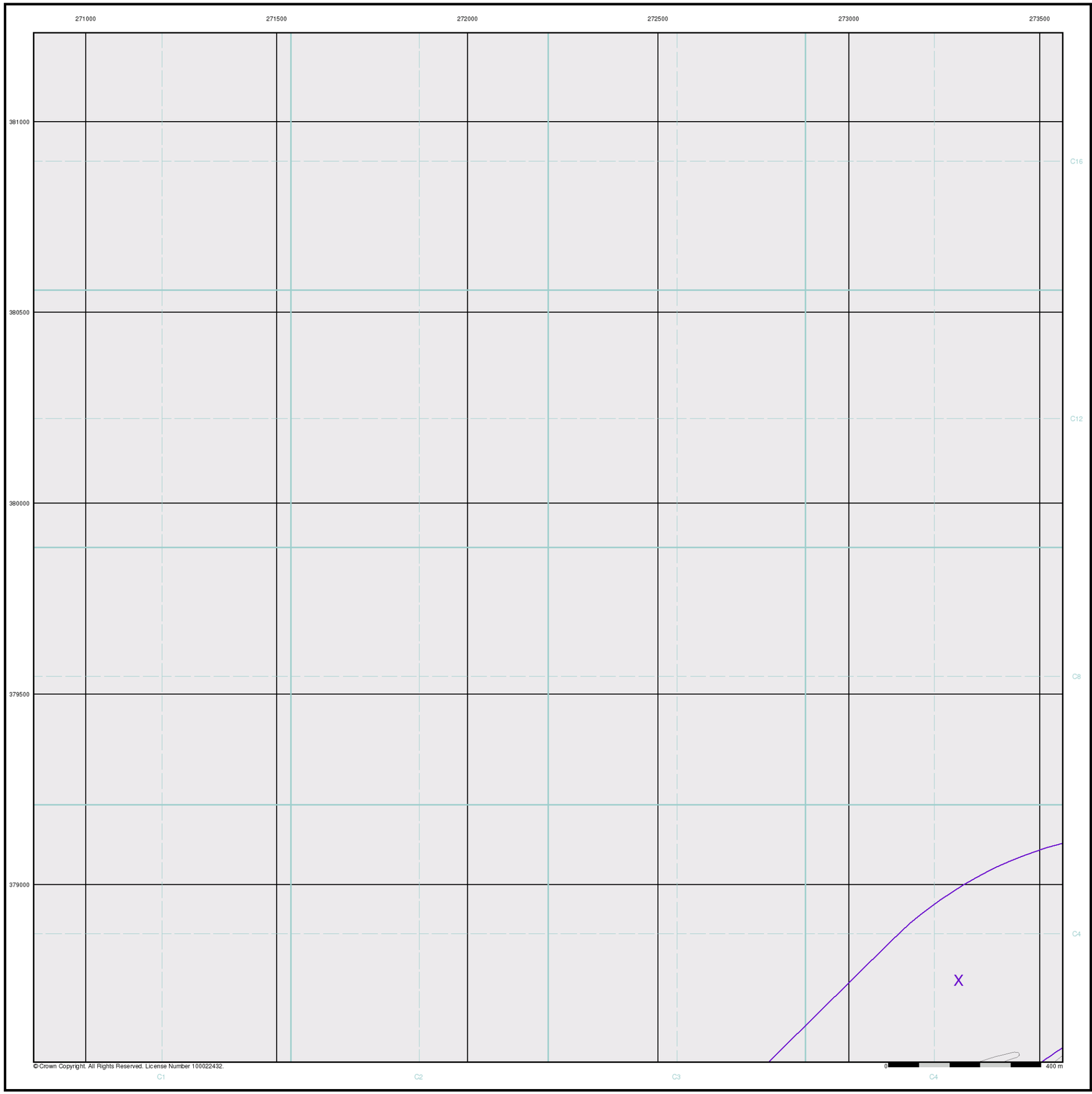
Order Details

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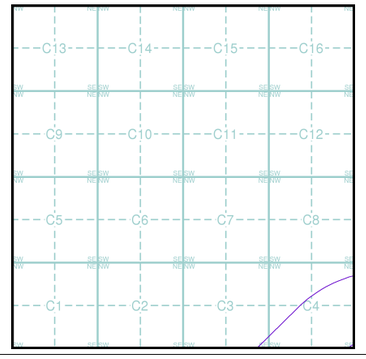
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice C



Order Details

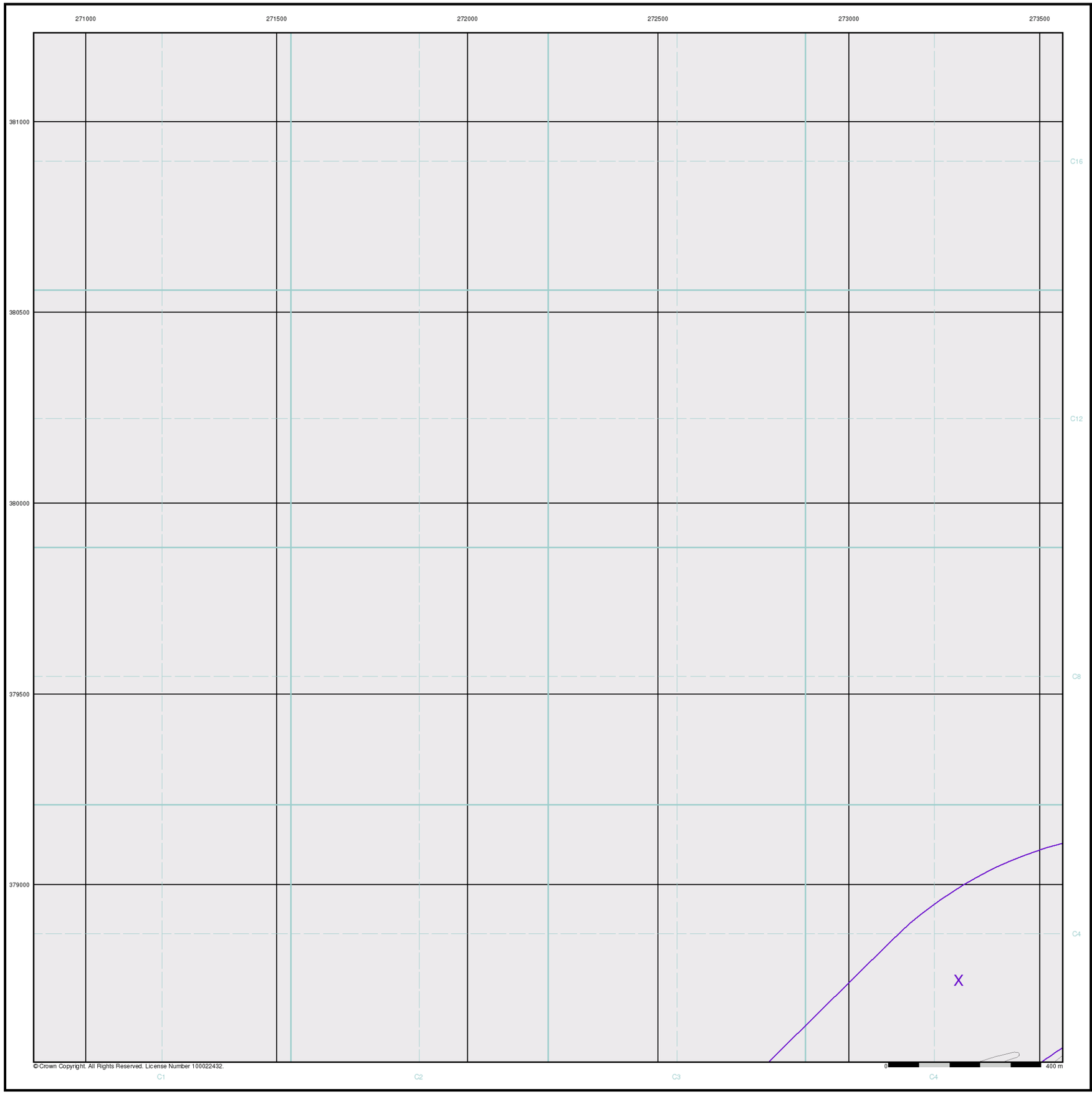
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- Bearing Reference Point
- Map ID
- Several of Type at Location

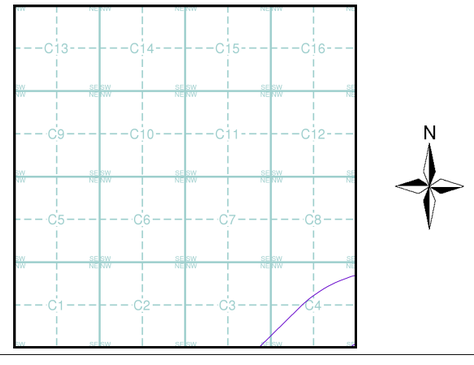
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice C



Order Details

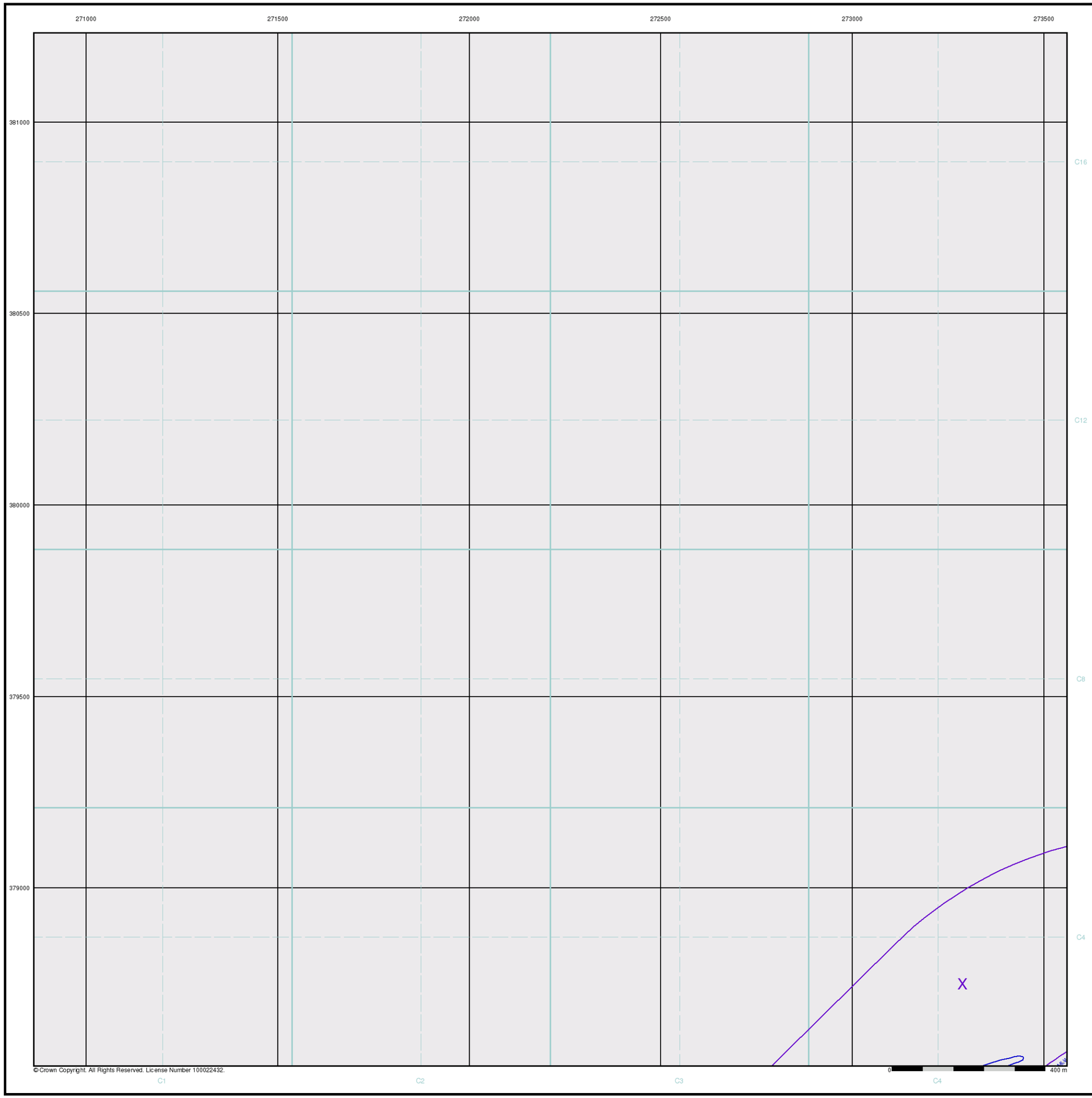
Order Number:	175417398_1_1
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

Standard Contour 105

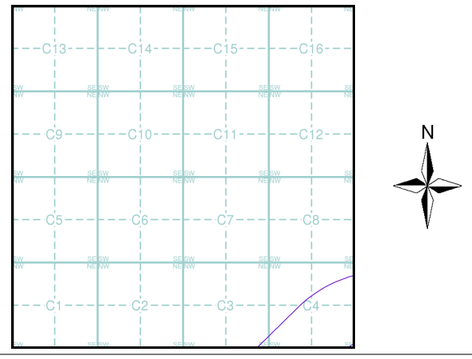
Master Contour 100

Spot Height 167.3

MLW Mean Low Water

MHW Mean High Water

OS Water Network Map - Slice C



Order Details

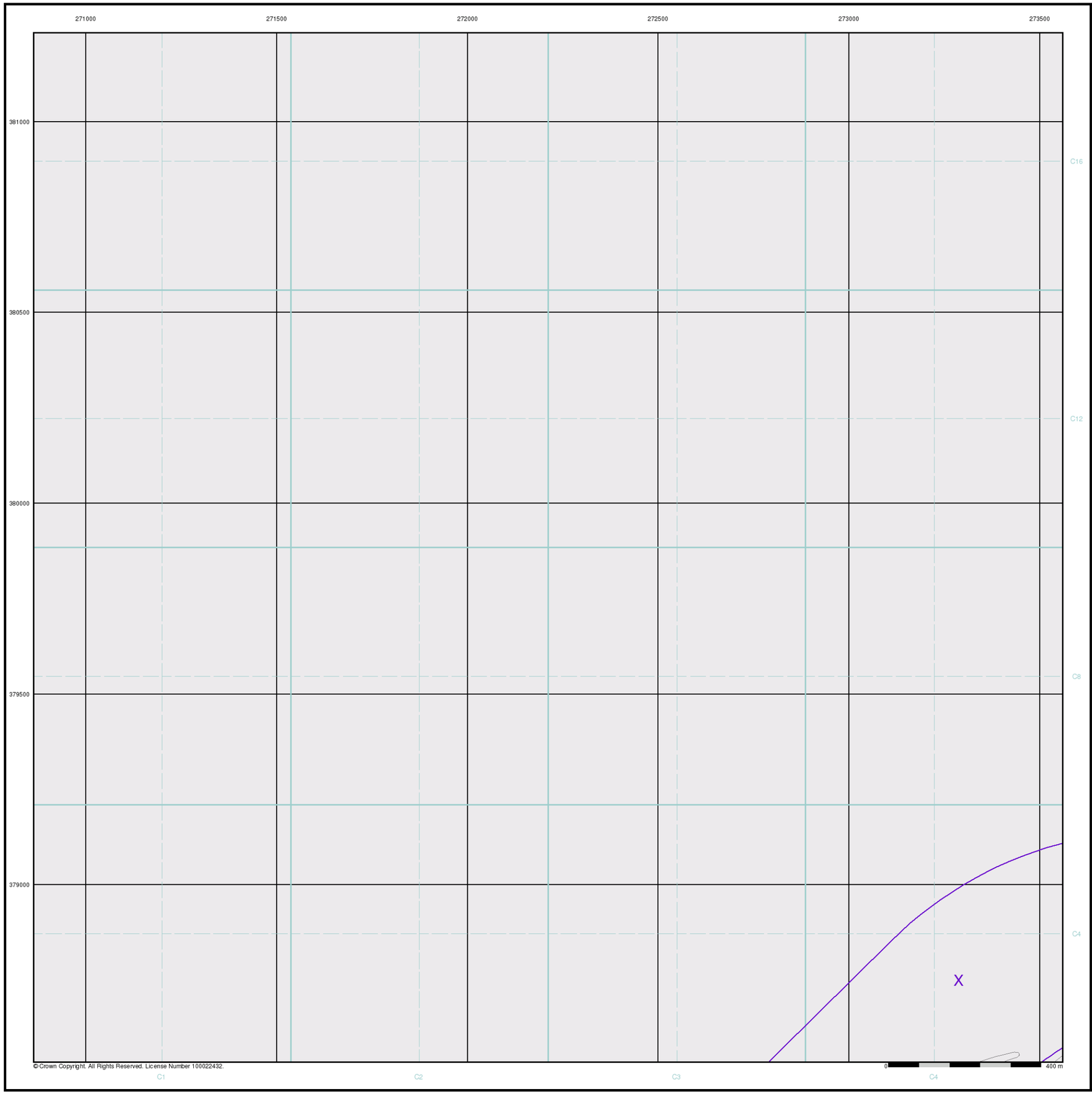
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

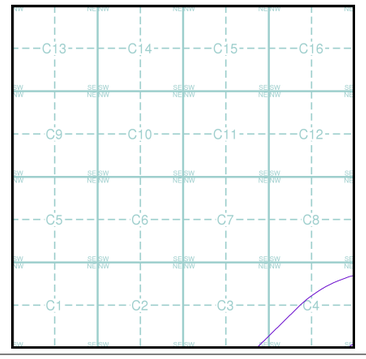
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice C



Order Details

Order Number:	175417398_1_1
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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

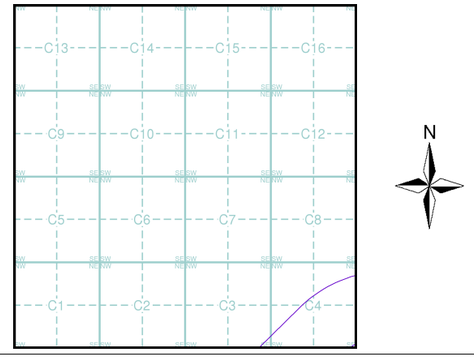
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

RAMBOLL

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:10,560	1888	2
Caernarvonshire	1:10,560	1901	3
Caernarvonshire	1:10,560	1915 - 1920	4
Caernarvonshire	1:10,560	1938 - 1951	5
Caernarvonshire	1:10,560	1953	6
Ordnance Survey Plan	1:10,000	1964	7
Ordnance Survey Plan	1:10,000	1975	8
Ordnance Survey Plan	1:10,000	1983	9
Ordnance Survey Plan	1:10,000	1992 - 1993	10
10K Raster Mapping	1:10,000	2000	11
10K Raster Mapping	1:10,000	2006	12
VectorMap Local	1:10,000	2018	13

Historical Map - Slice C



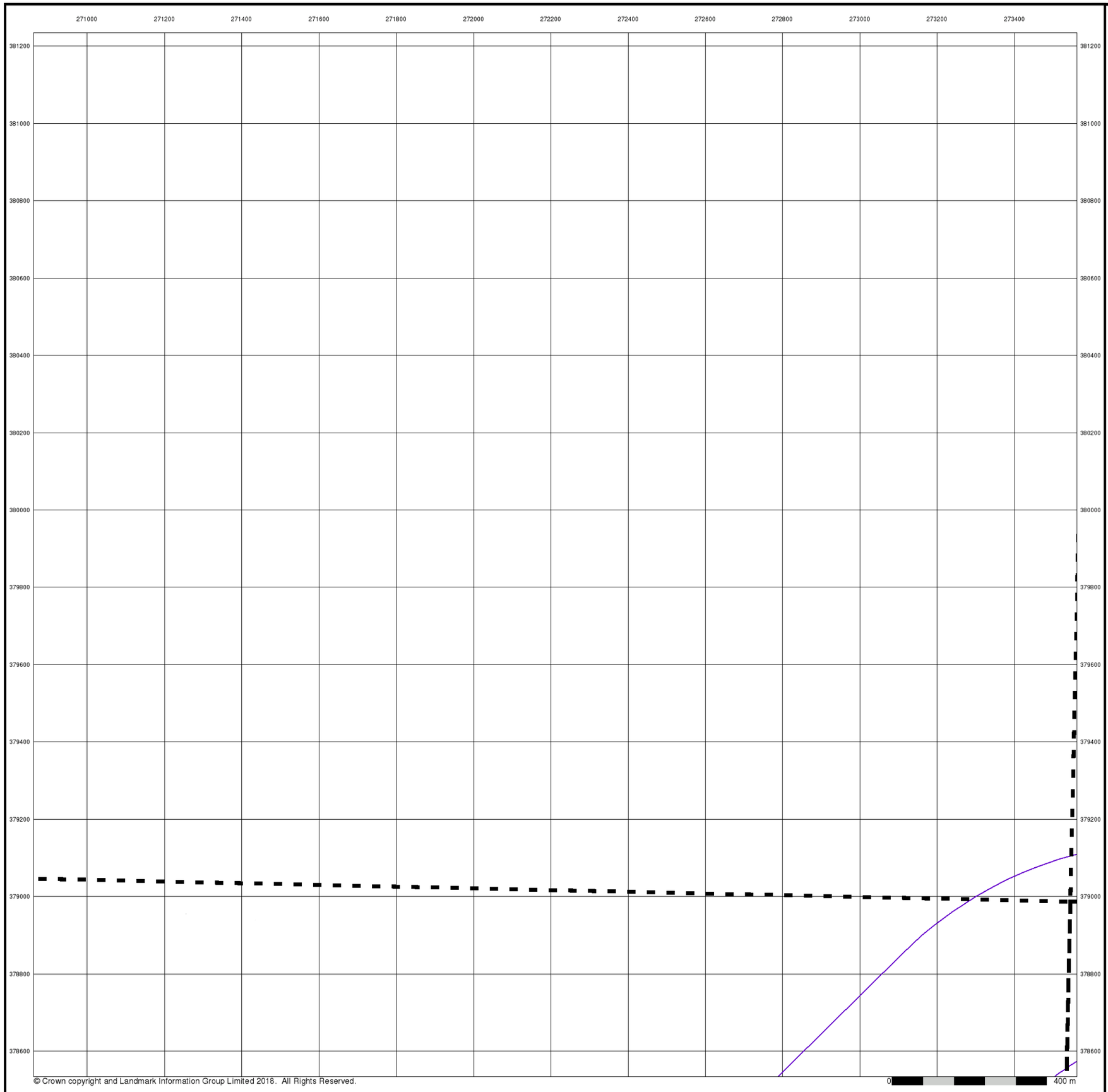
Order Details

Order Number:	175417398_1_1
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Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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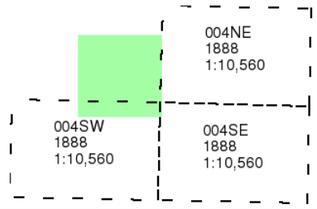
Caernarvonshire

Published 1888

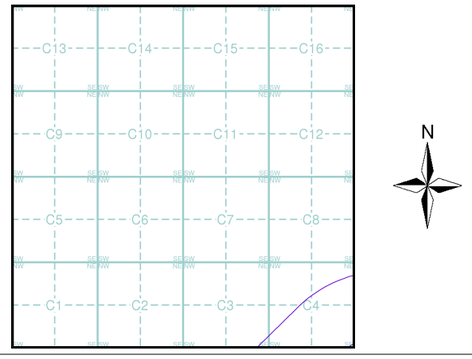
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice C



Order Details

Order Number:	175417398_1_1
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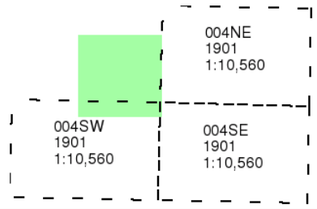
Caernarvonshire

Published 1901

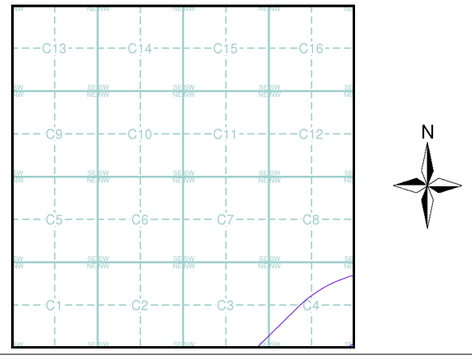
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Historical Map - Slice C



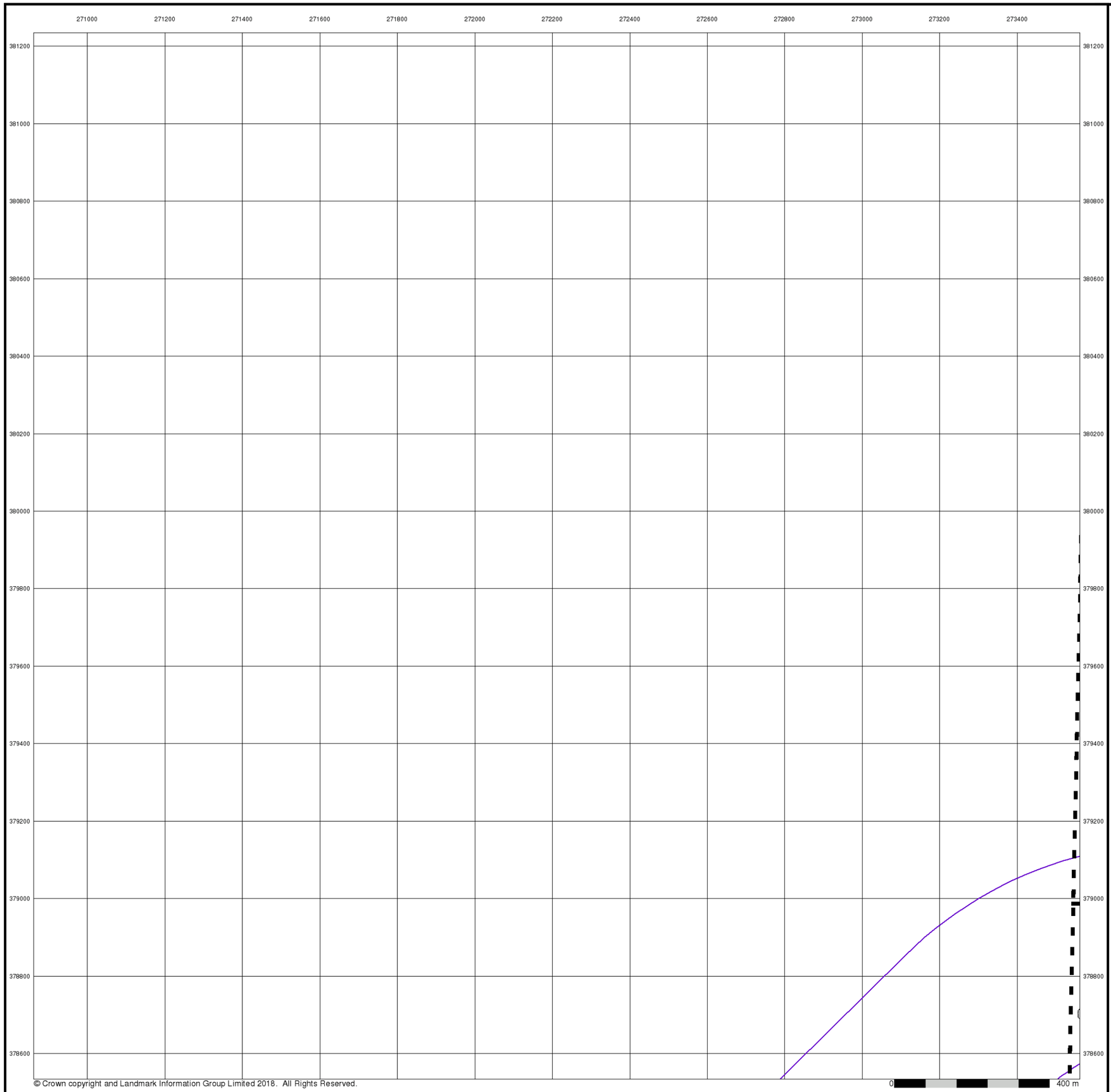
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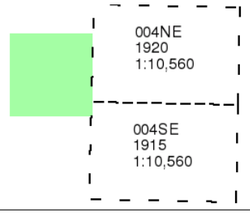
Caernarvonshire

Published 1915 - 1920

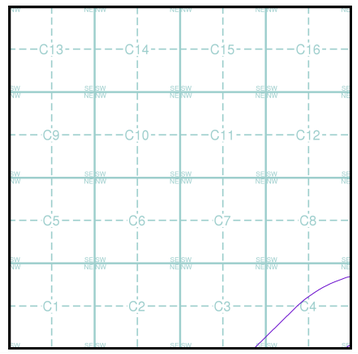
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice C



Order Details

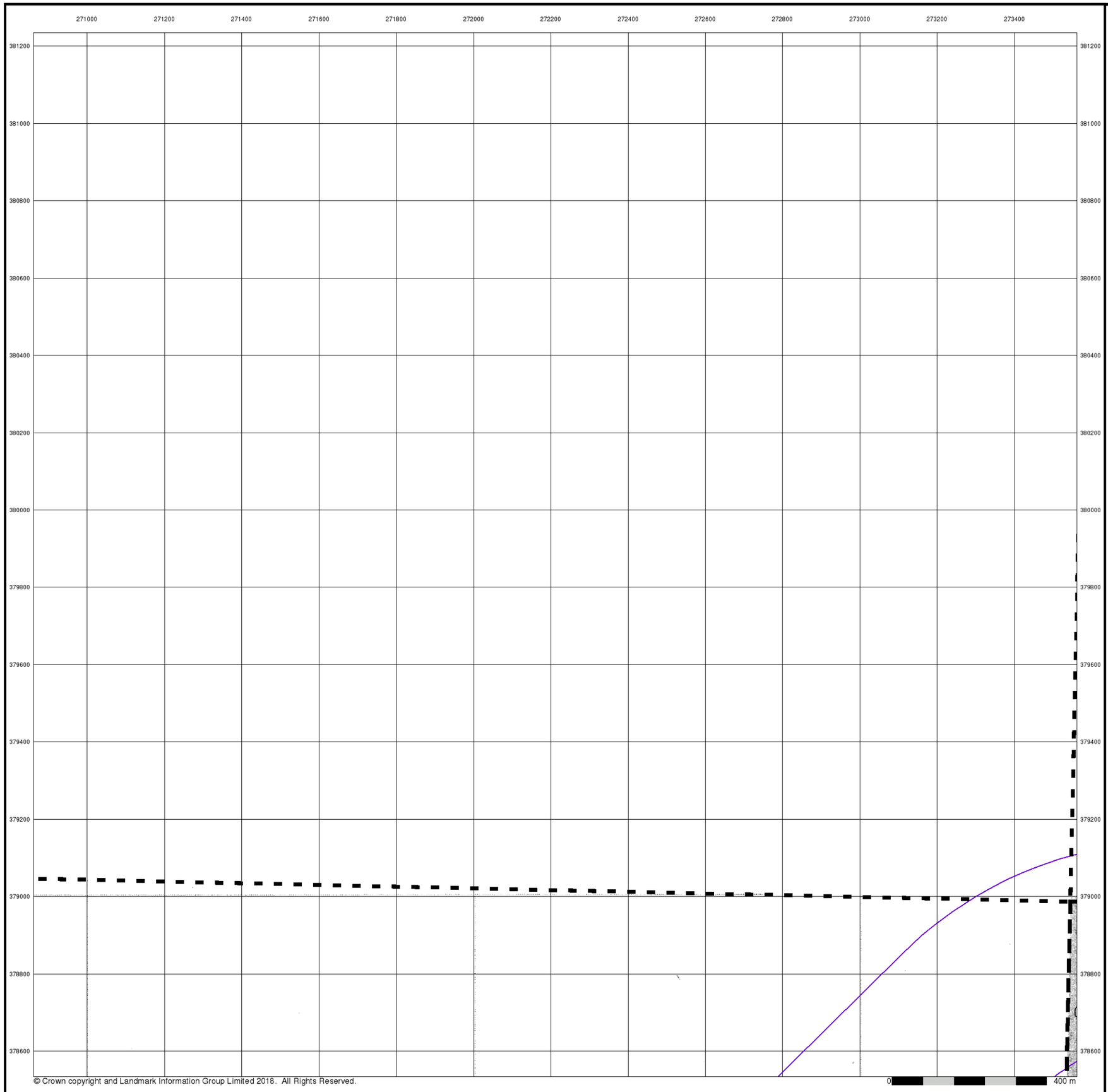
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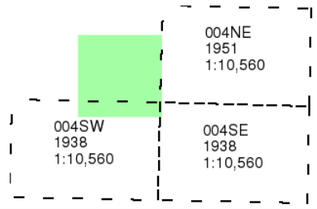
Caernarvonshire

Published 1938 - 1951

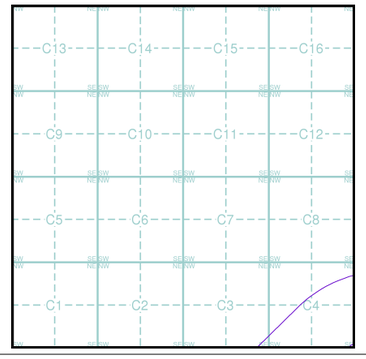
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice C



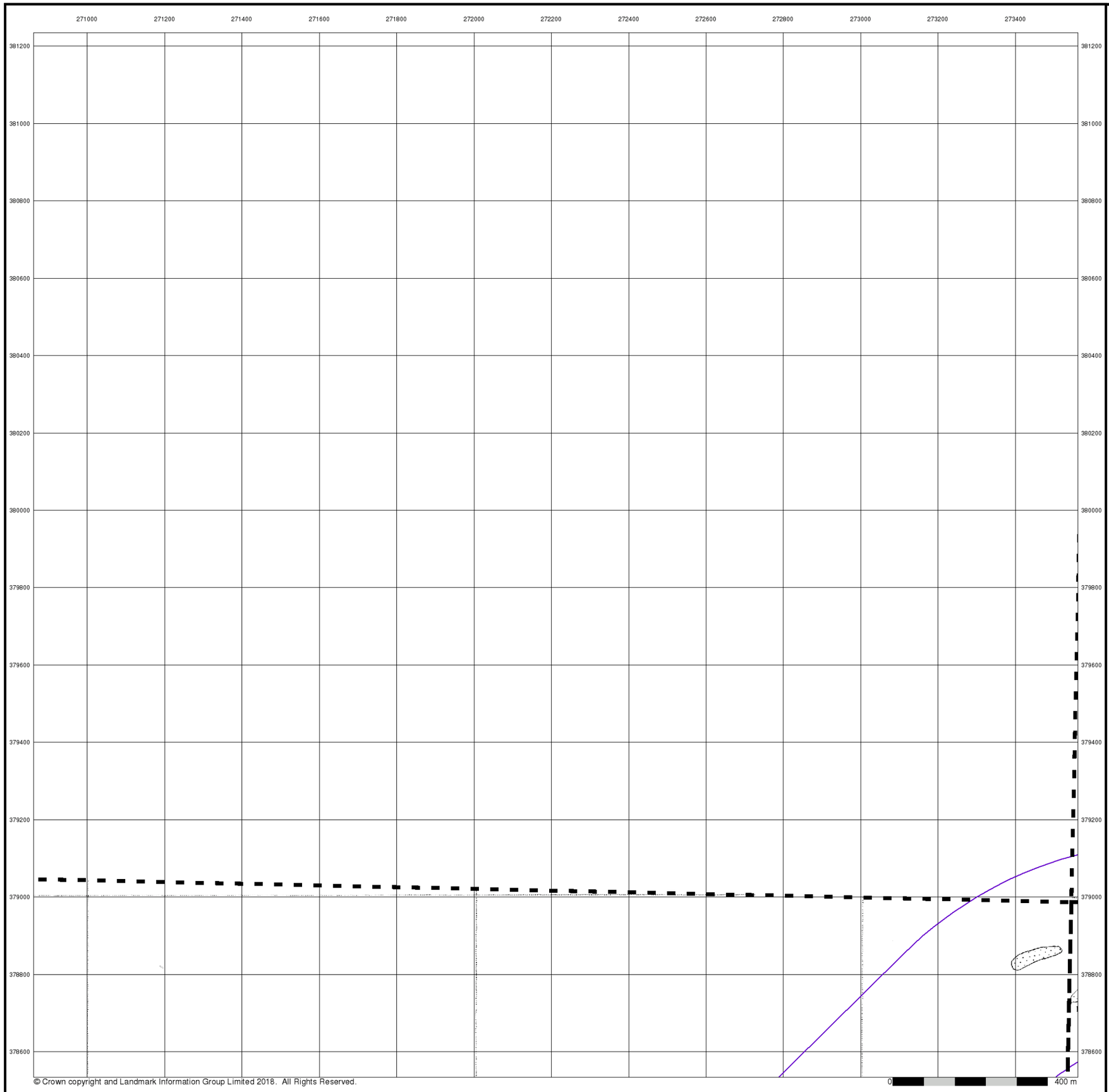
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National Grid Reference:	273290, 378750
Slice:	C
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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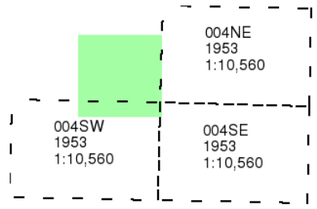
Caernarvonshire

Published 1953

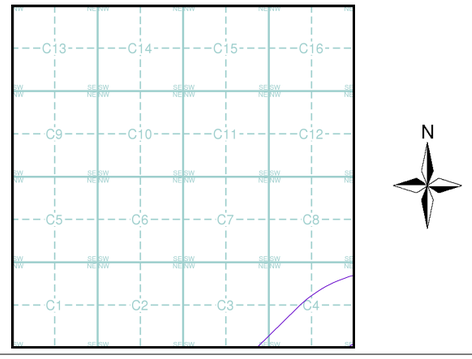
Source map scale - 1:10,560

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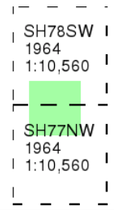
Ordnance Survey Plan

Published 1964

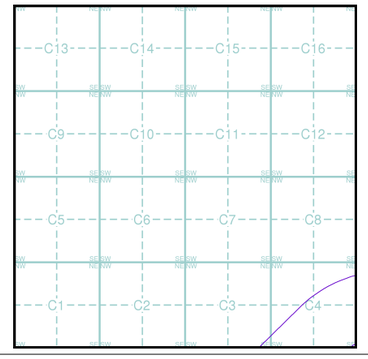
Source map scale - 1:10,000

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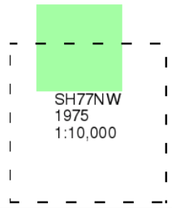
Ordnance Survey Plan

Published 1975

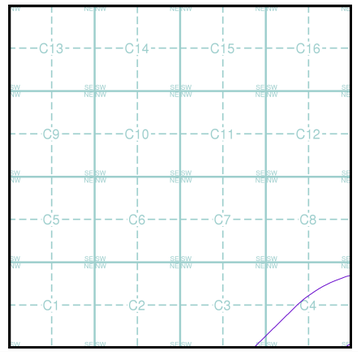
Source map scale - 1:10,000

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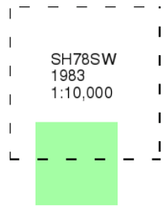
Ordnance Survey Plan

Published 1983

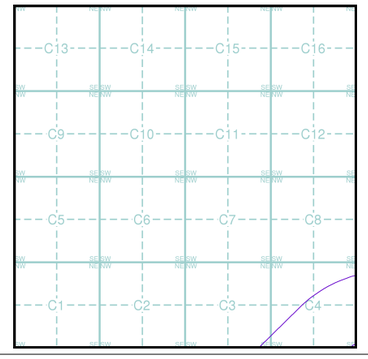
Source map scale - 1:10,000

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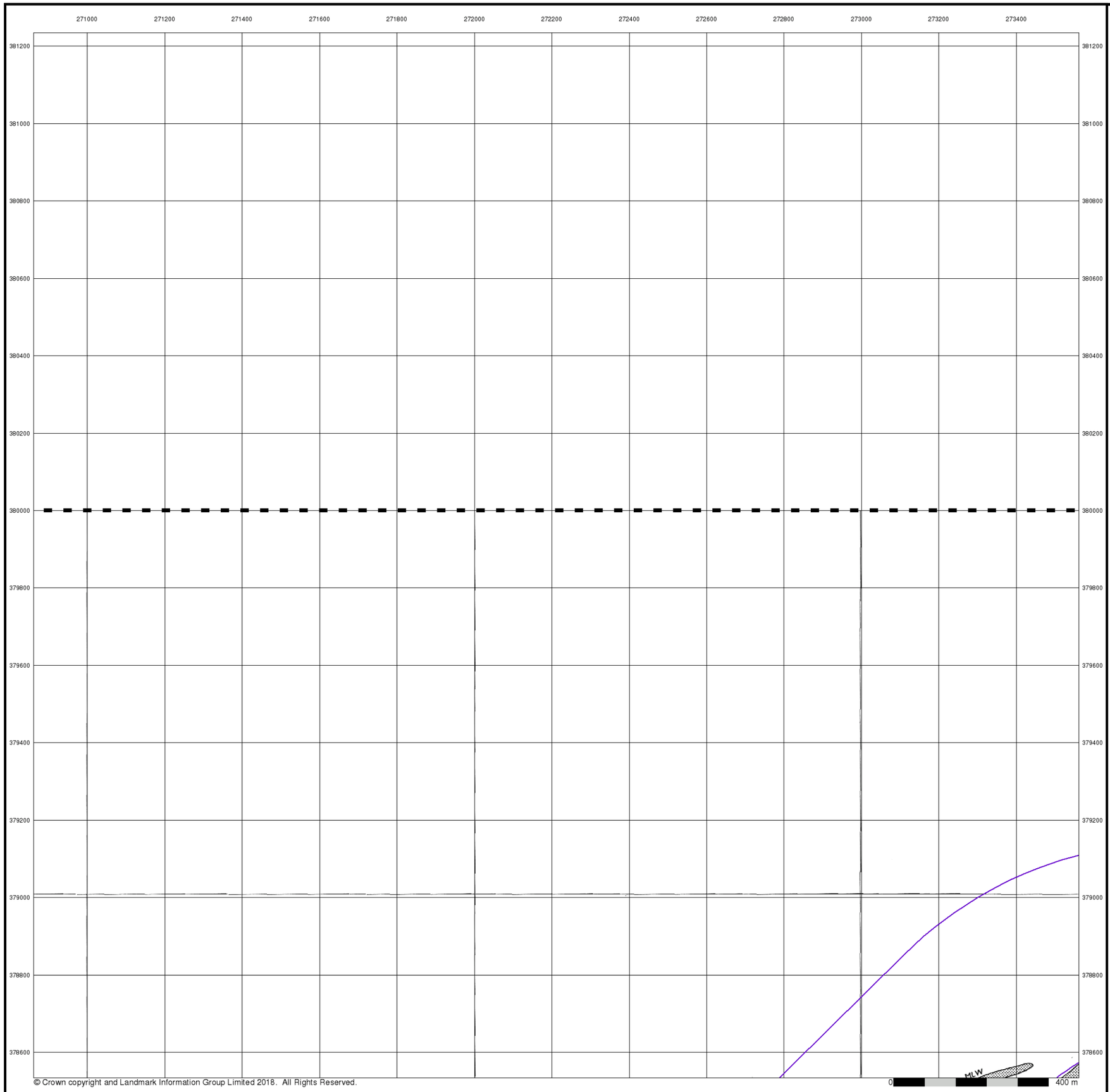
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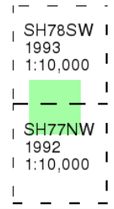
Ordnance Survey Plan

Published 1992 - 1993

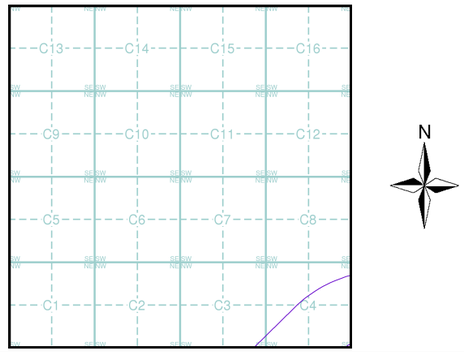
Source map scale - 1:10,000

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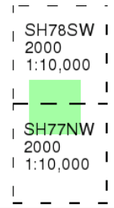
10k Raster Mapping

Published 2000

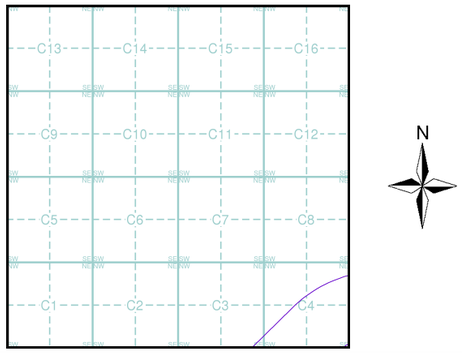
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



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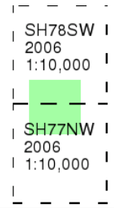
10k Raster Mapping

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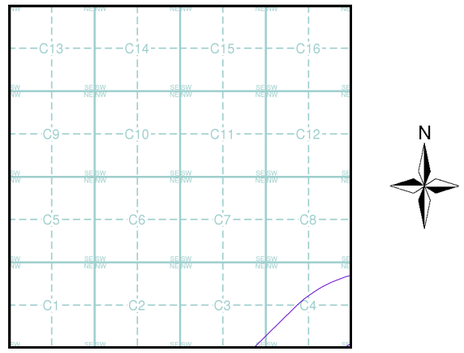
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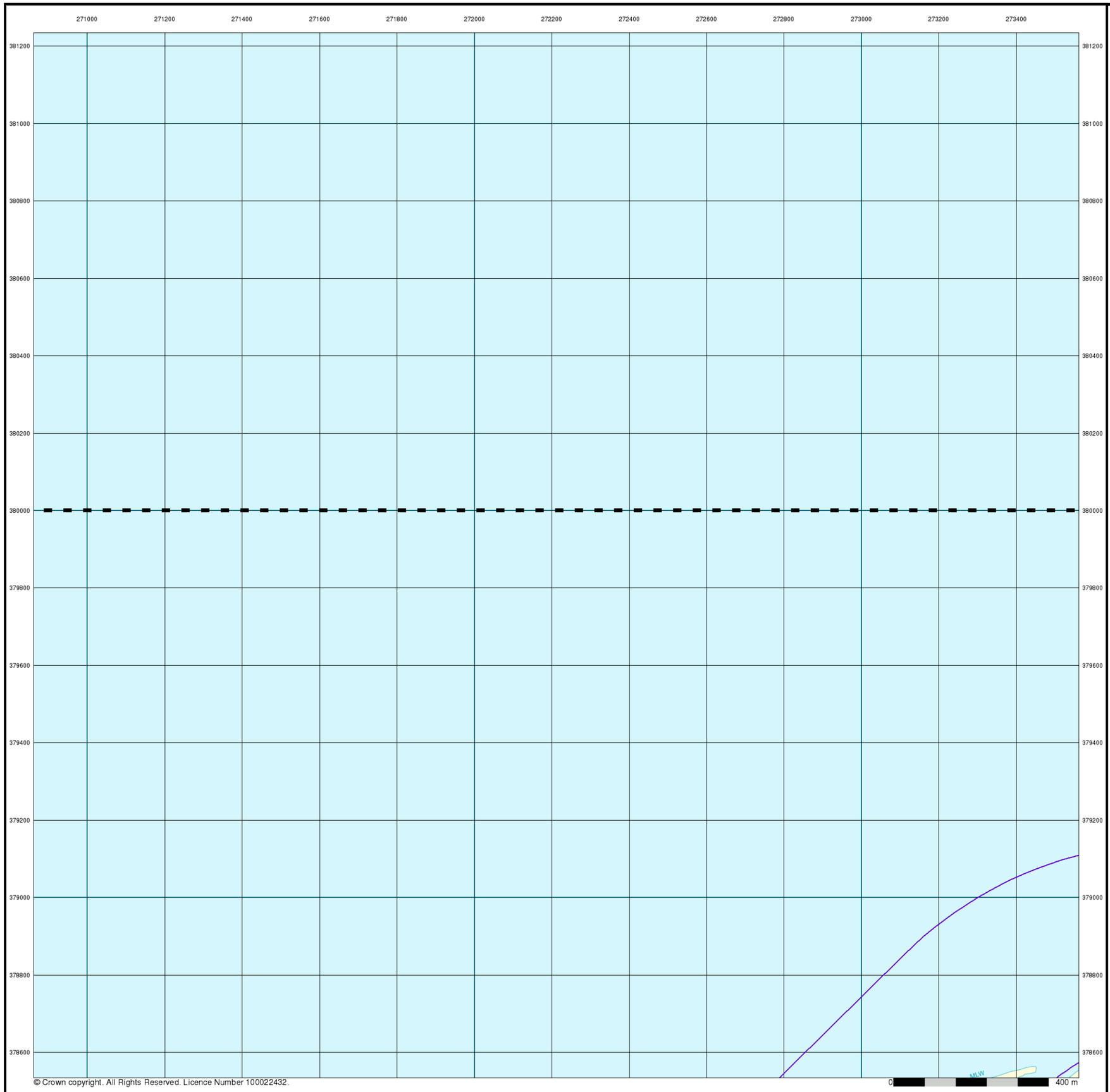
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VectorMap Local

Published 2018

Source map scale - 1:10,000

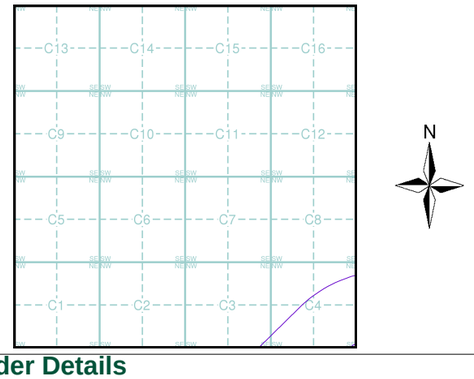
VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SH78SW
2018
Variable

SH77NW
2018
Variable

Historical Map - Slice C



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Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
274170, 378800

Slice:
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Site Area (Ha):
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Search Buffer (m):
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Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Contents

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes		n/a
Contaminated Land Register Entries and Notices					
Discharge Consents					
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 1		Yes		
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes	pg 1				1
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability	pg 1	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 1	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 1	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 1	Yes		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 1	Yes		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 3	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
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Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 4	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 4	Yes	Yes		Yes
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 4	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 5	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 5	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 5	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 5		Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries					
Fuel Station Entries					
Points of Interest - Commercial Services					
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production					
Points of Interest - Public Infrastructure					
Points of Interest - Recreational and Environmental					
Gas Pipelines					
Underground Electrical Cables					

RAMBOLL

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 6		2	1	
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks	pg 6	1			
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 6		1		1
Special Areas of Conservation	pg 6		1		
Special Protection Areas	pg 6		2		
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	1	273750 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	D1SE (SW)	0	1	274173 378804
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	1	274000 378100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	1	273900 378000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	1	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(S)	0	1	273850 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	19	1	274100 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	93	1	274173 378250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	104	1	274200 378150
	Nearest Surface Water Feature	D2SW (E)	184	-	274370 378841
1	**Prosecutions Relating to Authorised Processes** Location: Penmaenbach Headland, CONWY, Gwynedd, LL32 Prosecution Text: EA News Release 26/01/0000, Fly tipping on 05/07/1999 Prosecution Act: EPA90 Hearing Date: 21st January 2000 Verdict: Guilty Fine: 100 Costs: 150 Positional Accuracy: Manually positioned within the geographical locality	D2SE (E)	805	2	274764 378569
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	D1SE (SW)	0	2	274173 378804
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 15 North Wales Coast Scale: 1:100,000	(SE)	0	2	274451 378445
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	D1SE (N)	0	1	274176 378818
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	(SE)	0	1	274454 378512
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	(SE)	0	1	274396 378357
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	3	274272 378824
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	3	274272 378824

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	3	274272 378824
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
	OS Water Network Lines None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Conwy County Borough Council - Has supplied landfill data		0	4	274173 378804

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Unnamed Igneous Intrusion, Ordovician To Silurian	(SE)	0	1	274412 378384
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	(SE)	0	1	274454 378512
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	D1SE (N)	54	1	274176 378818
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: 100 - 200 mg/kg Nickel Concentration: no data	D1SE (SW)	132	1	274173 378804
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: no data Cadmium Concentration: <1.8 mg/kg Chromium Concentration: no data Lead Concentration: 100 - 200 mg/kg Nickel Concentration: no data	D1NE (N)	765	1	274181 378889
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: no data Chromium Concentration: 60 - 90 mg/kg Lead Concentration: no data Nickel Concentration: 15 - 30 mg/kg	D1NE (NW)	862	1	273983 379000
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	(SE)	0	1	274521 378521
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	0	1	274176 378818
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	(S)	0	1	274340 378390
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	(S)	0	1	274334 378412
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	D1SE (N)	12	1	274176 378818
	Radon Potential - Radon Affected Areas No Data Available				
	Radon Potential - Radon Protection Measures No Data Available				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Ancient Woodland** Name: Not Supplied Reference: 37449 Area(m²): 83872.31 Type: Restored Ancient Woodland Site	(S)	220	3	274348 377863
3	**Ancient Woodland** Name: Not Supplied Reference: 35987 Area(m²): 6343.61 Type: Ancient and Semi-Natural Woodland	(S)	227	3	274372 378223
4	**Ancient Woodland** Name: Not Supplied Reference: 49774 Area(m²): 838.65 Type: Ancient Woodland Site of Unknown Category	(SE)	347	3	274425 378277
5	**National Parks** Name: Snowdonia Multiple Area: N Area (m2): 2139330937.98 Source: Natural Resources Wales **Status: Fully Designated - designated as a National Park** Designation Date: 31st December 1951	(SE)	0	3	274444 378408
6	**Sites of Special Scientific Interest** Name: Sychnant Pass Multiple Areas: Y Total Area (m2): 1081930.79 Source: Natural Resources Wales Reference: 91931way Designation Details: Biological Designation Date: 1st January 1957 Date Type: Notified	(S)	235	3	274345 378081
7	**Sites of Special Scientific Interest** Name: Aber Afon Conwy Multiple Areas: N Total Area (m2): 13007686.27 Source: Natural Resources Wales Reference: 254531wlz Designation Details: Biological Designation Date: 11th December 2003 Date Type: Notified	D2SE (E)	661	3	274625 378806
8	**Special Areas of Conservation** Name: Y Fenai A Bae Conwy / Menai Strait And Conwy Bay Multiple Areas: N Total Area (m2): 265017352.03 Source: Natural Resources Wales Reference: Uk0030202 **Status: Designated**	D1SE (SW)	184	3	274173 378804
9	**Special Protection Areas** Name: Liverpool Bay / Bae Lerpwl (Wales) Multiple Areas: N Total Area (m2): 786840845.92 Source: Natural Resources Wales Reference: UK9020294 Designation Date: 31st October 2017	D1SE (SW)	184	3	274173 378804
10	**Special Protection Areas** Name: Liverpool Bay Multiple Areas: N Total Area (m2): 1696797358.7 Source: Natural England Reference: UK9020294 Designation Date: Not Supplied	D1SE (SW)	186	5	274173 378804

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Conwy County Borough Council - Environmental Health Department	August 2013	Annual Rolling Update
Discharge Consents		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	August 2014	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Welsh Region	October 2008	Variable
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Local Authority Pollution Prevention and Controls		
Conwy County Borough Council - Environmental Health Department	January 2015	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Conwy County Borough Council - Environmental Health Department	January 2015	Variable
Nearest Surface Water Feature		
Ordnance Survey	September 2017	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	As notified
Natural Resources Wales	March 2013	As notified
Registered Radioactive Substances		
Natural Resources Wales	January 2015	As notified
Environment Agency - Welsh Region	January 2015	
Substantiated Pollution Incident Register		
Environment Agency Wales - North Area	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	April 2018	Quarterly
Natural Resources Wales	April 2018	Quarterly
Water Industry Act Referrals		
Natural Resources Wales	April 2018	Quarterly
Environment Agency - Welsh Region	October 2017	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified
Superficial Aquifer Designations		
British Geological Survey - National Geoscience Information Service	August 2015	As notified
Source Protection Zones		
Natural Resources Wales	November 2016	As notified

Agency & Hydrological	Version	Update Cycle
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
Waste	**Version**	**Update Cycle**
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Natural Resources Wales	April 2018	Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency Wales - North Area Natural Resources Wales	April 2018 January 2018	Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency Wales - North Area Natural Resources Wales	April 2018 April 2018	Quarterly Quarterly
Local Authority Landfill Coverage Conwy County Borough Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites Conwy County Borough Council - Environmental Health Department	July 2003	Not Applicable
Potentially Infilled Land (Non-Water) Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water) Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Transfer Sites Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency Wales - North Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Conwy County Borough Council - Planning Department Snowdonia National Park	February 2016 February 2016	Variable Variable
Planning Hazardous Substance Consents Conwy County Borough Council - Planning Department Snowdonia National Park	February 2016 February 2016	Variable Variable
Geological	**Version**	**Update Cycle**
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2018	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	May 2018	Quarterly
Fuel Station Entries Catalist Ltd - Experian	April 2018	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Points of Interest - Commercial Services PointX	June 2018	Quarterly
Points of Interest - Education and Health PointX	June 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	June 2018	Quarterly
Points of Interest - Public Infrastructure PointX	June 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	June 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually
Sensitive Land Use	**Version**	**Update Cycle**
Ancient Woodland Natural Resources Wales	October 2017	Bi-Annually
Areas of Outstanding Natural Beauty Natural Resources Wales	February 2018	Bi-Annually
Environmentally Sensitive Areas The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Conwy County Borough Council	February 2018	Bi-Annually
Marine Nature Reserves Natural Resources Wales	October 2017	Bi-Annually
National Nature Reserves Natural Resources Wales	February 2018	Bi-Annually
National Parks Natural Resources Wales	February 2018	Annually
Nitrate Vulnerable Zones Natural Resources Wales The National Assembly for Wales - GI Services (Department of Planning & Countryside)	July 2017 October 2005	Bi-Annually
Ramsar Sites Natural Resources Wales	February 2018	Bi-Annually
Sites of Special Scientific Interest Natural Resources Wales	February 2018	Bi-Annually
Special Areas of Conservation Natural Resources Wales	February 2018	Bi-Annually
Special Protection Areas Natural England Natural Resources Wales	February 2018 February 2018	Bi-Annually Bi-Annually

Data Suppliers

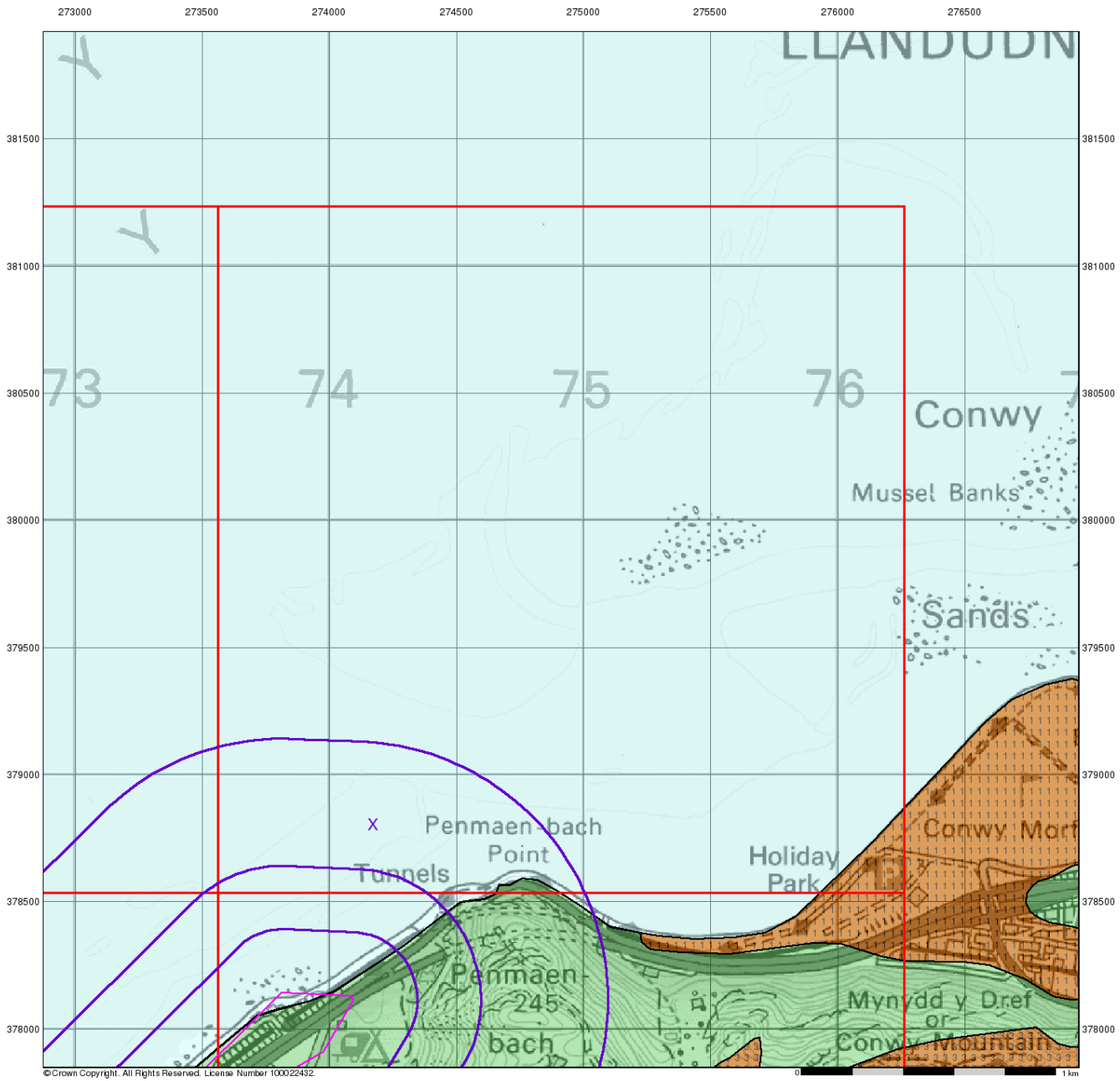
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
4	**Conwy County Borough Council - Environmental Health Department** Civic Offices, Colwyn Bay, Gwynedd, LL29 8AR	Telephone: 01492 575187 Fax: 01492 575204 Website: www.conwy.gov.uk
5	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



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Groundwater Vulnerability

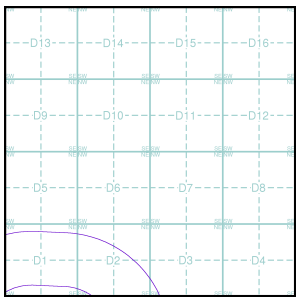
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice D



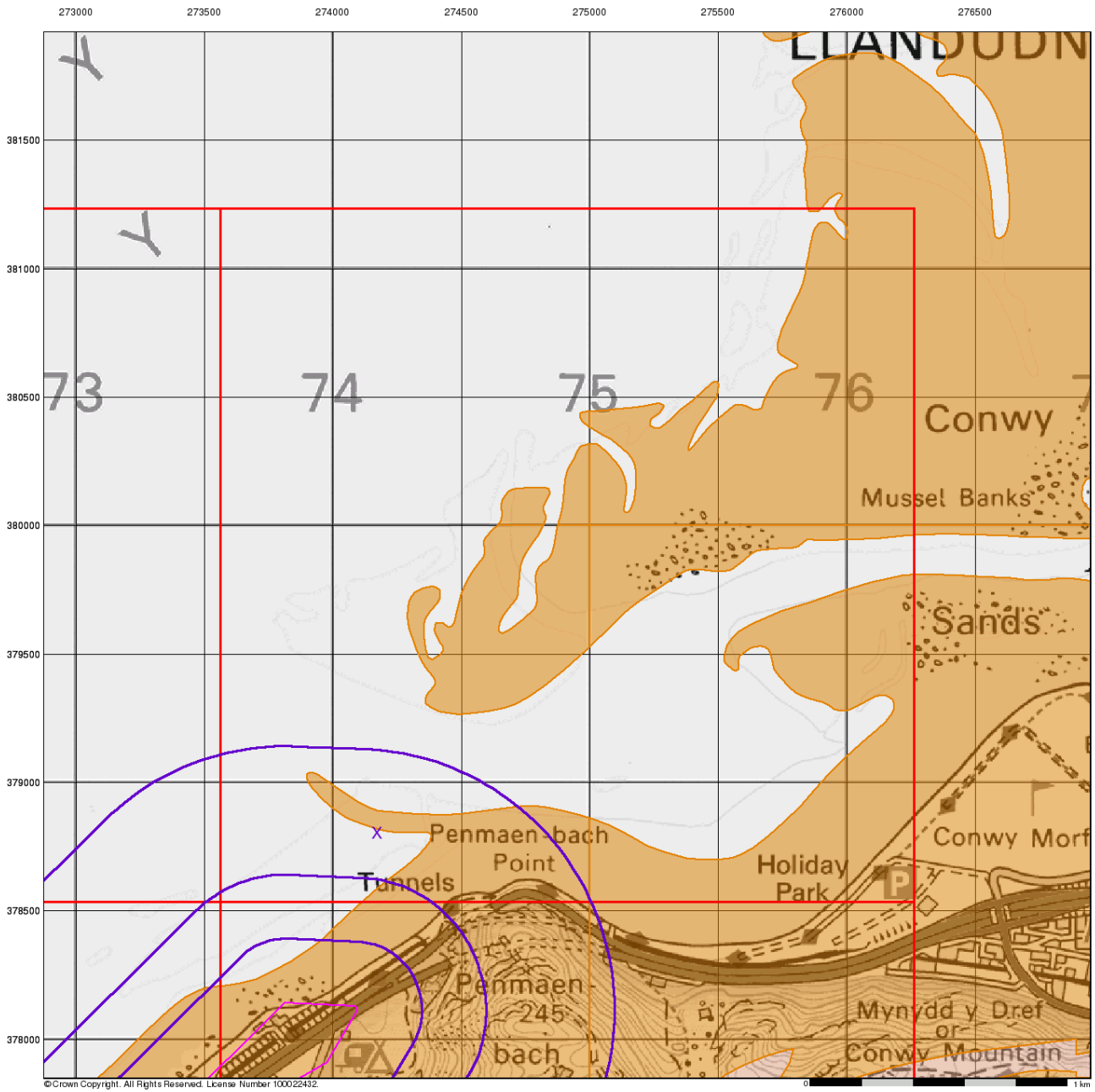
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Bedrock Aquifer Designation

General

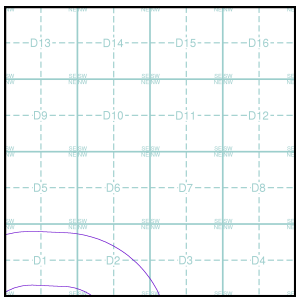
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice D



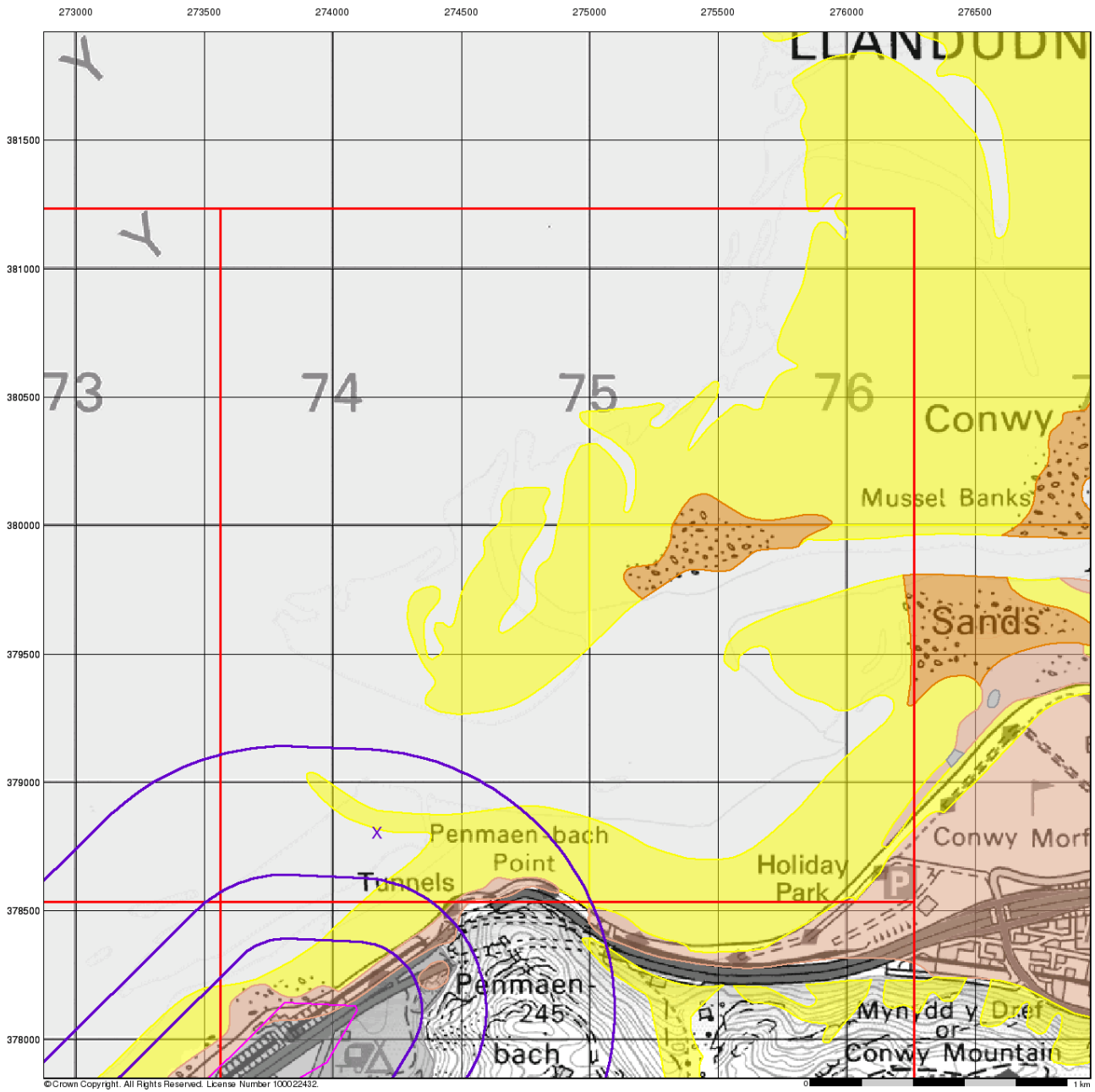
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Superficial Aquifer Designation

General

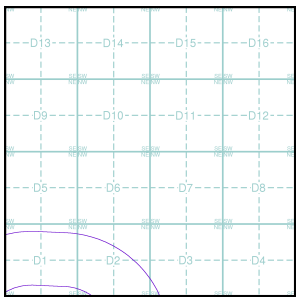
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice D



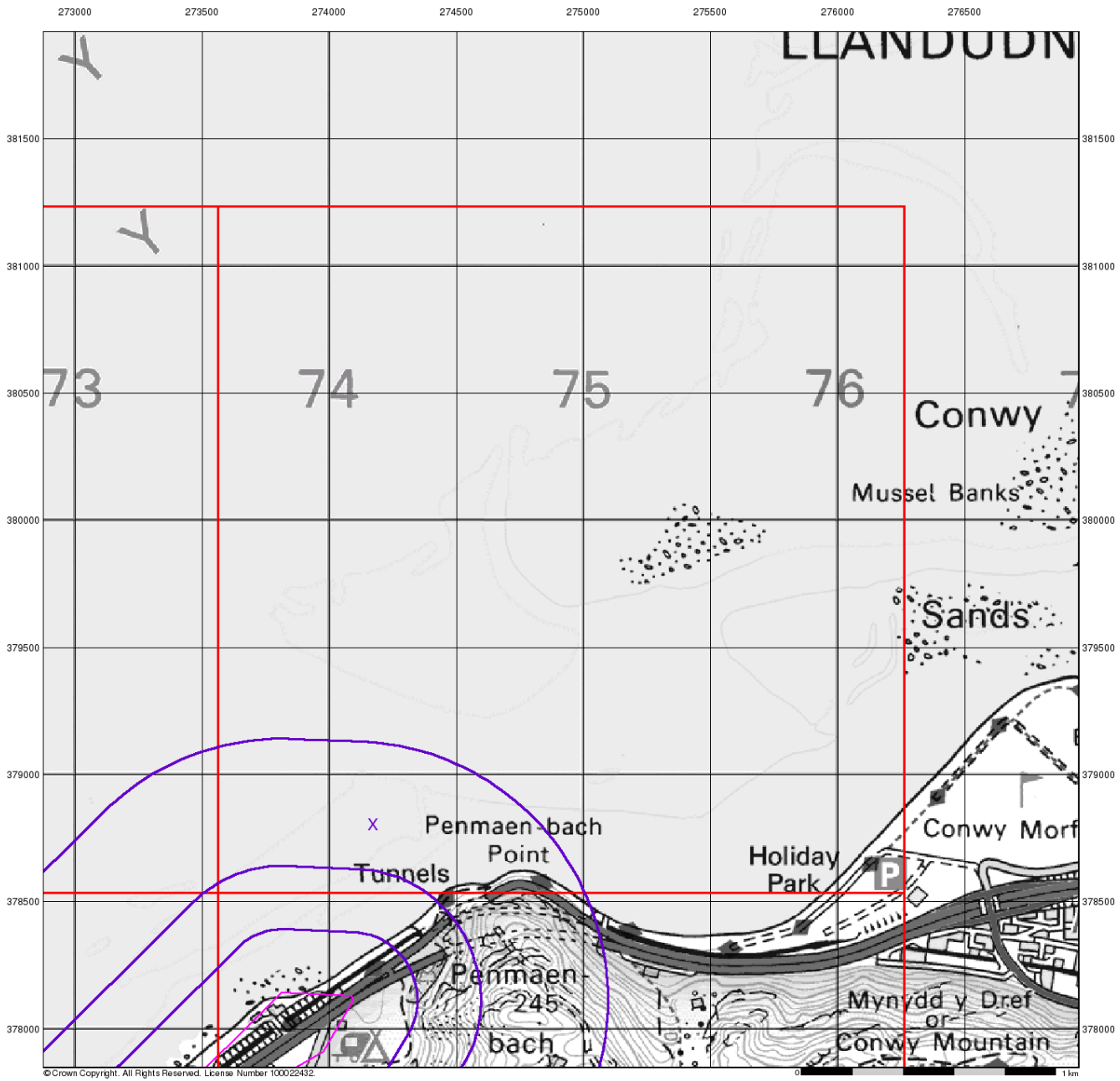
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Source Protection Zones

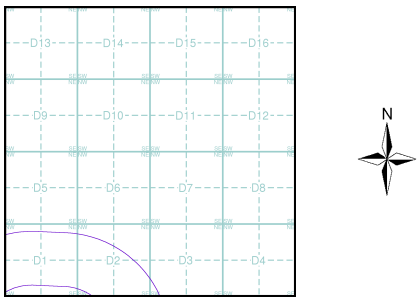
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice D



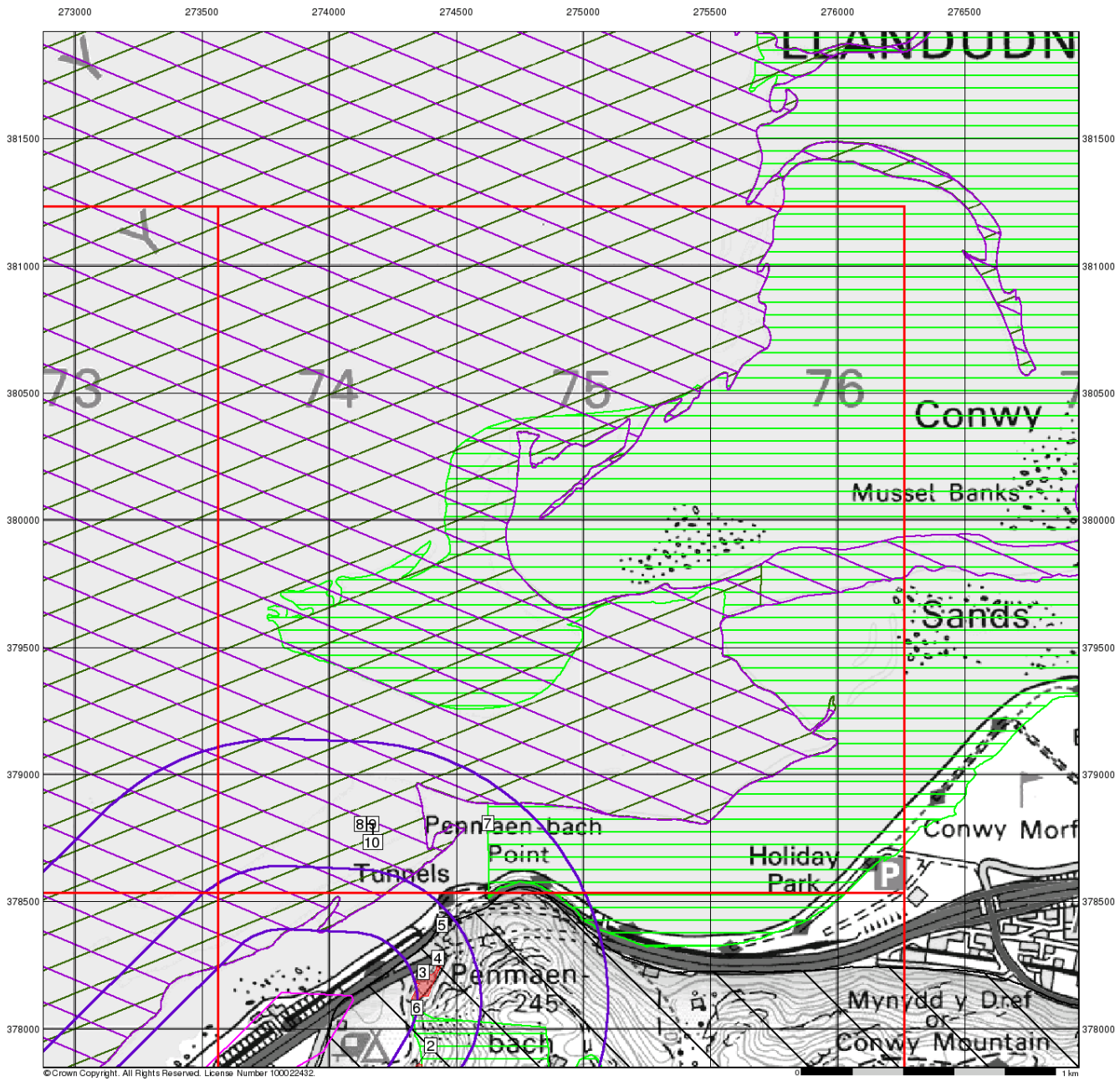
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

Sensitive Land Uses

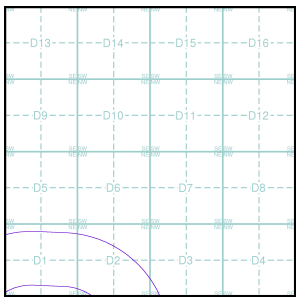
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice D

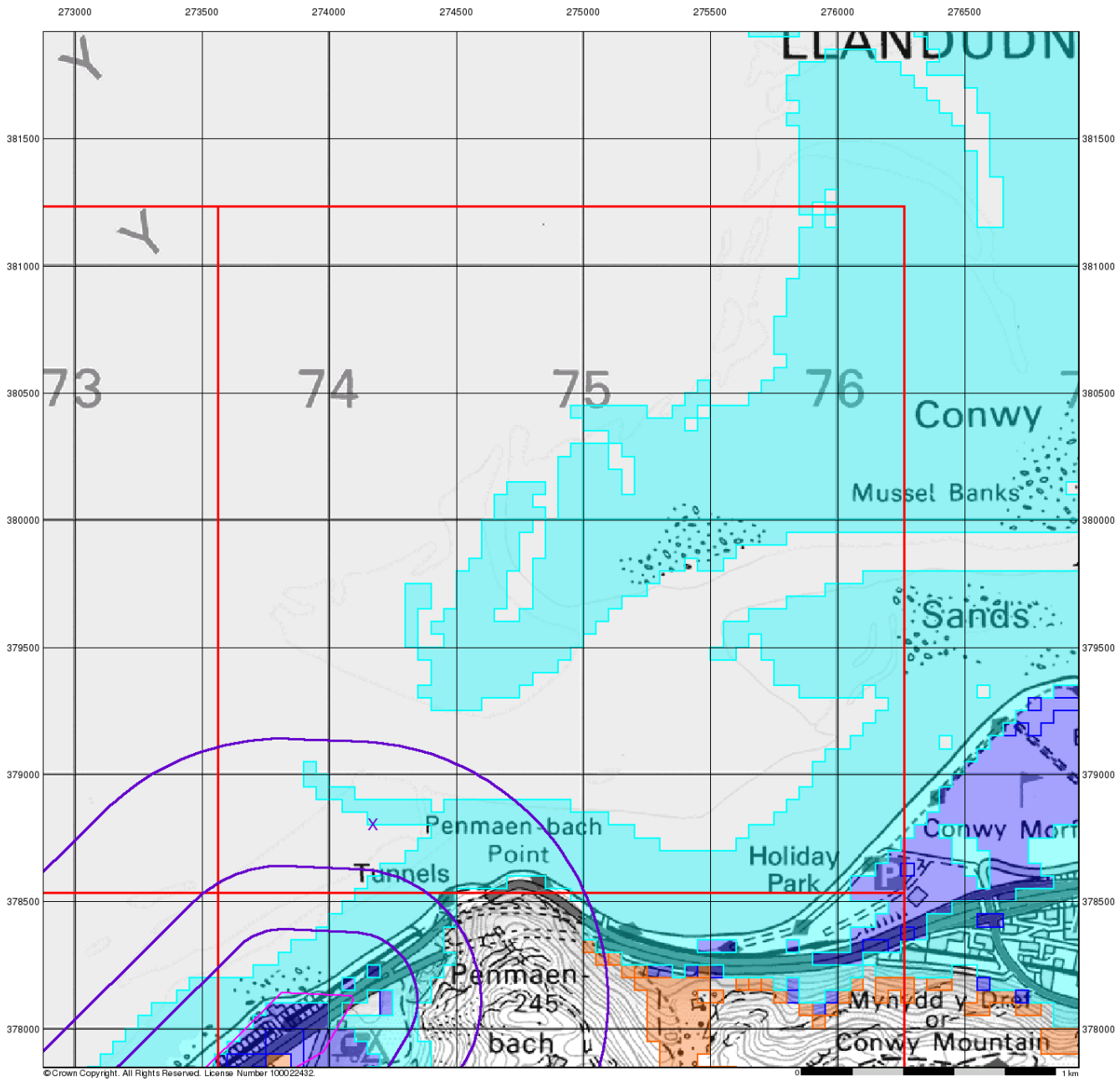


Order Details

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Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy



RAMBOLL

BGS Flood GFS Data

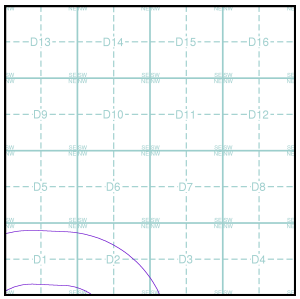
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice

Agency and Hydrological (Flood)

Limited Potential for Groundwater Flooding to Occur
Potential for Groundwater Flooding of Property Situated Below Ground Level
Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice D



Order Details

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Customer Ref:	1620004796 - J16
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Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Envirocheck® Report:

Flood Screening Report Datasheet

Order Details:

Order Number:
175417398_1_1

Customer Reference:
1620004796 - J16

National Grid Reference:
274170, 378800

Slice:
D

Site Area (Ha):
28.4

Search Buffer (m):
1000

Site Details:

Site at
Penmaenmawr
Conwy

Client Details:

Mr S Miller
Ramboll UK Ltd
2nd Floor
The Exchange
Chester
CH 1 1DA

Contents

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer(s) selected. For ease of reference, the report is broken down into seven sections of data.	
EA / NRW / CEH Flood Data	1
This section details data from the Environment Agency/Natural Resources Wales and the Centre for Ecology and Hydrology. The EA/NRW data is reported to a distance of 250m from the edge of the site polygon and details both Zone 2 (extreme) and Zone 3 flood extents, as well as flood defences, flood water storage areas and areas benefiting from flood defences. The CEH data is reported to a distance of 250m from the edge of the site polygon and covers flood data for Scotland, divided into levels based on the frequency and magnitude of a predicted 100 year term. All data sets within this section are plotted and feature on the EA / NRW / CEH Flood Data (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
JBA Flood Data	2
This section contains the Comprehensive Flood Map ("CFM") data from JBA Risk Management Limited. The data is based upon the likelihood of a flood occurrence for up to 4 flood return periods depending on the type of flooding; these being 75 years, 100 years, 200 years and 1000 years. Each layer being modelled at a 5m cell resolution. Each return period is depicted on a separate 1:10,000 scale map and reports features to a distance of 250m in the datasheet from the edge of the site polygon. For each return period the following three sources of flooding are identified, surface water or pluvial flooding, undefended river flooding or fluvial flooding and undefended coastal flooding. In each case the extent of the flooding source is displayed with the associated depth range. In addition, a 1:10,000 scale map depicting flooding from a Canal Failure and a coverage check for this dataset is included. Where coverage exists, information is reported in the datasheet where the site could be affected by flooding that results from a dam breach. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	
BGS Flood Data	3
This section contains two BGS data sets; namely Geological Indicators of Flooding and Groundwater Flooding Susceptibility, both of which report features out to a possible 1000m, with coverage in England, Wales and Scotland. Each data set is plotted on a seperate BGS Flood Data (1:50,000) map.	
GeoSmart Information Groundwater Flood Data	5
This section contains data provided by GeoSmart Information who, building on their expertise, have developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in Great Britain. The resulting map, classifies groundwater flood risk for each 5m x 5m into four categories, negligible, low, moderate and high. These classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 200 years.	
OS Water Network Data	-
This section details the MasterMap Water Network data sourced from the Ordnance Survey. The OS MasterMap Water Network data details a network representing the watercourse within Great Britain. The OS Water Network Lines data set details the approximate central alignment of a watercourse, including rivers, lakes and canals. The OS Water Network Nodes data set details features that represent a river's source, end, a junction where three of more links meet, and places where the real world related attribution changes; for example a watercourse becoming tidal. The data sets within this section are plotted and feature on the OS Water Network Map (1:10,000) . For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.	

Contents

EA/NRW Historic Flood Events Data	**-**

This section details Historic Flood data sourced from the Environment Agency/Natural Resources Wales and from data held by Landmark. The EA/NRW Historic Flood Events data is reported to a distance of 1000m from the edge of the site polygon and details recorded historic flood events from 1703 to October 2008. The data also contains information on the source and cause of the flood, and how the flood outline was established.

Also included in this section is Landmark's Historical Flood Liabilities data set, which identifies areas that are liable to flood based on systematic analysis of historical mapping dating back to the mid 19th century.

Both data sets within this section are plotted and feature on the EA/NRW Historical Flood (1:10,000) map. For added value, OS Contour data is also plotted, detailing contours, spot heights and land water boundaries.

EA/NRW RoFRS Data	**8**

This section details the Risk of Flooding from Rivers and Sea (RoFRS) data sourced from the Environment Agency/Natural Resources Wales and is reported to a distance of 1000m from the edge of the site polygon. The RoFRS data provides an indication of areas of land at risk of flooding from rivers and the sea. These areas of land, called impacted cells, are represented as 50 metre squares, or smaller areas where a square is intersected by a river or coastline.

The average height information of the impacted cell, modelled river and sea levels and information about over 200,000 flood defences are used as inputs to a computer flood model run by the Environment Agency/Natural Resources Wales. The model compares the probability that the flood defences will overtop or breach and the distance of the impact cell from the river or the sea for 40 scenarios for probabilities of between 100% to 0.1%.

The results are then consolidated to calculate a single probability category for each impacted cell. These results have been validated by local staff using their local knowledge and expertise. RoFRS is a national flood risk assessment and does not contain information about property thresholds. Due to variations in the input data and the performance of the computer flood model at particular locations, the resulting category of an impacted cell should only be used at a specific study scale. In certain areas it would only be appropriate to compare risks between towns and counties whereas in other areas they would be more suitable for understanding risk at a street level. The level of suitability for a particular cell is indicated by the cell's suitability scale.

The data within this section is plotted and feature on the EA/NRW RoFRS Data (1:50,000) map. This dataset is not available in Scotland.

Flood Insurance Risk Data	**11**

This section contains flood risk data from Crawford and Company. This dataset is not plotted on any of the associated Flood maps.

Crawford & Co have generated an Insurance Claims rating for Flood Risk. The risk is determined by comparing the number of flood insurance claims made to the number of properties in the postcode sector. The data will also include flood claims from domestic accidents or blocked drains, as well as flooding from river or tidal events. Flood insurance claim ratings are reported for the site only.

Data Currency	**12**
Data Suppliers	**15**
Useful Contacts	**16**

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
EA / NRW / CEH Flood Data					
Extreme Flooding from Rivers or Sea without Defences	pg 1	1		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 1	2		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
JBA Flood Data					
JBA 75 Year Return (undefended) - Pluvial				n/a	n/a
JBA 75 Year Return (undefended) - Fluvial				n/a	n/a
JBA 75 Year Return (undefended) - Coastal	pg 2	1		n/a	n/a
JBA 100 Year Return (undefended) - Fluvial				n/a	n/a
JBA 100 Year Return (undefended) - Coastal	pg 2	1		n/a	n/a
JBA 200 Year Return (undefended) - Pluvial				n/a	n/a
JBA 200 Year Return (undefended) - Fluvial				n/a	n/a
JBA 200 Year Return (undefended) - Coastal	pg 2	1		n/a	n/a
JBA 1000 Year Return (undefended) - Pluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Fluvial				n/a	n/a
JBA 1000 Year Return (undefended) - Coastal	pg 2	1		n/a	n/a
JBA Canal Failure					
JBA Dam Break					
BGS Flood Data					
BGS Geological Indicators of Flooding	pg 3	5	1	2	4
BGS Groundwater Flooding Susceptibility	pg 3	6	3		3
GeoSmart Information Groundwater Flood					
GeoSmart Information Groundwater Flood Risk	pg 5	4	2	15	15
OS Water Network Data					
OS Water Network Lines					
OS Water Network Nodes					
EA/NRW Historic Flood Events Data					
Historic Flood Events					
Historical Flood Liabilities					
EA/NRW RoFRS Data					
RoFRS - Risk of Flooding from Rivers and Sea	pg 8	7	5	10	17
Flood Insurance Risk Data					
Postcode Sector Flood Insurance Claim Ratings	pg 11	1	n/a	n/a	n/a

Report Version v53.0

EA / NRW / CEH Flood Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	1	274272 378824
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	1	274272 378824
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	D2SW (E)	0	1	274272 378824
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	JBA 75 Year Return (undefended) - Pluvial None				
	JBA 75 Year Return (undefended) - Fluvial None				
	JBA 75 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	D1SE (SW)	0	2	274173 378804
	JBA 100 Year Return (undefended) - Fluvial None				
	JBA 100 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	D1SE (SW)	0	2	274173 378804
	JBA 200 Year Return (undefended) - Pluvial None				
	JBA 200 Year Return (undefended) - Fluvial None				
	JBA 200 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	D1SE (SW)	0	2	274173 378804
	JBA 1000 Year Return (undefended) - Pluvial None				
	JBA 1000 Year Return (undefended) - Fluvial None				
	JBA 1000 Year Return (undefended) - Coastal Flood Depth: Greater than 1.0m	D1SE (SW)	0	2	274173 378804
	JBA Canal Failure Coverage Coverage: This area has not been mapped for risk of flooding from canal or aqueduct failure or breach.	D1SE (SW)	0	2	274173 378804
	JBA Canal Failure None				
	JBA Dam Break Coverage Coverage: This area has been mapped for flooding from dam or reservoir embankment failure or breach.	D2SW (SE)	0	2	274335 378615
	JBA Dam Break Coverage Coverage: This area has not been mapped for flooding from dam or reservoir embankment failure or breach.	D1SE (SW)	188	2	274173 378804
	JBA Dam Break None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	D1SE (N)	0	3	274176 378818
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SW)	0	3	273720 378048
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SW)	0	3	273730 378053
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(S)	0	3	274340 378390
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	(S)	0	3	274172 378139
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SW)	1	3	273700 378038
	BGS Geological Indicators of Flooding Flooding Type: Inland Flooding Flood Potential Code: Higher flood potential from rivers: the first areas to experience the effects of inland flooding in a river catchment.	(SE)	262	3	274400 378300
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	495	3	274467 378450
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(SE)	515	3	274485 378460
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(E)	975	3	274993 378502
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Lower flood potential from the sea: areas affected in extreme cases due to combined factors e.g. very high tides/high wind speeds/large storm surge.	(E)	978	3	275000 378509
	BGS Geological Indicators of Flooding Flooding Type: Coastal Flooding Flood Potential Code: Higher flood potential from the sea: the first areas to experience the effects of coastal flooding.	D3SW (E)	987	3	275000 378804
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	3	273750 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	D1SE (SW)	0	3	274173 378804
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	3	274000 378100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	0	3	273900 378000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(SW)	0	3	273600 377900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(S)	0	3	273850 377900

BGS Flood Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	19	3	274100 378200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	93	3	274173 378250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	(S)	104	3	274200 378150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SE)	924	3	275000 378350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	D3SW (E)	935	3	275000 378804
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	(SE)	964	3	275050 378300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	0	2	274385 378375
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D2SW (SE)	0	2	274270 378665
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	0	2	274030 378130
	GeoSmart Information Groundwater Flood Data Risk: Negligible Risk Risk Details: There is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence has a chance of less than 1 in 100 (<1%) probability of occurrence.	(SE)	0	2	274520 378525
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	118	2	274173 378220
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	125	2	274175 378225
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	260	2	274380 378255
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	295	2	274320 378330
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	298	2	274355 378270
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	305	2	274395 378300
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(S)	314	2	274400 378230
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	388	2	274390 378380
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	395	2	274395 378385
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	402	2	274400 378390
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	409	2	274405 378395
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	416	2	274410 378400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	441	2	274430 378415
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	448	2	274435 378420
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	466	2	274450 378430
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	473	2	274455 378435
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	480	2	274460 378440
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	509	2	274480 378460
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	519	2	274485 378470
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	(SE)	526	2	274490 378475
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (NE)	690	2	274180 378815
	GeoSmart Information Groundwater Flood Data Risk: Moderate Risk Risk Details: There is a moderate risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (N)	706	2	274173 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (NW)	707	2	274120 378835
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D2SE (SE)	709	2	274660 378555
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D2SE (SE)	716	2	274665 378560
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (NW)	725	2	274090 378855
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D2SE (SE)	728	2	274680 378560
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (NW)	734	2	274070 378865

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1SE (N)	739	2	274165 378865
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D2SE (SE)	743	2	274695 378565
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1NE (NW)	747	2	274135 378875
	GeoSmart Information Groundwater Flood Data Risk: Low Risk Risk Details: There is a low risk of groundwater flooding in this area with a chance of greater than 1 in 100 (>1%) probability of occurrence.	D1NE (NW)	755	2	274090 378885

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SW)	0	1	273870 378082
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	0	1	273920 378093
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	0	1	273940 378100
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	0	1	274038 378150
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SW (E)	0	1	274272 378824
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SW)	0	1	273670 377995
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SW)	0	1	273665 377990
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SW)	5	1	273560 377900
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	67	1	274110 378200
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	113	1	274175 378244
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	145	1	274184 378250
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	233	1	274260 378299
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	287	1	274305 378328
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	296	1	274315 378335

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	305	1	274320 378338
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	315	1	274330 378344
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(S)	325	1	274335 378347
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	354	1	274360 378361
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	405	1	274409 378400
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	469	1	274450 378431
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	477	1	274456 378435
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	487	1	274464 378440
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	509	1	274485 378464
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	553	1	274513 378485
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	561	1	274519 378490
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	604	1	274562 378505
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: High - Greater than or equal to 1 in 30 (3.3%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (E)	677	1	274591 378861
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (SE)	733	1	274678 378565

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (SE)	739	1	274690 378560
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (SE)	750	1	274700 378565
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (E)	804	1	274755 378584
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (E)	832	1	274795 378572
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (E)	868	1	274850 378550
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	D2SE (E)	882	1	274870 378542
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(E)	917	1	274930 378500
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	949	1	274985 378450
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	958	1	275000 378450
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	991	1	275045 378400
	Risk of Flooding from Rivers and Sea (RoFRS) Flood Risk Assessment: Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year Suitability Scale: County to Town Source: Natural Resources Wales	(SE)	997	1	275050 378403

Flood Insurance Risk Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Postcode Sector Flood Insurance Claim Ratings Insurance Rating: Low Flood Insurance Claim Rating Postcode Sector: LL34 6	D2SW (SE)	0	2	274387 378543

EA / NRW / CEH Flood Data	Version	Update Cycle
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	July 2017	Quarterly
EA / NRW Surface Water Flood Data	**Version**	**Update Cycle**
Surface Water 1 in 30 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Depth Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Velocity Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Flow Direction 25m Natural Resources Wales	October 2013	As notified
Surface Water 1 in 30 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 100 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water 1 in 1000 year Flood Hazard Natural Resources Wales	October 2013	As notified
Surface Water Suitability Natural Resources Wales	October 2013	As notified

JBA Flood Data	Version	Update Cycle
JBA 75 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 75 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 100 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 200 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Pluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Fluvial JBA Risk Management Limited	December 2017	Annually
JBA 1000 Year Return (undefended) - Coastal JBA Risk Management Limited	December 2017	Annually
JBA Canal Failure JBA Risk Management Limited	October 2017	Annually
JBA Dam Break JBA Risk Management Limited	October 2017	Annually
BGS Flood Data	**Version**	**Update Cycle**
BGS Geological Indicators of Flooding British Geological Survey - National Geoscience Information Service	February 2011	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
GeoSmart Information Groundwater Flooding Data	**Version**	**Update Cycle**
GeoSmart Information Groundwater Flood Risk GeoSmart Information Ltd	November 2017	Bi-Annually
OS Water Network Data	**Version**	**Update Cycle**
OS Water Network Lines Ordnance Survey	May 2018	Quarterly
OS Water Network Nodes Ordnance Survey	May 2018	Quarterly
EA/NRW Historic Flood Events Data	**Version**	**Update Cycle**
Historic Flood Events Environment Agency - Head Office	May 2018	Quarterly
Historical Flood Liabilities Landmark Information Group Limited	December 1999	Not Applicable

EA/NRW Risk of Flooding from Rivers and Sea (RoFRS)	Version	Update Cycle
RoFRS - Risk of Flooding from Rivers and Sea Natural Resources Wales	May 2015	Not Applicable
Flood Insurance Risk Data	**Version**	**Update Cycle**
Postcode Sector Flood Insurance Claim Ratings Crawford and Company	July 2018	Quarterly

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Natural Resources Wales	
Centre for Ecology and Hydrology	
British Geological Survey	
GeoSmart Information	
JBA Risk Management	

Useful Contacts

Contact	Name and Address	Contact Details
1	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
2	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9966 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk
3	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk

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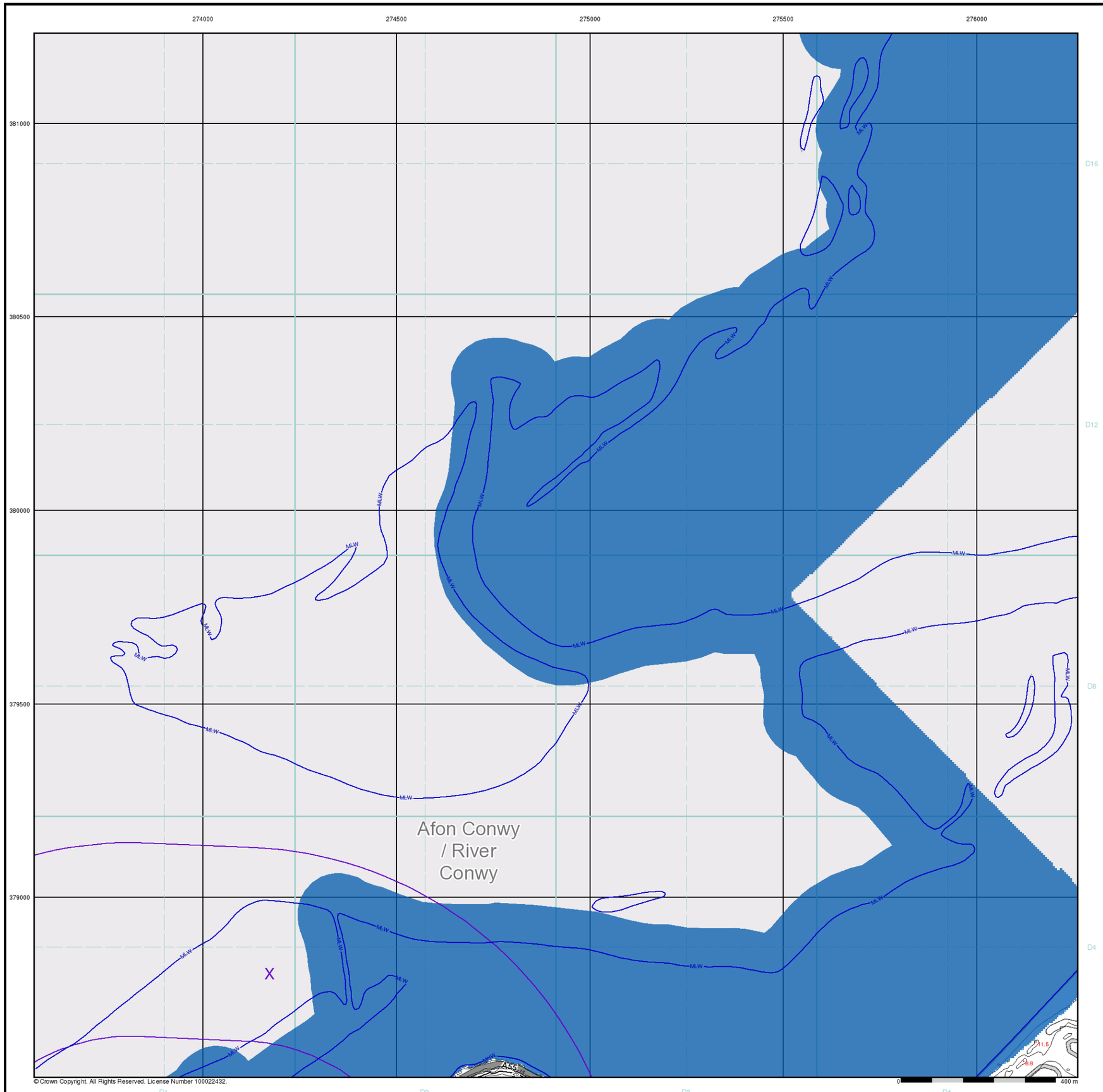
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RAMBOLL

EA/NRW Flood Data Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Flood Data

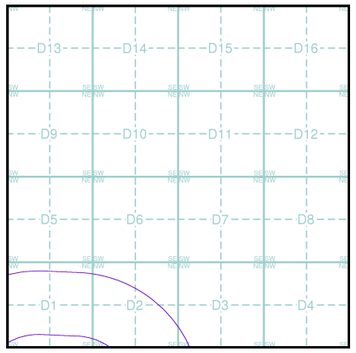
- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height * 167.8

MLW Mean Low Water
MHW Mean High Water

EA/NRW Flood Data Map - Slice D



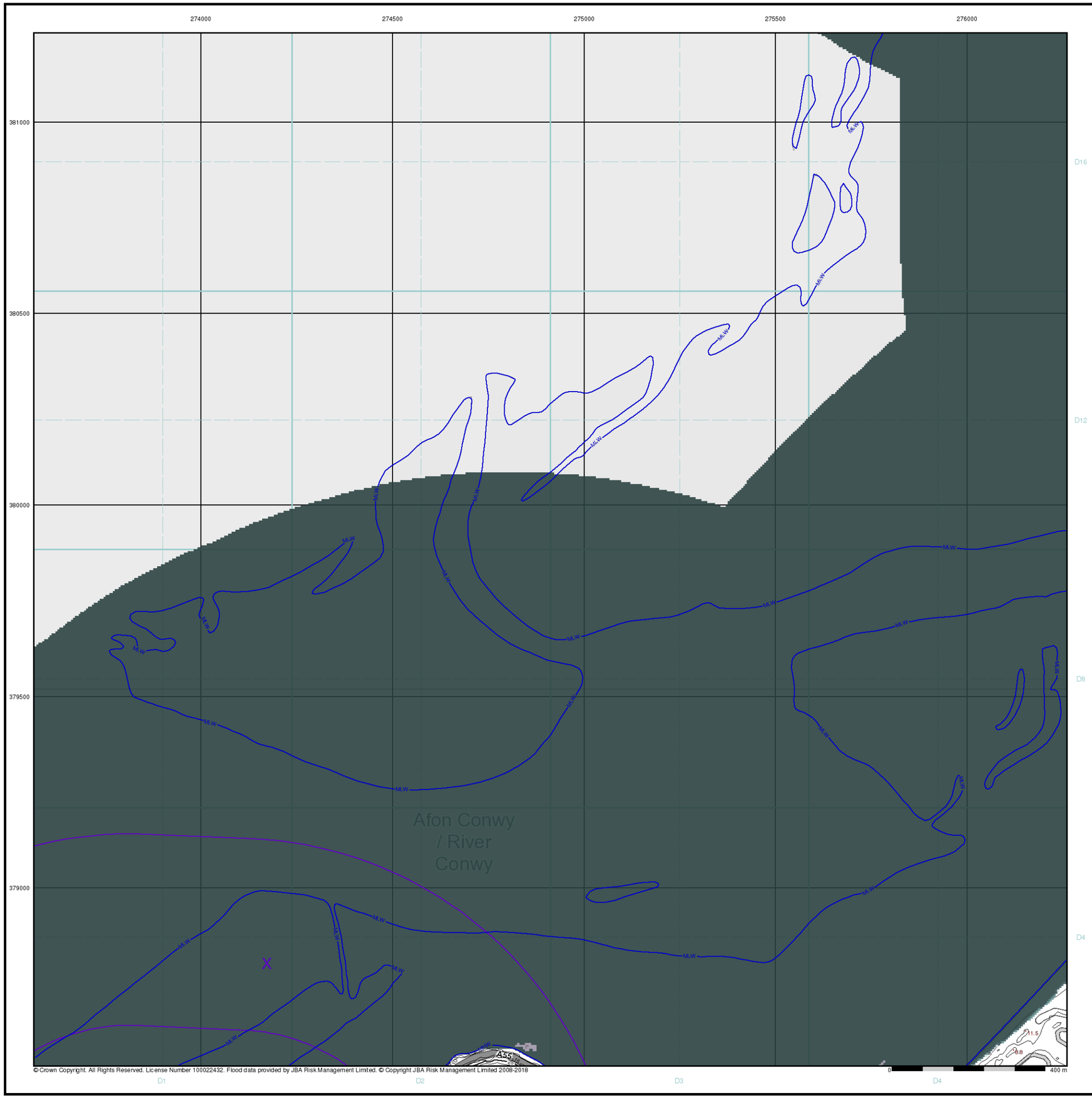
Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

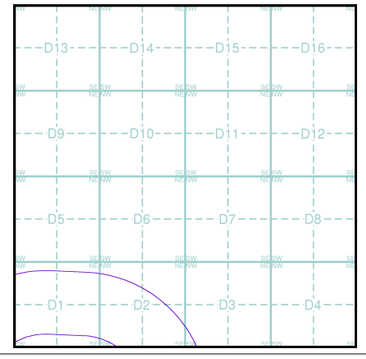
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 75 Year Return Flood Map (Undefended) - Slice D



Order Details

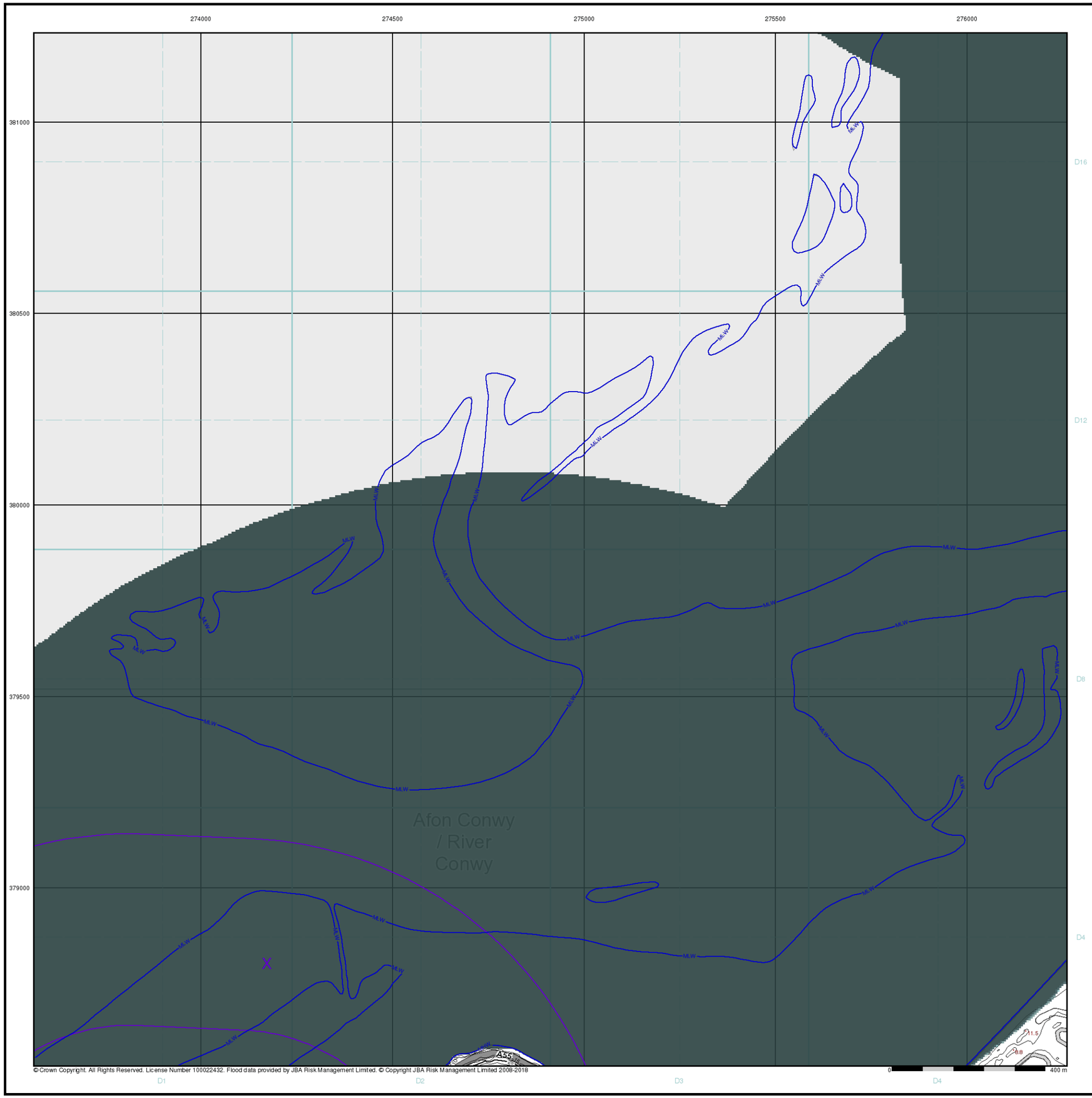
Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

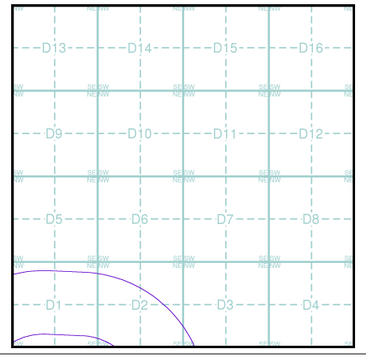
Fluvial Depth	Coastal Depth
0.01m - 0.05m	0.01m - 0.05m
0.05m - 0.1m	0.05m - 0.1m
0.1m - 0.3m	0.1m - 0.3m
0.3m - 1m	0.3m - 1m
>1m	>1m

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height 167.8

MLW Mean Low Water
MHW Mean High Water

JBA 100 Year Return Flood Map (Undefended) - Slice D



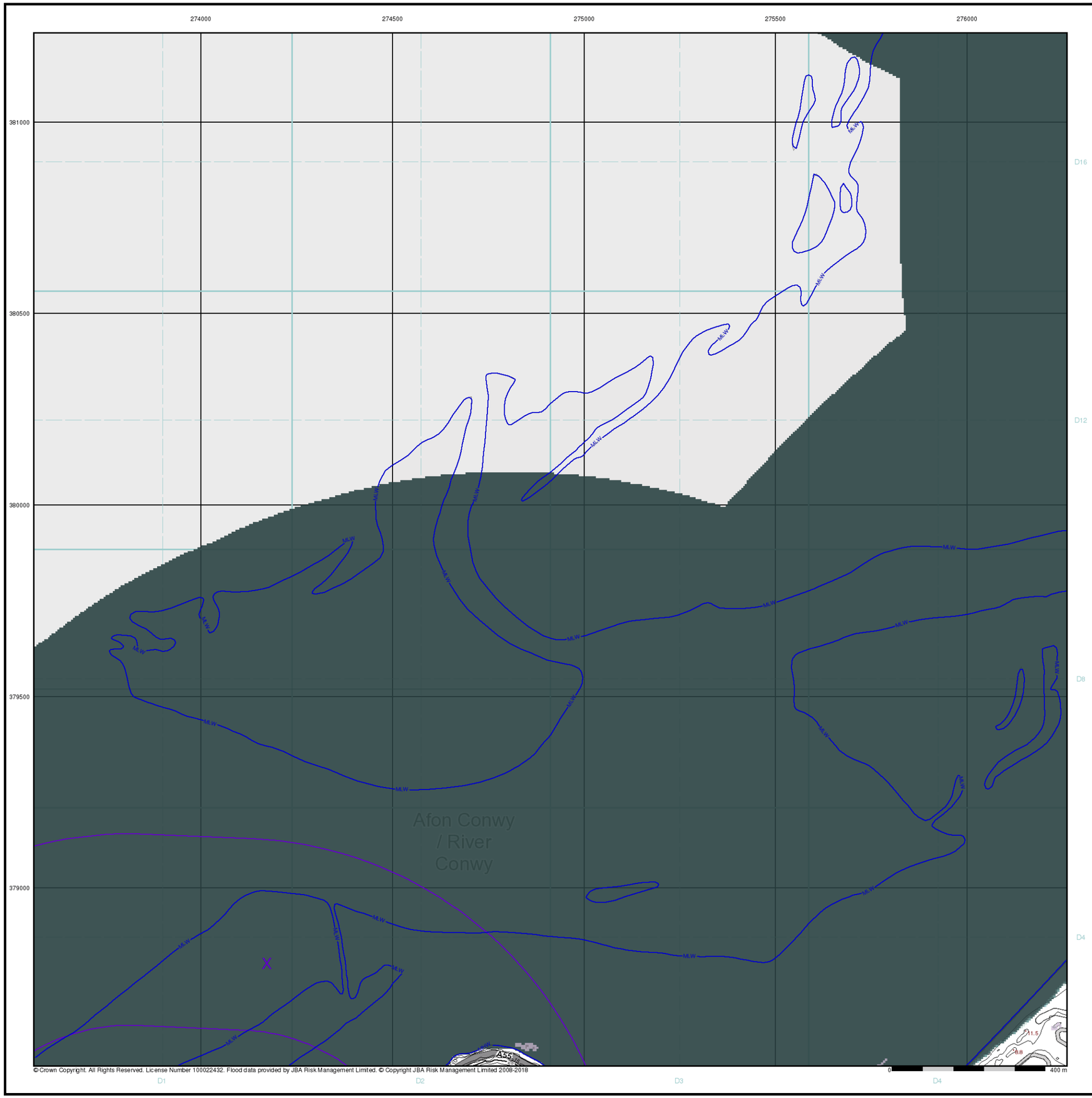
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

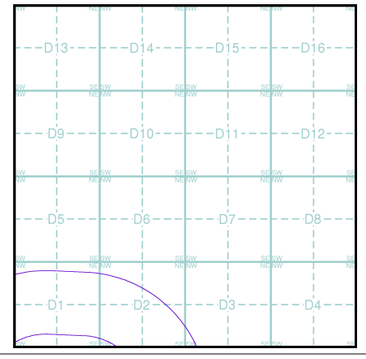
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 200 Year Return Flood Map (Undefended) - Slice D



Order Details

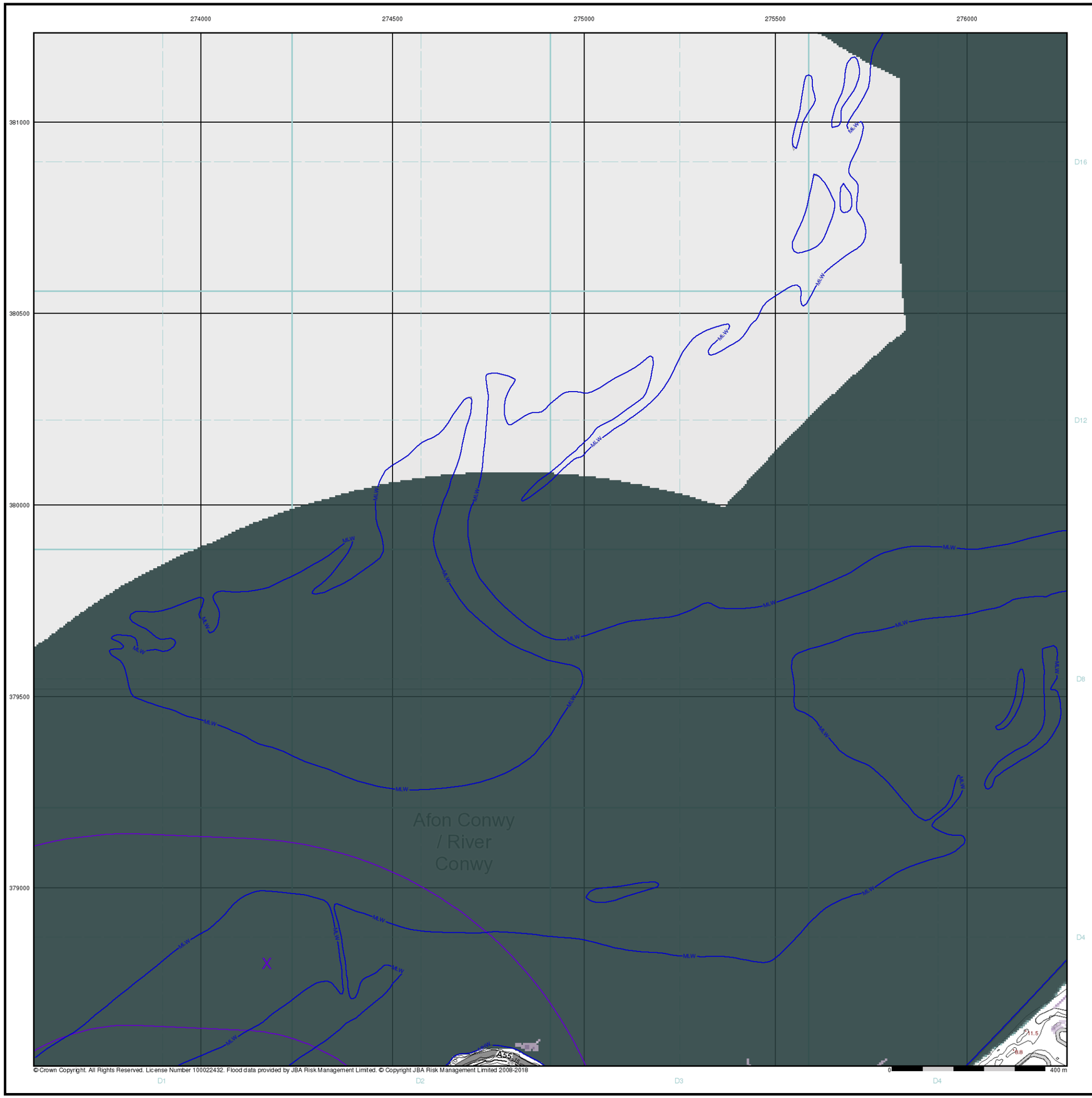
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Site Area (Ha):	28.4
Search Buffer (m):	1000

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JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

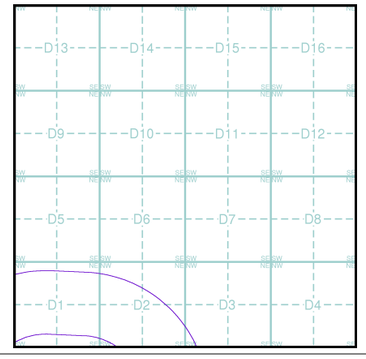
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height 157.8

JBA 1000 Year Return Flood Map (Undefended) - Slice D



Order Details

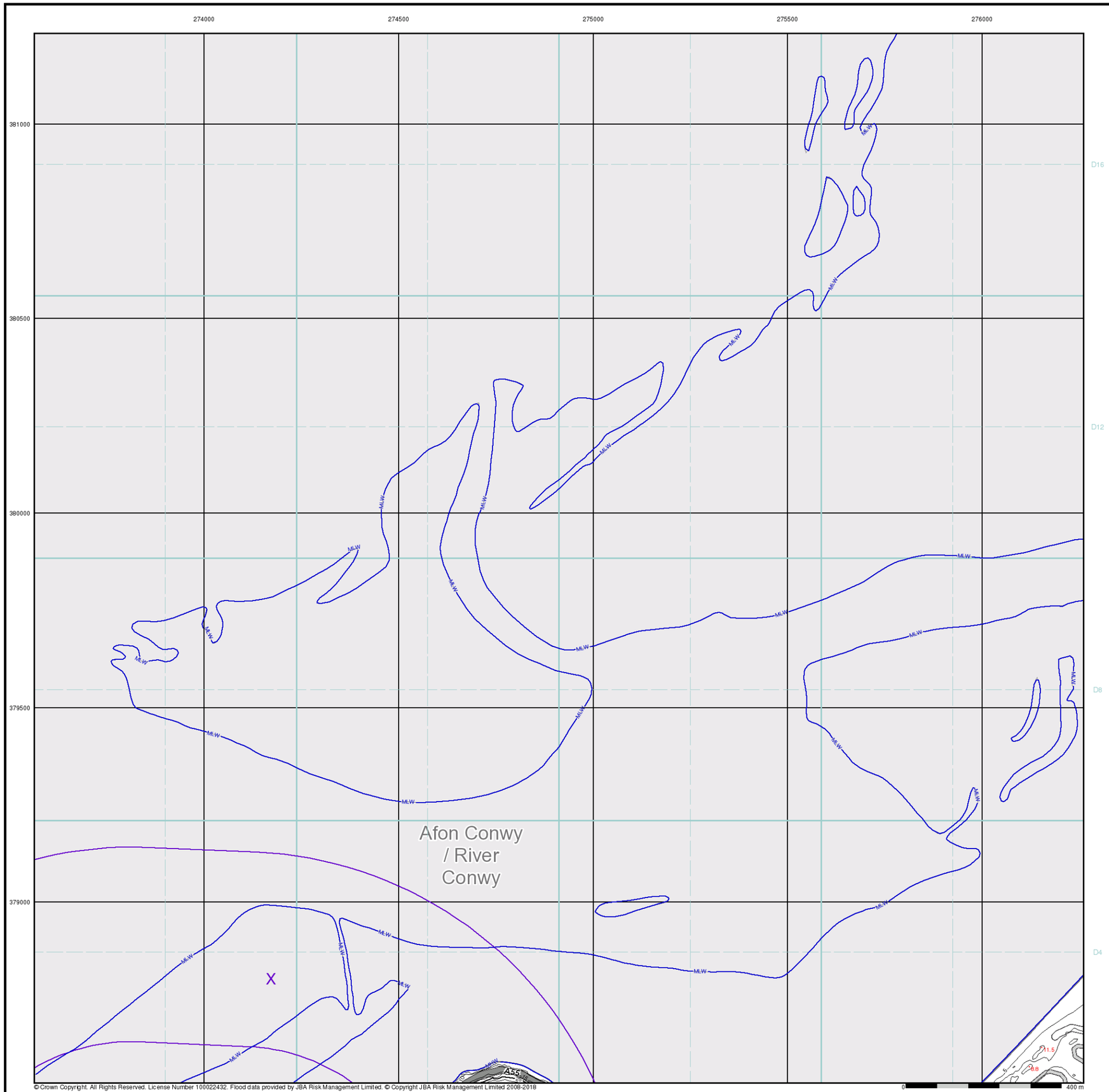
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Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

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Web: www.envirocheck.co.uk



RAMBOLL

JBA Canal Failure Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

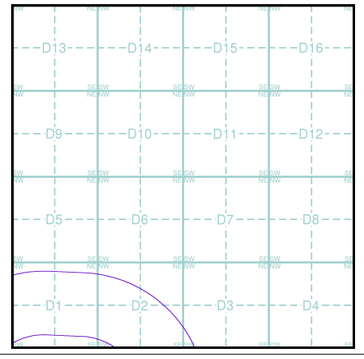
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour 105 100 95
- Master Contour
- Spot Height * 167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA Canal Failure Flood Map - Slice D



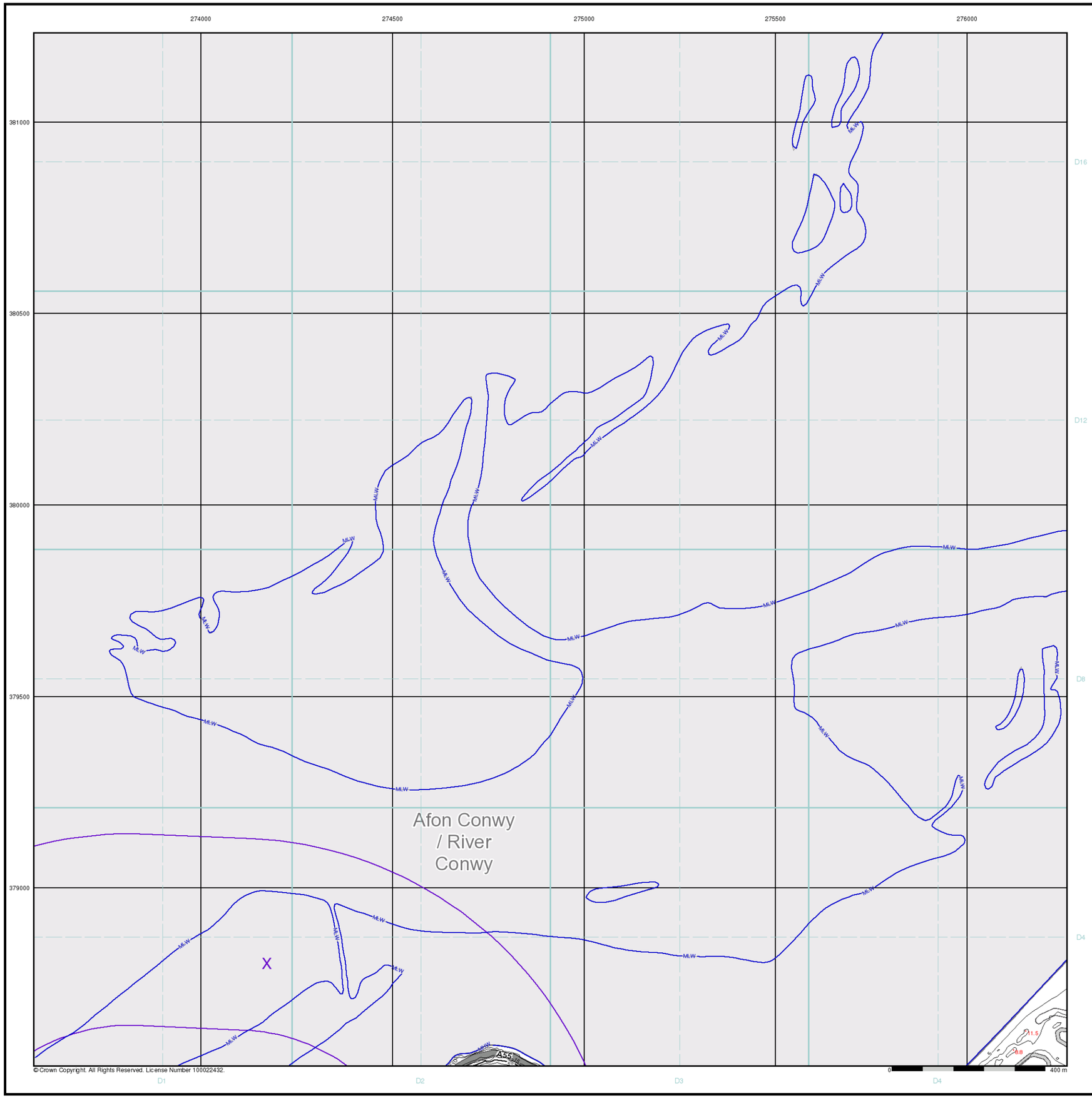
Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour 105
Master Contour 100 95
Spot Height * 167.8

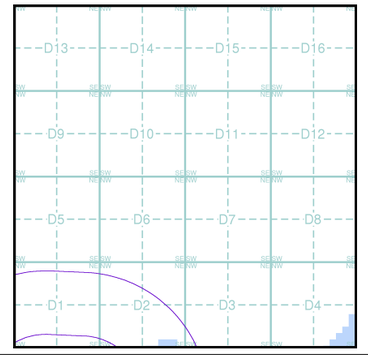
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice D



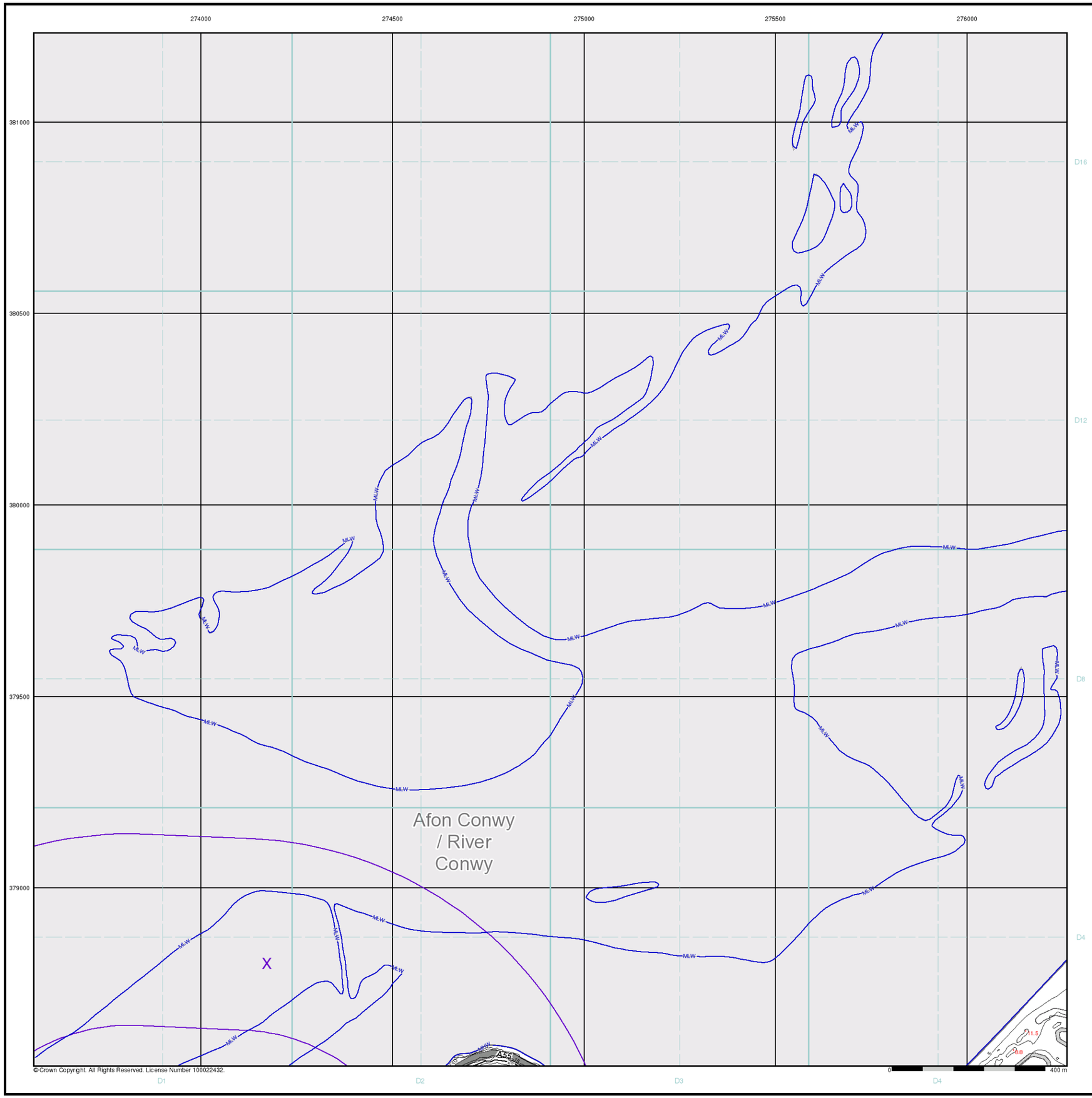
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RAMBOLL

EA/NRW Surface Water 100 Year Return Depth Map

General

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X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
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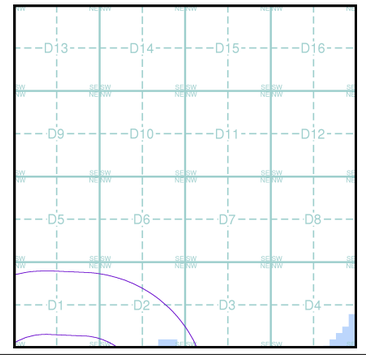
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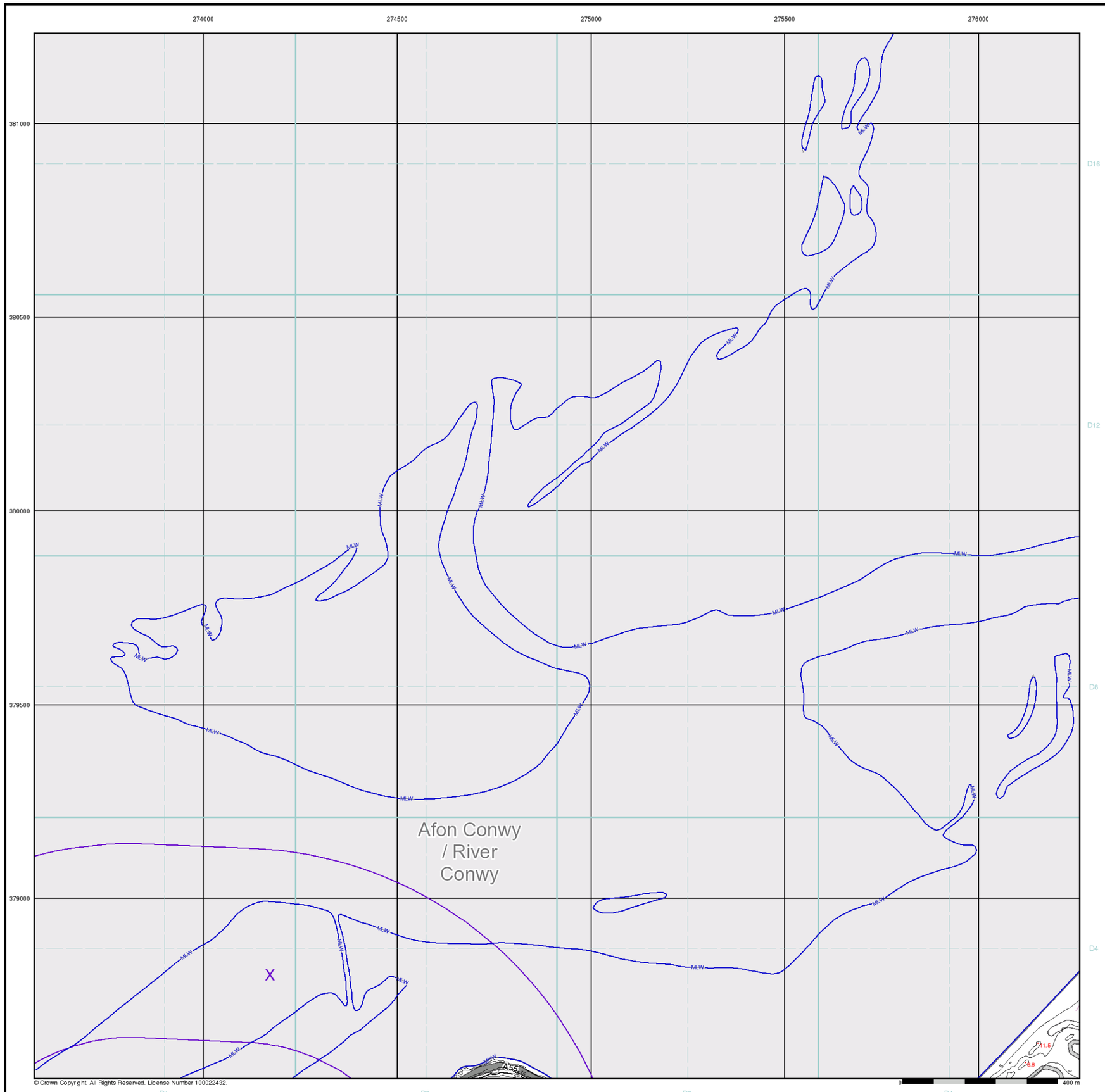
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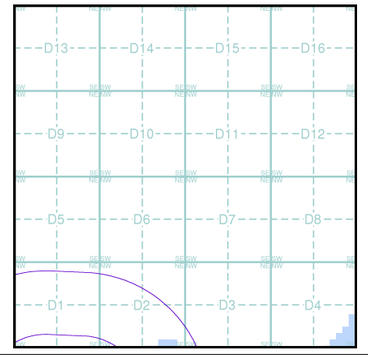
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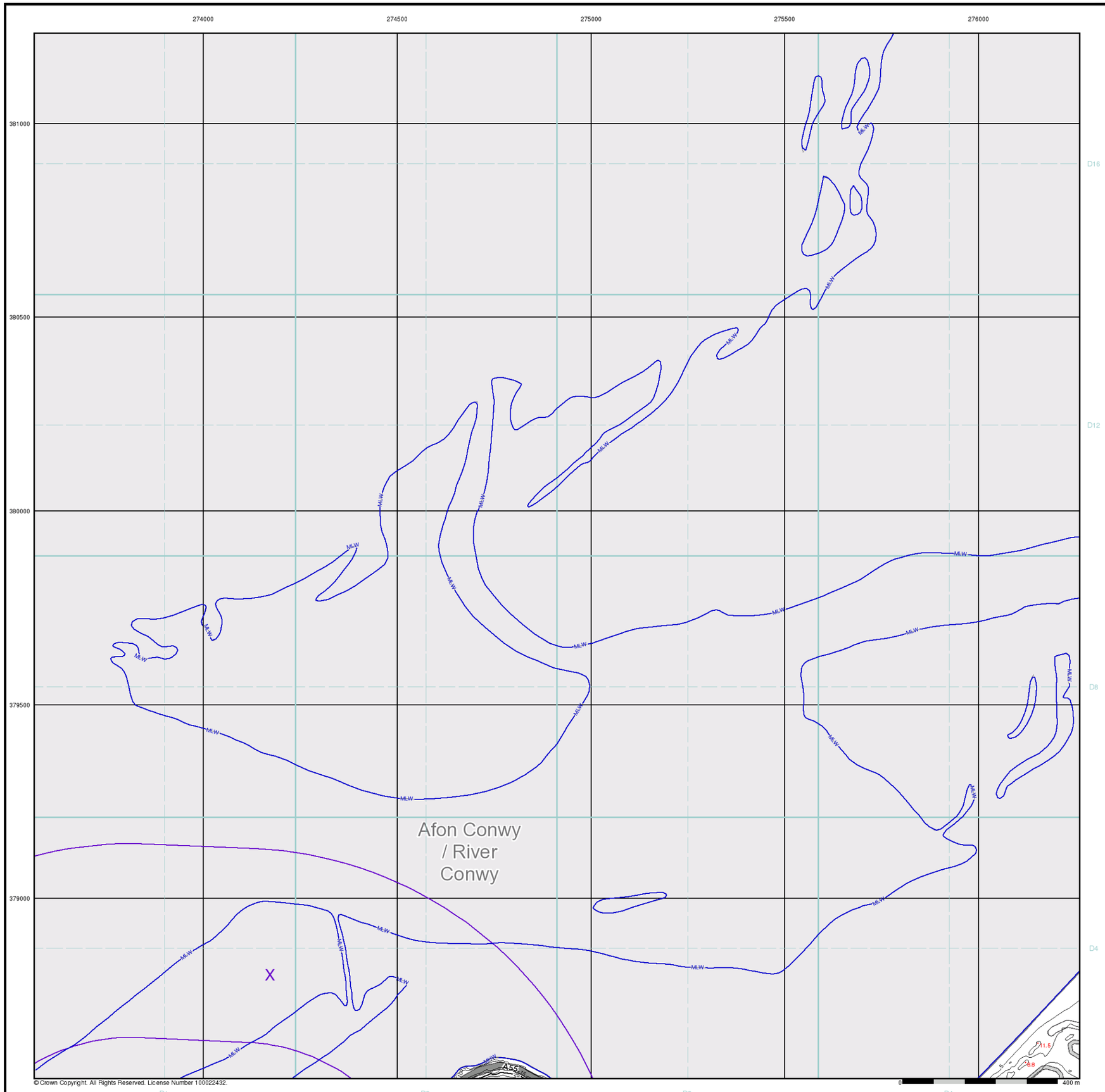
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RAMBOLL

EA/NRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point

Surface Water Velocity and Direction

0.00 - 0.25m/s
0.25 - 0.50m/s
0.50 - 1.00m/s
1.00 - 2.00m/s
> 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour
Master Contour
Spot Height *167.8

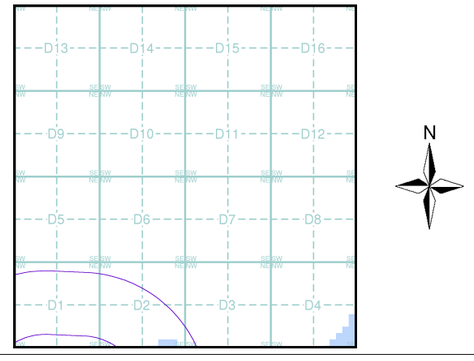
MLW Mean Low Water
MHW Mean High Water

Suitability

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National to county
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EA/NRW Suitability Map - Slice D



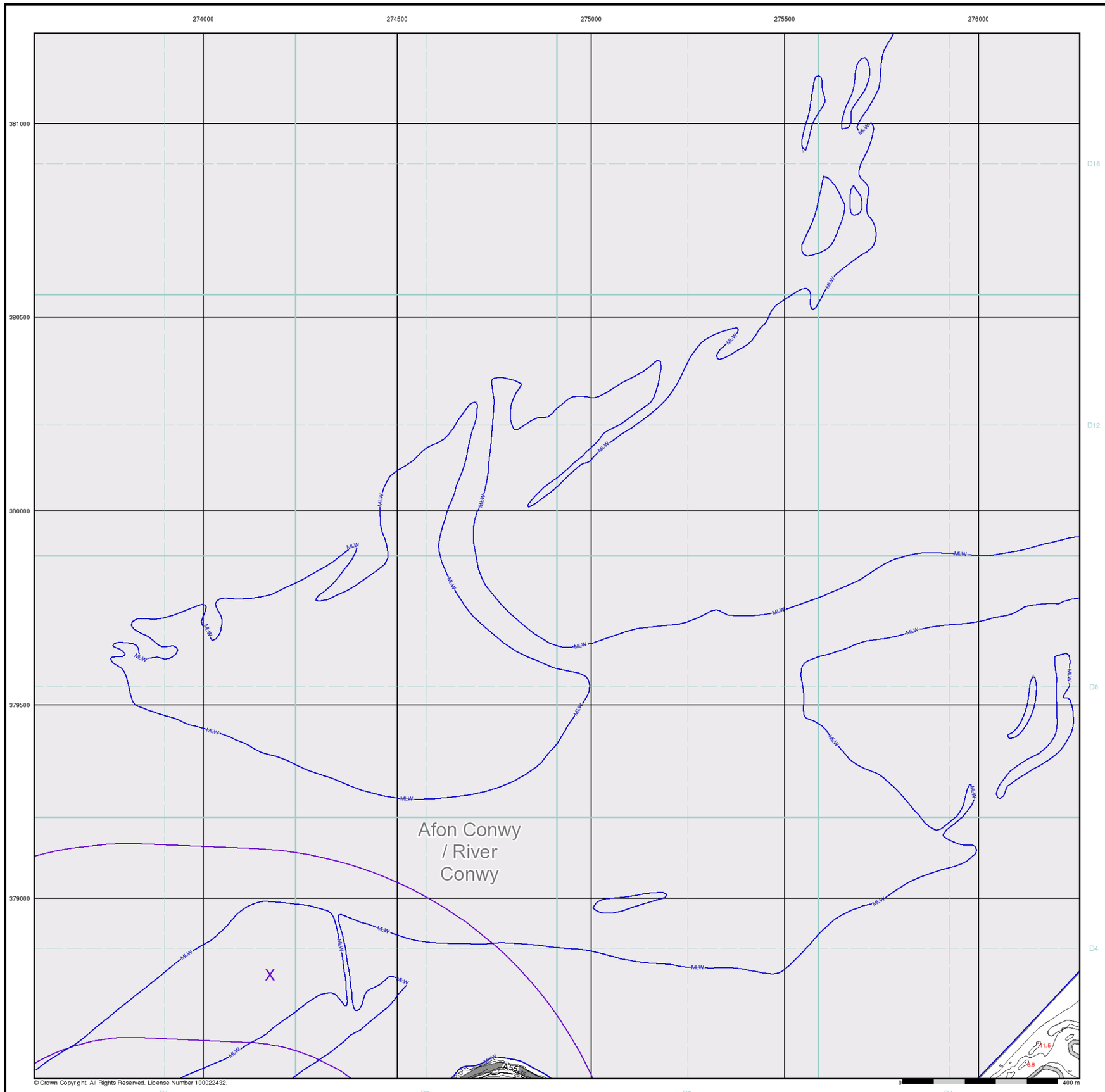
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EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

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0.00 - 0.25m/s
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Flow Direction at maximum velocity

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Master Contour 100 95
Spot Height *167.8

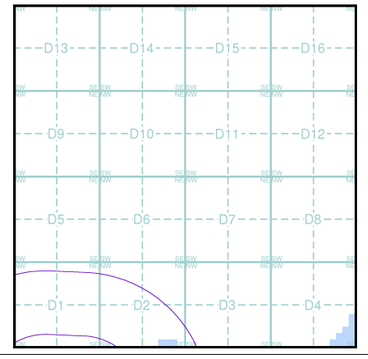
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EA/NRW Suitability Map - Slice D



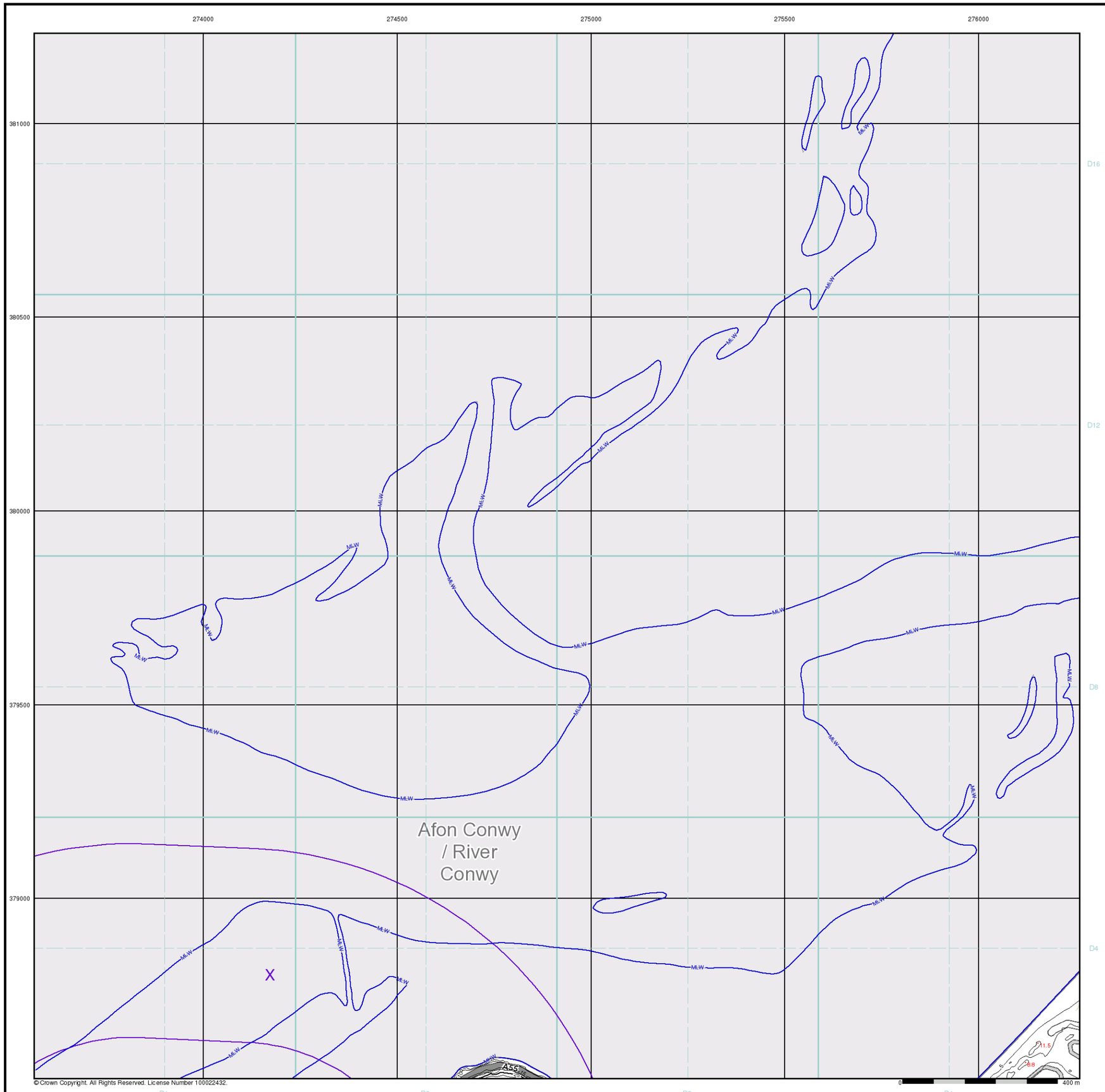
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Flow Direction at maximum velocity

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Spot Height *167.8

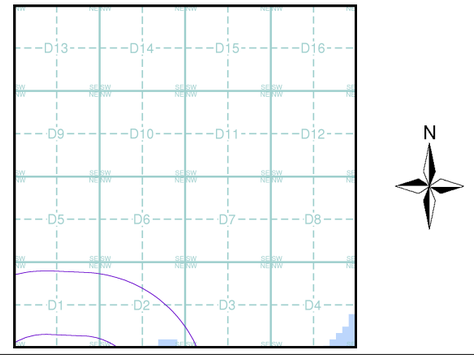
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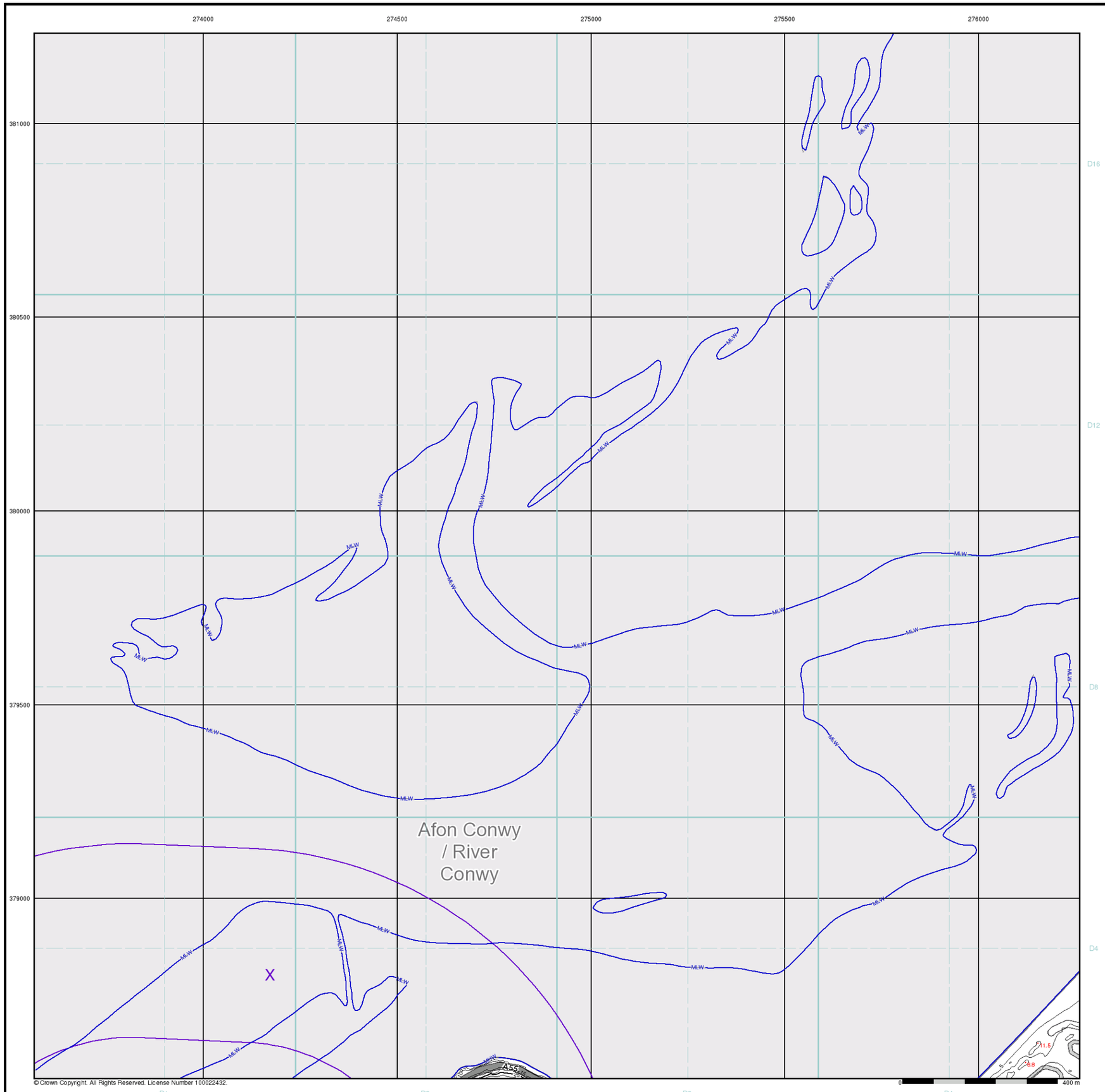
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RAMBOLL

EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

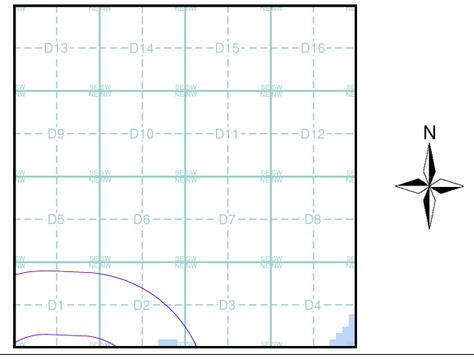
Spot Height * 167.8

Suitability

See the suitability map below

- National to county
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EA/NRW Suitability Map - Slice D



Order Details

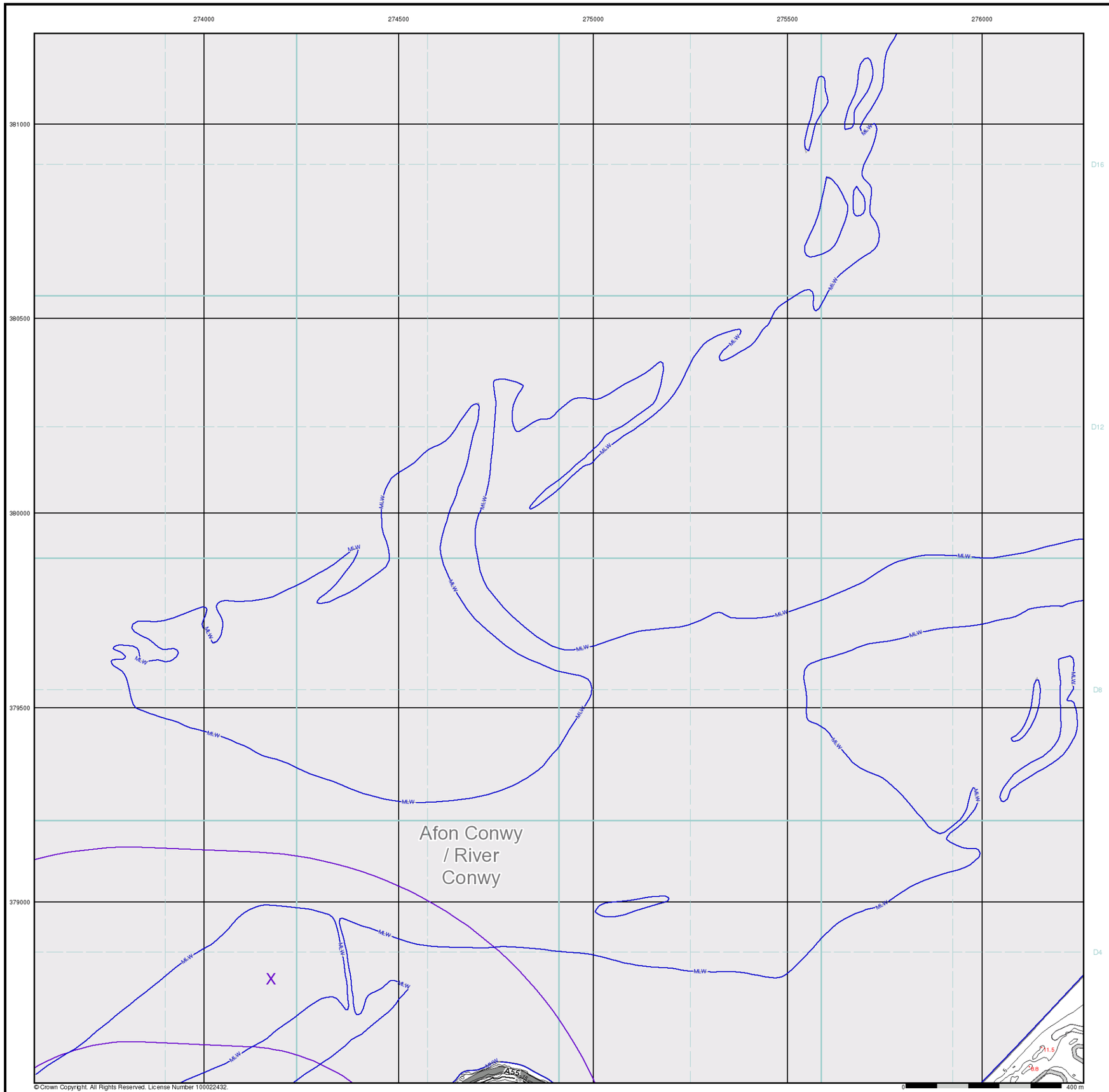
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RAMBOLL

EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

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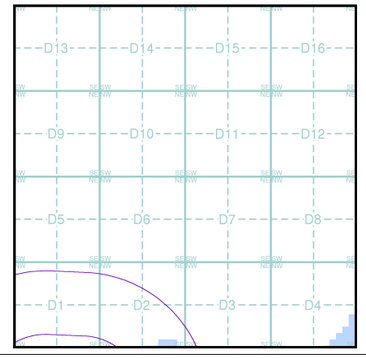
Spot Height *167.8

Suitability

See the suitability map below

- National to county
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- Town to street
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EA/NRW Suitability Map - Slice D



Order Details

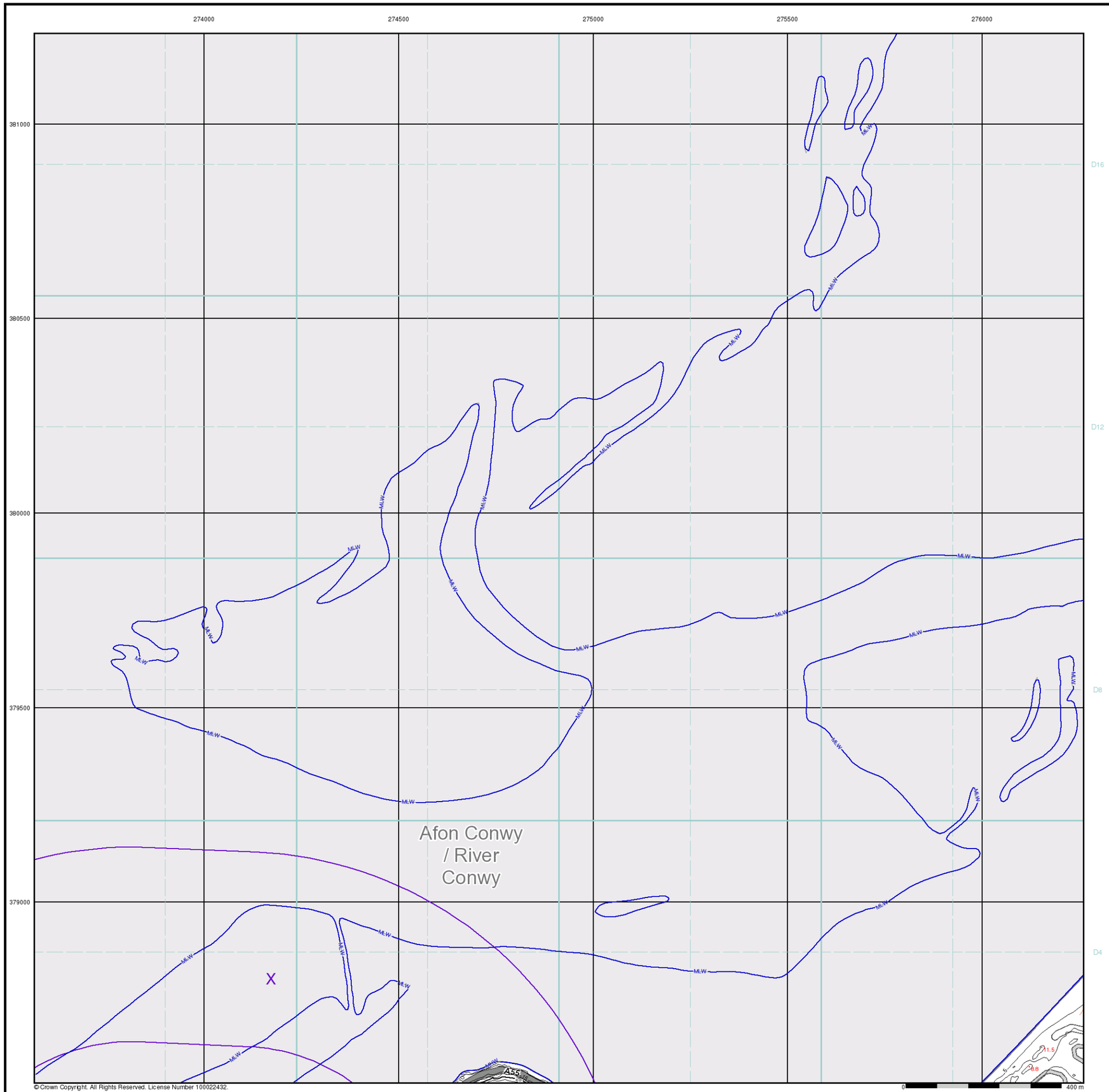
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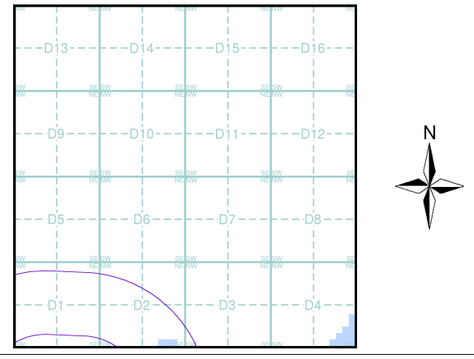
Spot Height * 167.8

Suitability

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EA/NRW Suitability Map - Slice D



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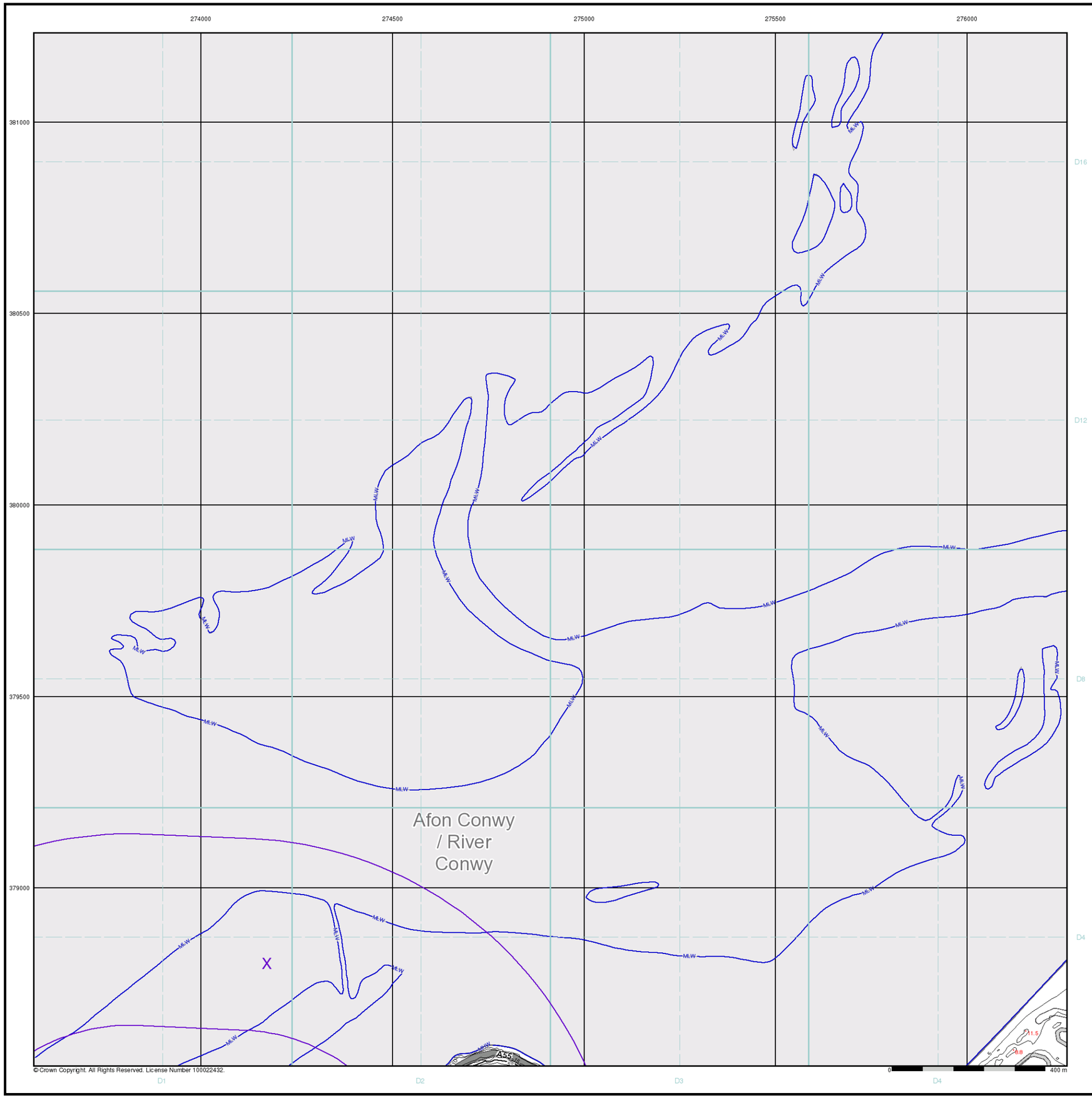
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RAMBOLL

OS Water Network Lines Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea
- Junction
- Outlet
- Pseudo
- Source
- Other

Contours (height in meters)

Standard Contour 105 100 95

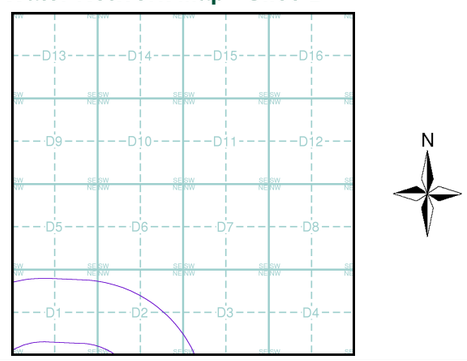
Master Contour

Spot Height *167.3

MLW Mean Low Water

MHW Mean High Water

OS Water Network Map - Slice D



Order Details

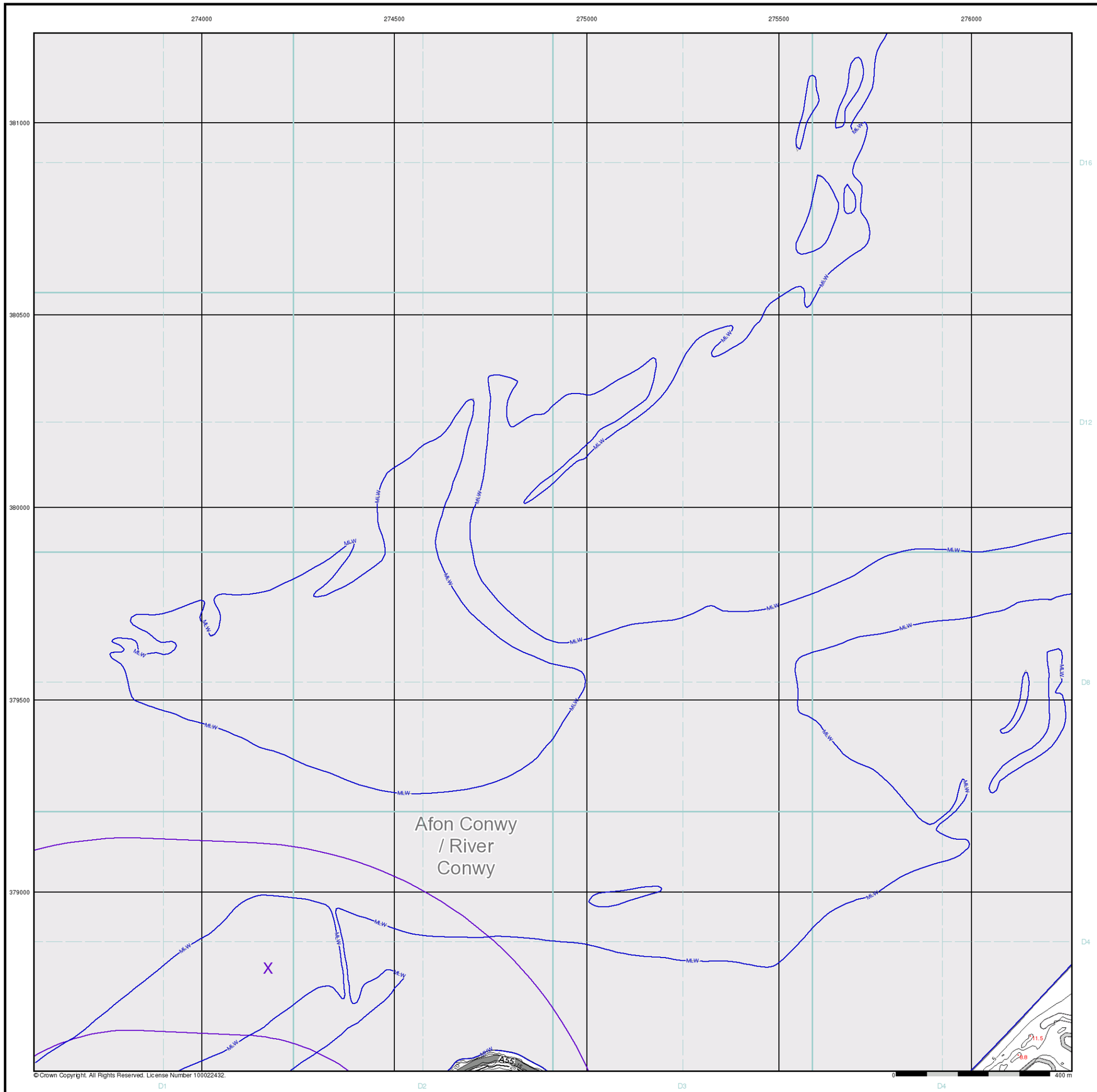
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RAMBOLL

EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

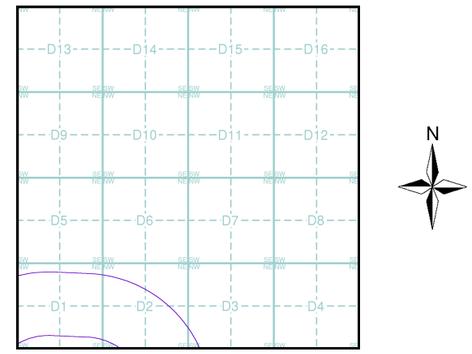
Historic Flood Events Data

- Channel Capacity Exceeded (no raised defences)
- Channel Capacity Exceeded /Surface Water
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Historical Flood Liabilities
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Surface Water
- Unknown

Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height * 167.8
- 95
- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Historic Flood Map - Slice D



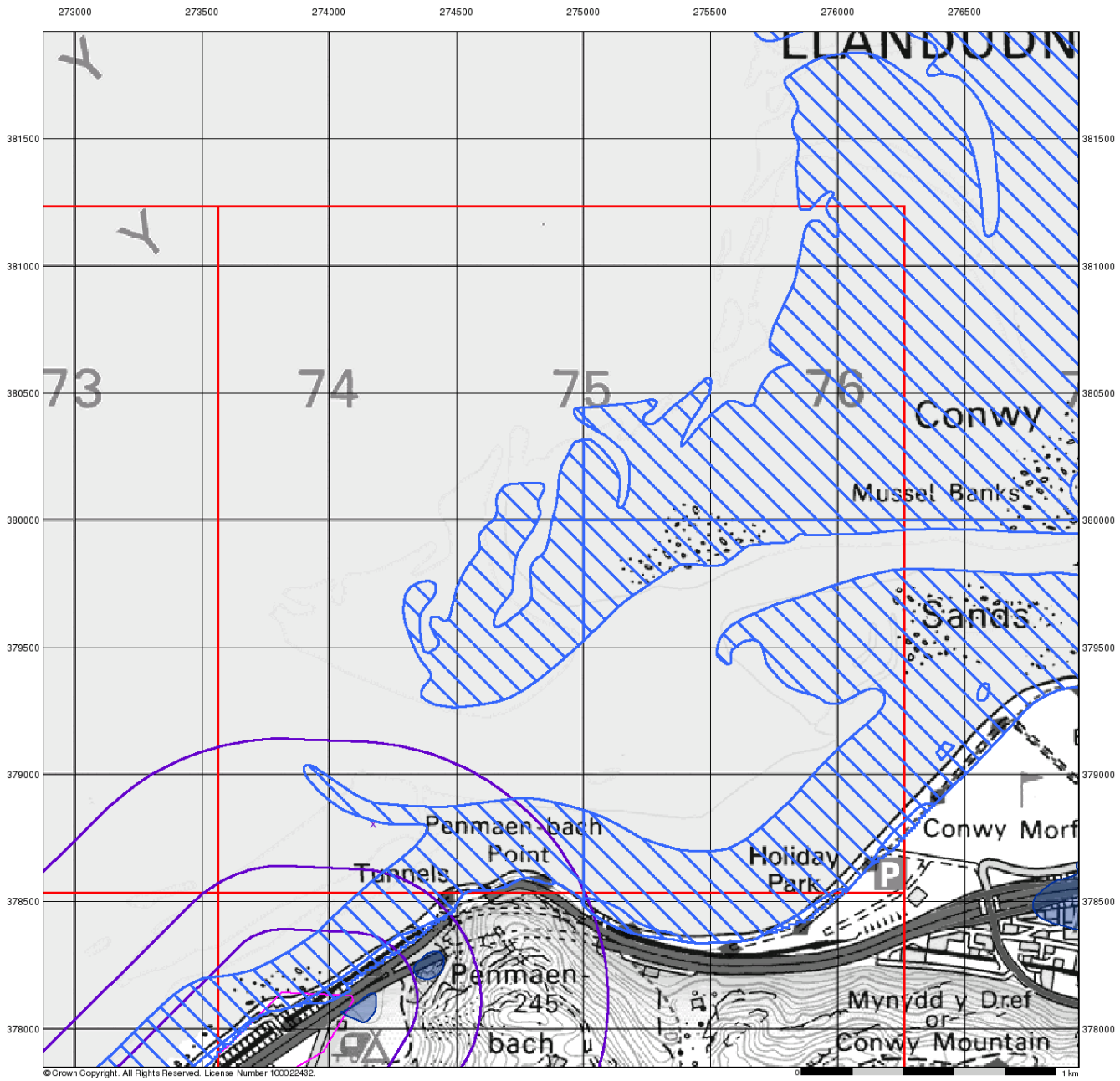
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RAMBOLL

BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

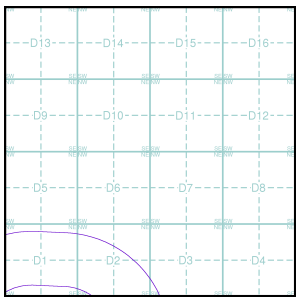
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice D



Order Details

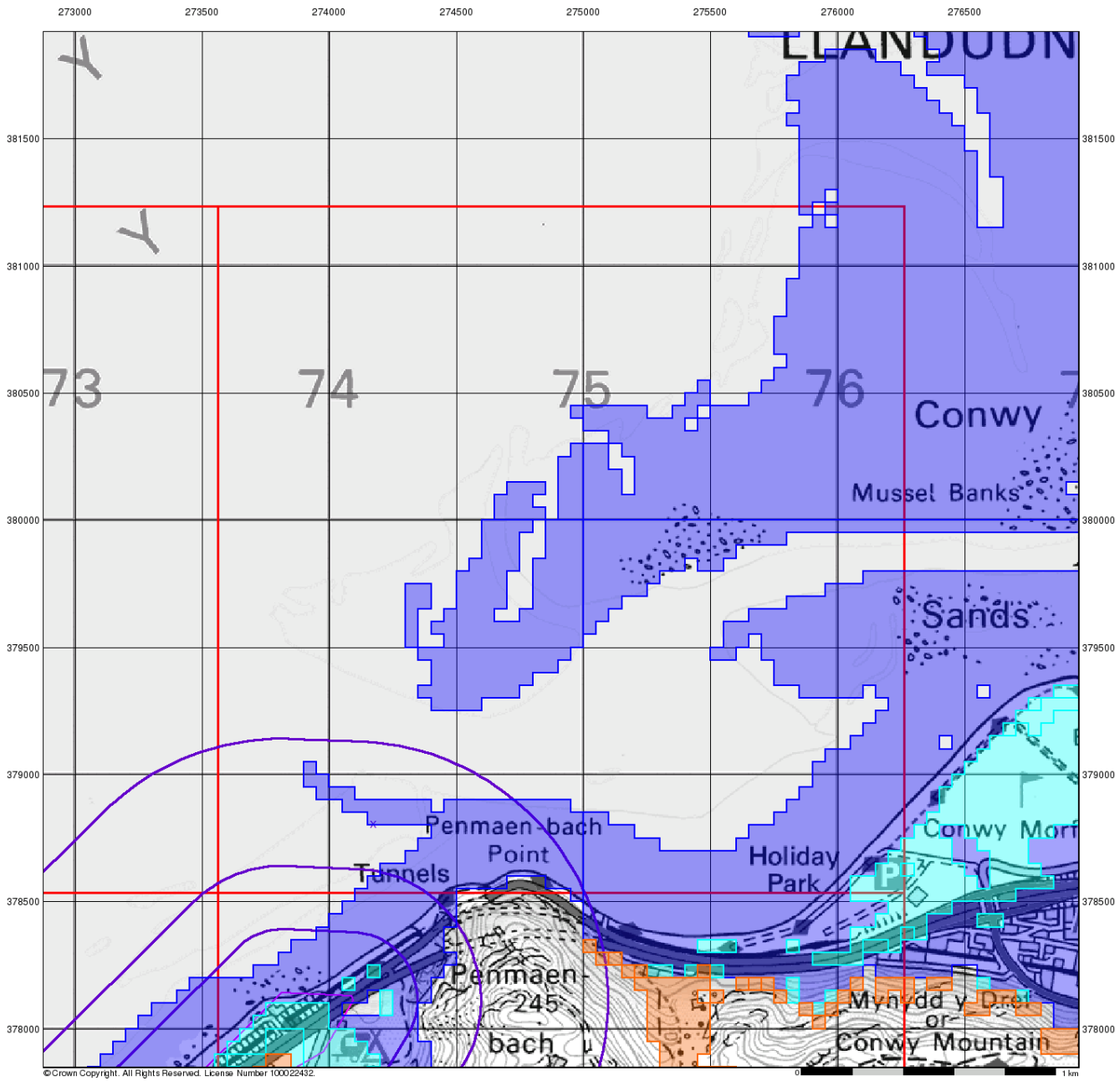
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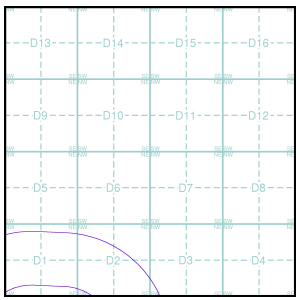
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

BGS Groundwater Flooding Susceptibility

- Potential for Groundwater Flooding to Occur at Surface
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice D



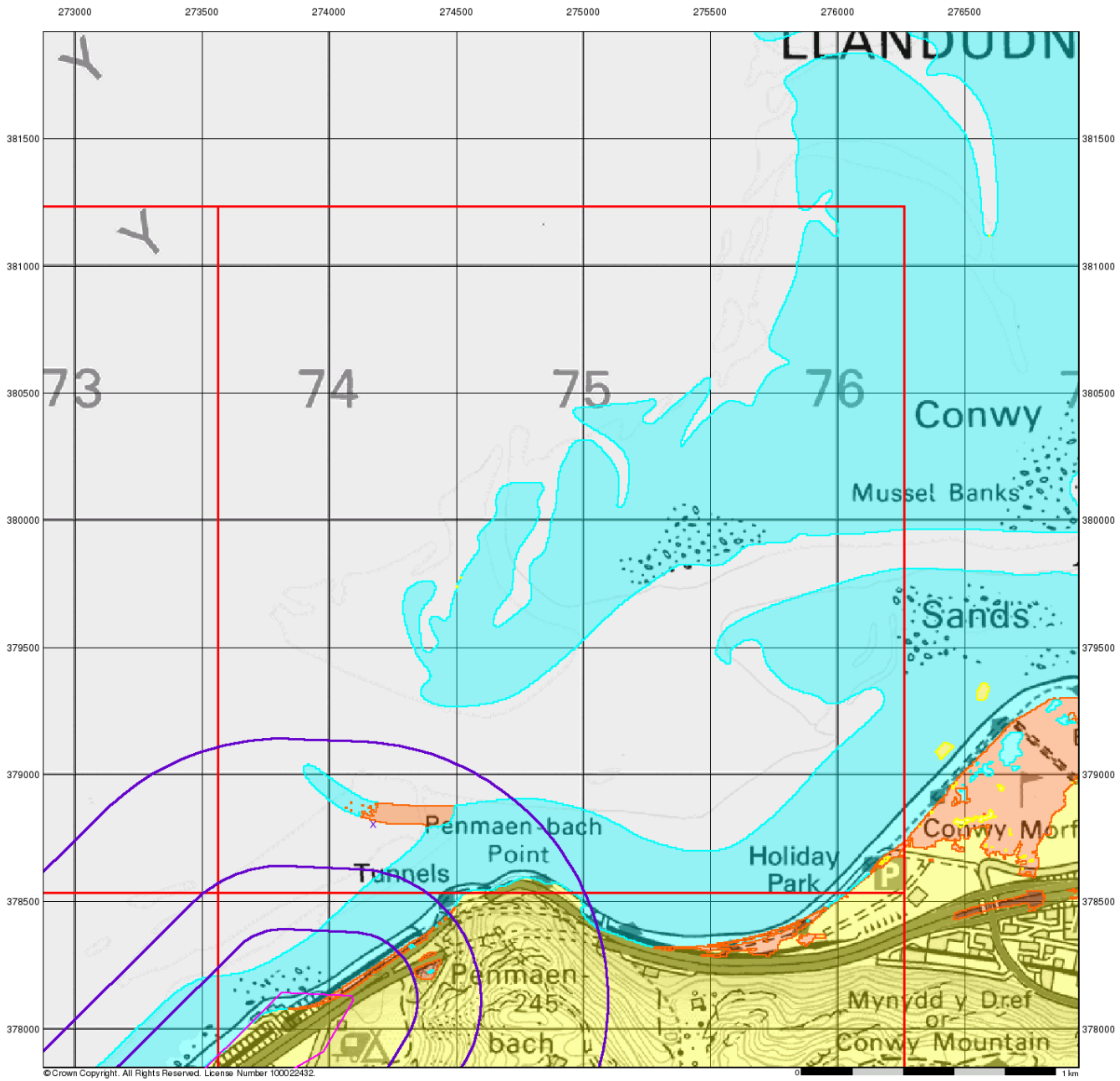
Order Details

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Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RAMBOLL

GeoSmart Information Groundwater Flood Map (1:50,000)

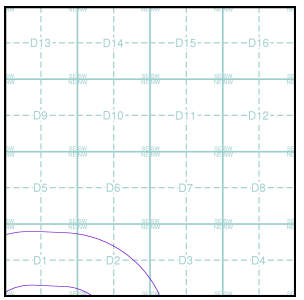
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

GeoSmart Information Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice D



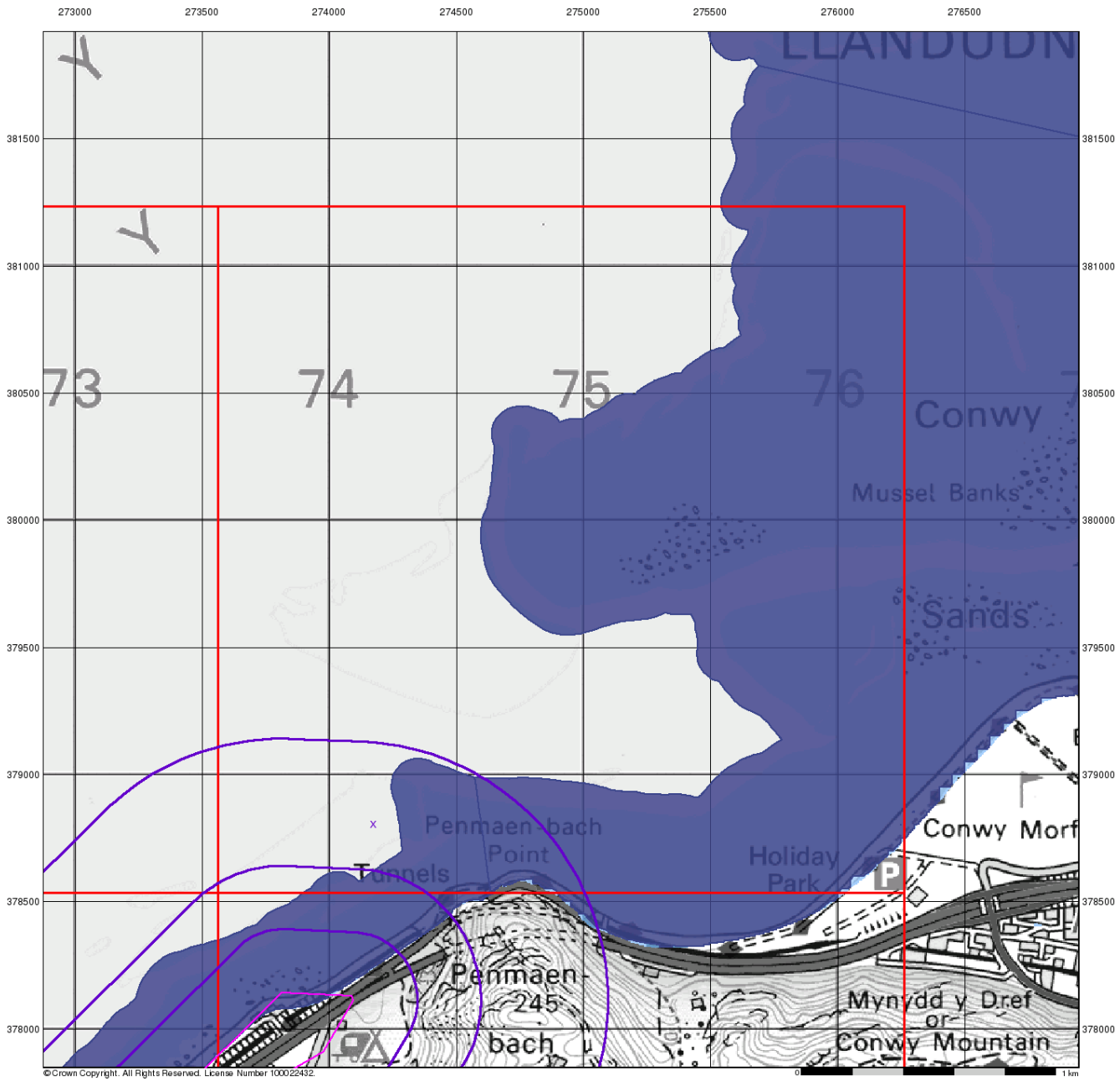
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RAMBOLL

EA/NRW RoFRS Data (1:50,000)

General

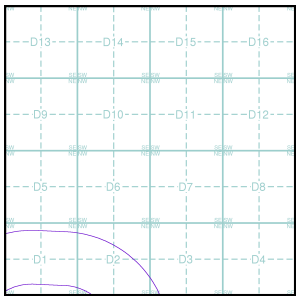
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice D



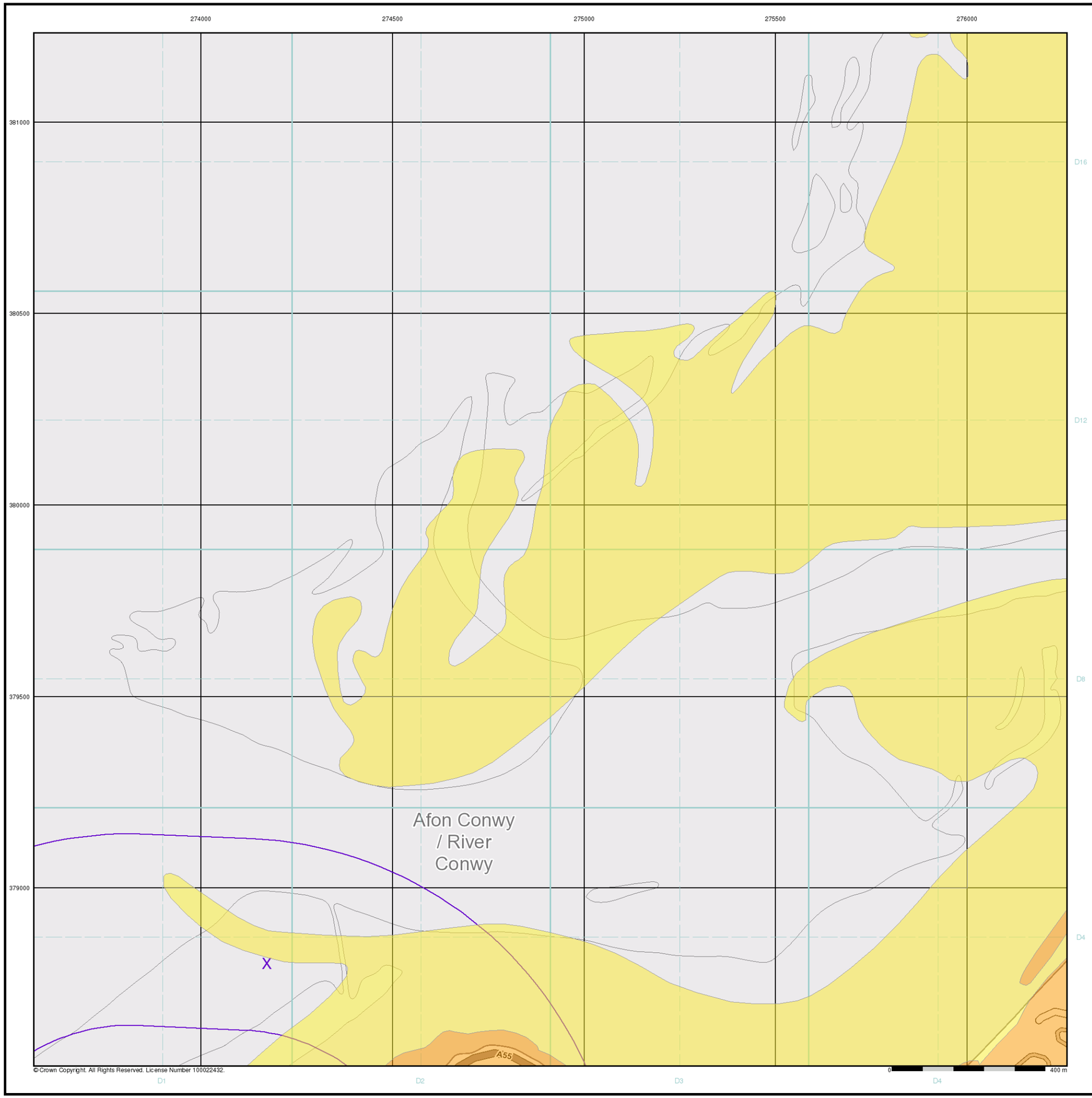
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General

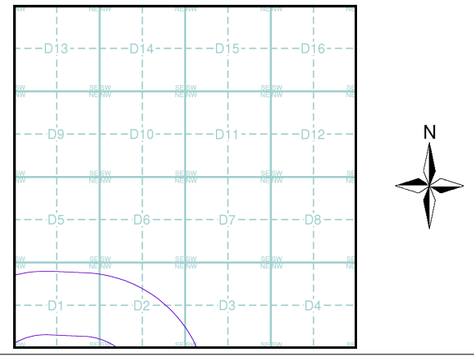
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice D



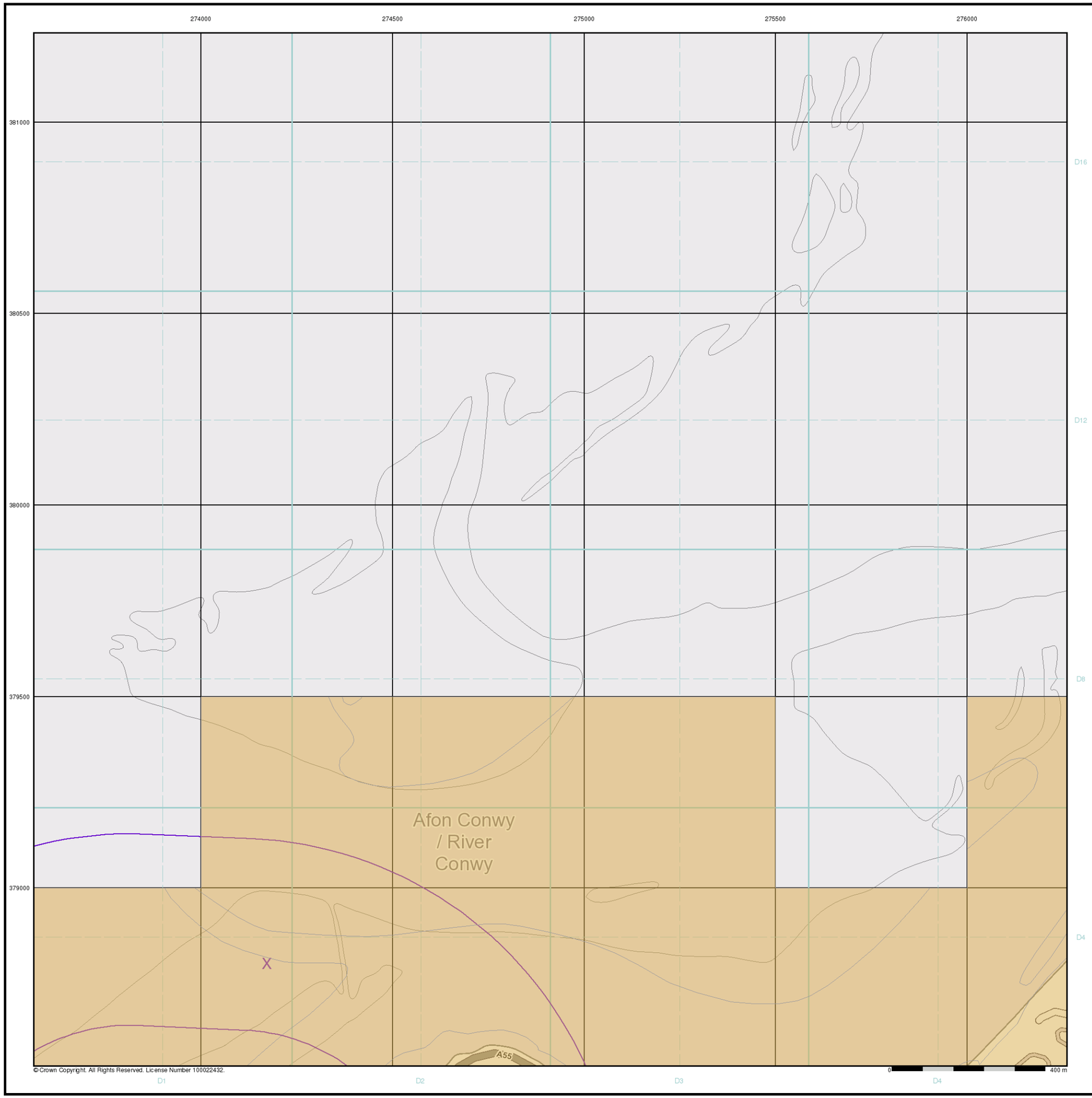
Order Details

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National Grid Reference:	274170, 378800
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RAMBOLL

General

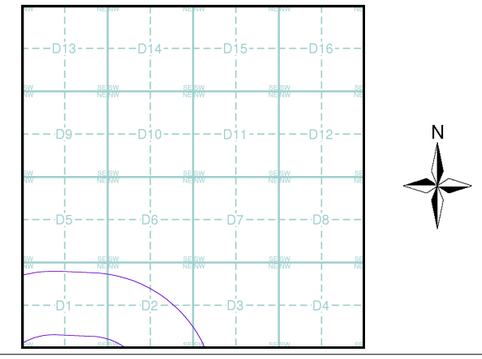
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice D



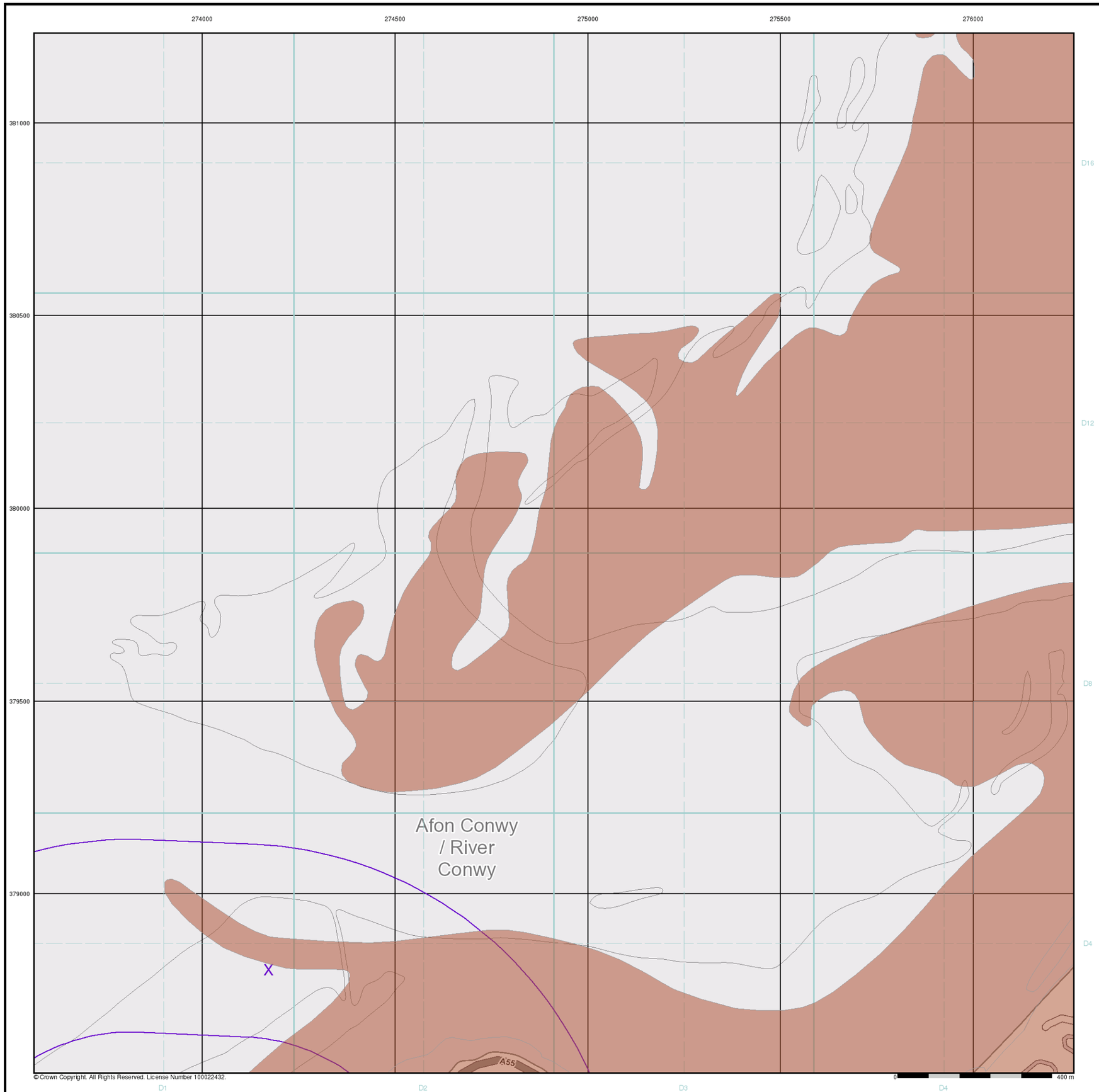
Order Details

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Slice:	D
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RAMBOLL

General

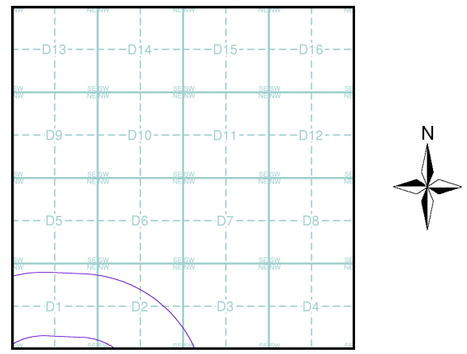
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice D

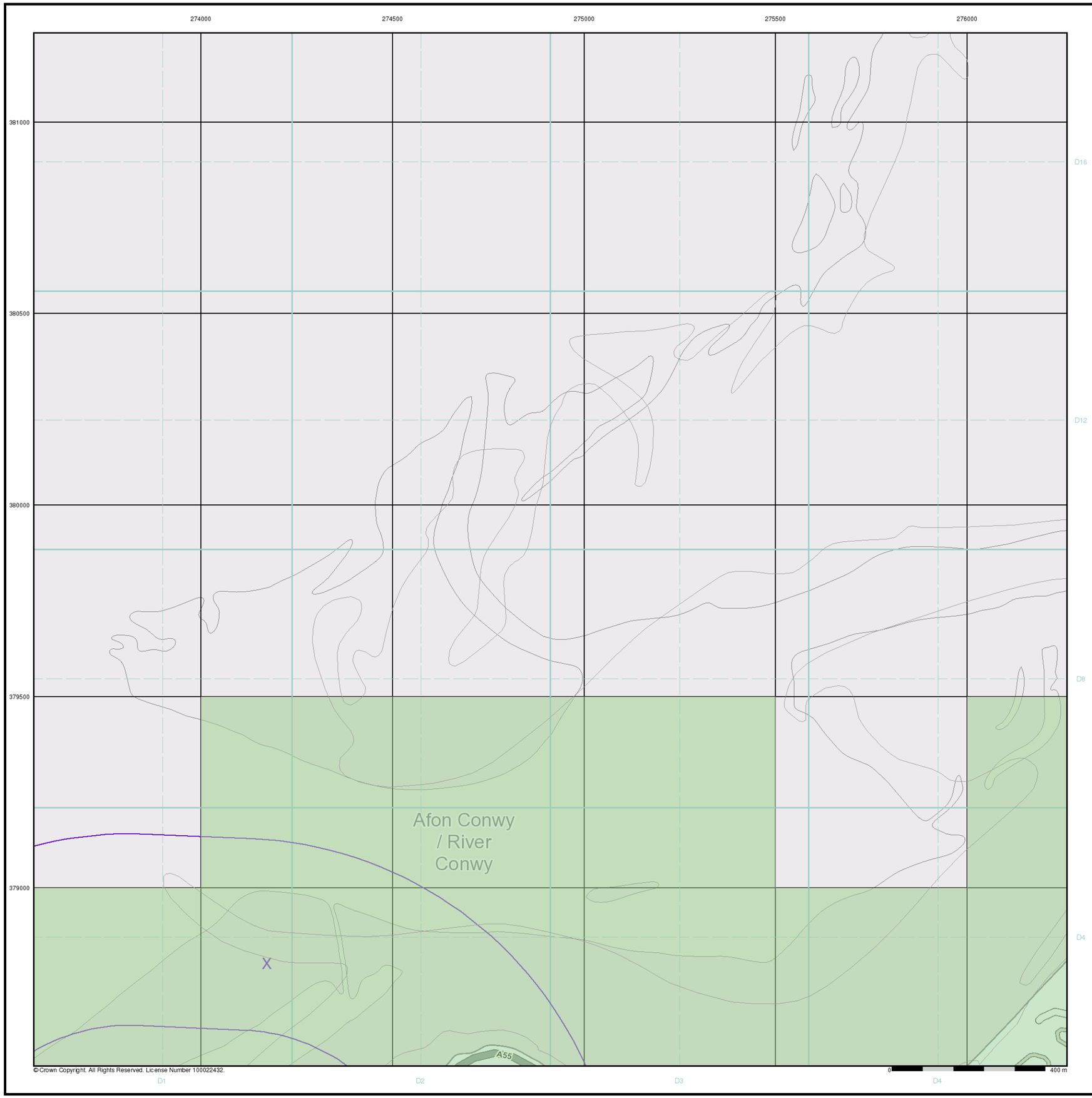


Order Details

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Site Details

Site at, Penmaenmawr, Conwy



RAMBOLL

General

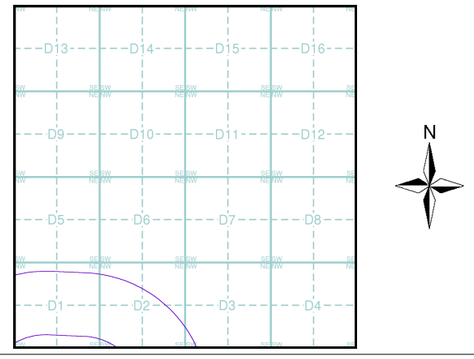
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice D



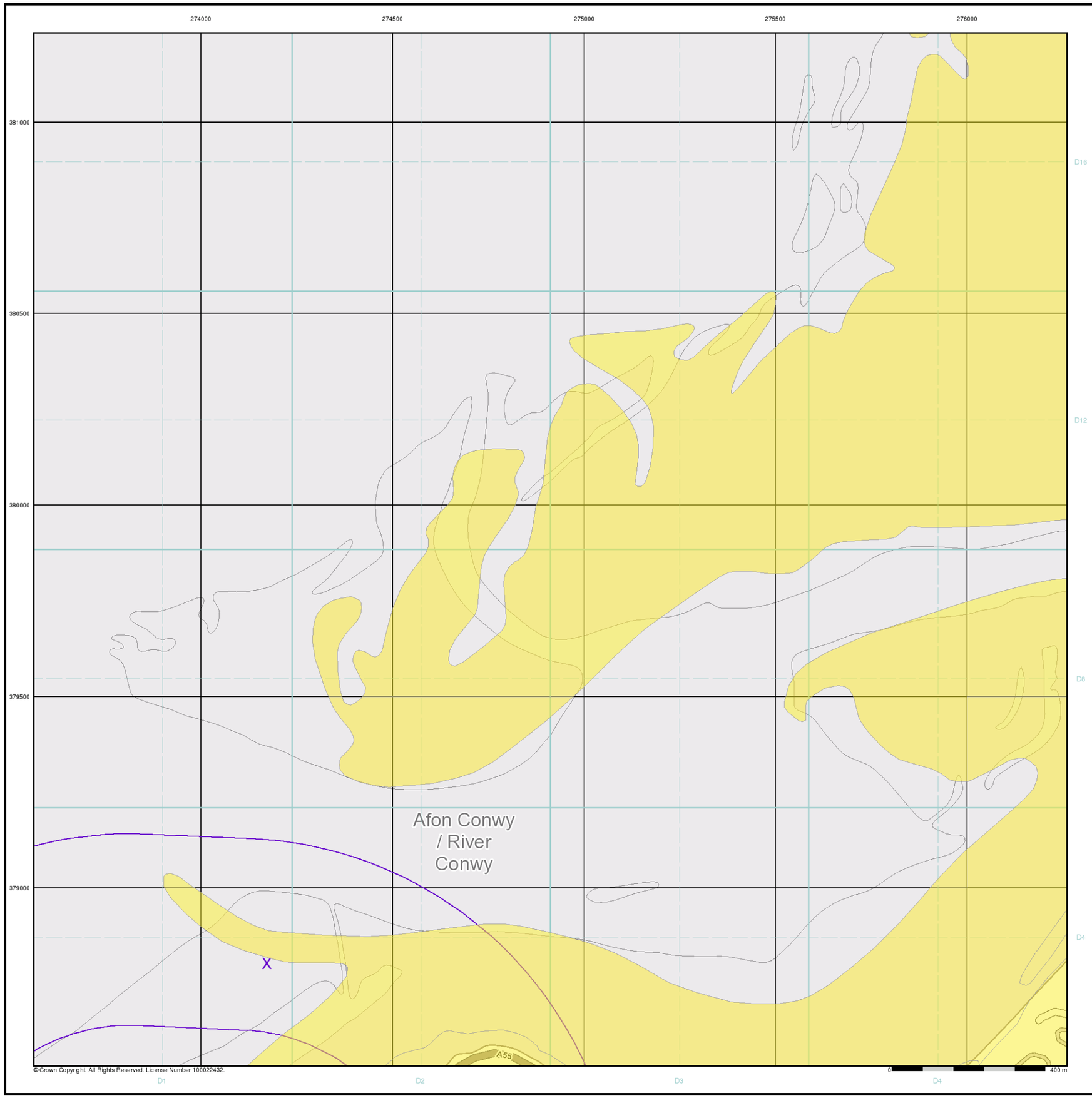
Order Details

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National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

General

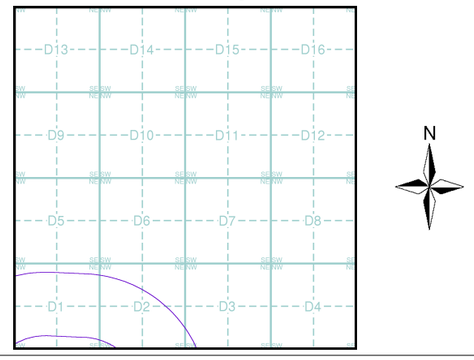
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice D



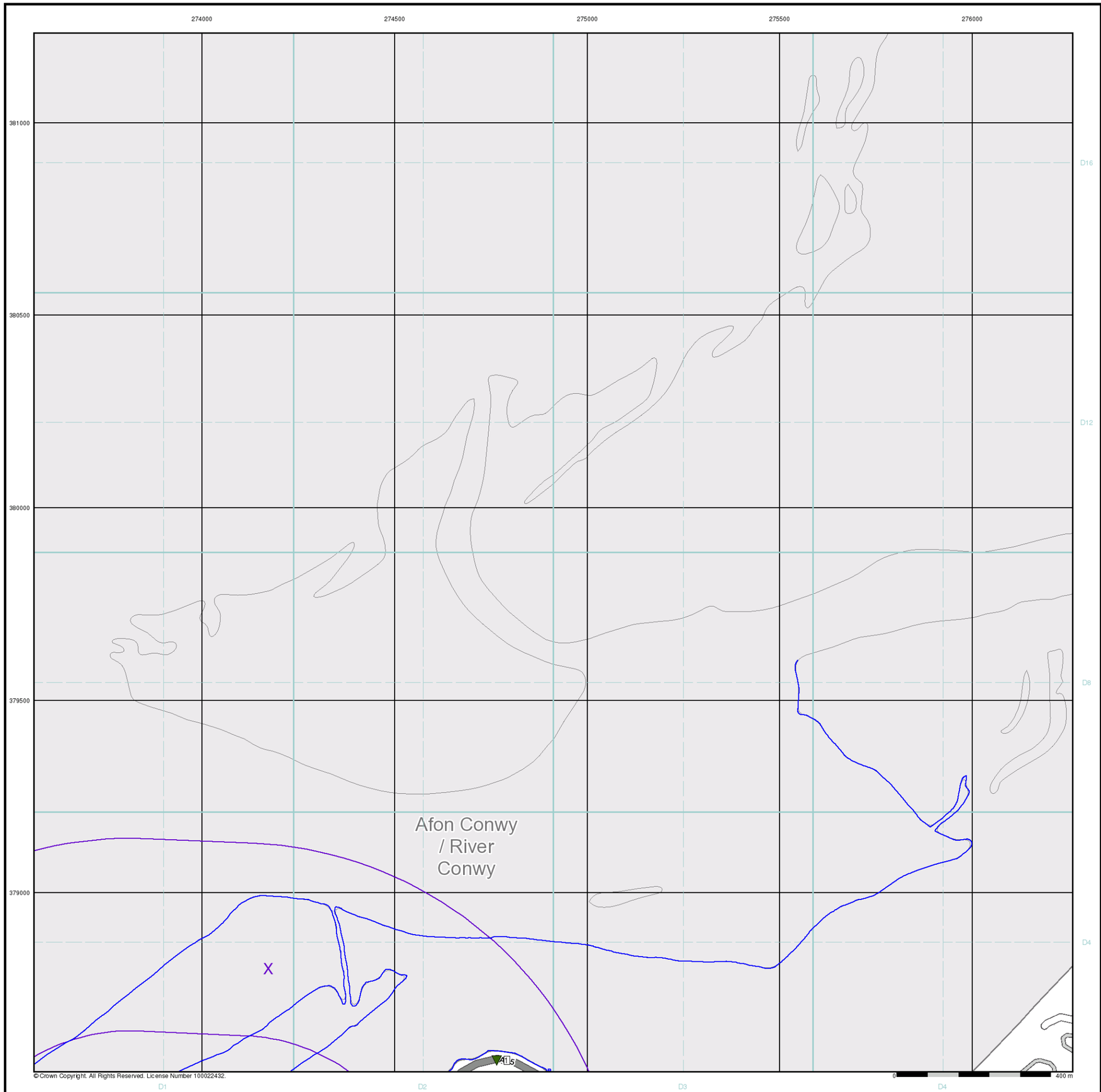
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RAMBOLL

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Map ID
Several of Type at Location

Agency and Hydrological

Contaminated Land Register Entry or Notice (Location)
Contaminated Land Register Entry or Notice
Discharge Consent
Enforcement or Prohibition Notice
Integrated Pollution Control
Integrated Pollution Prevention Control
Local Authority Integrated Pollution Prevention and Control
Local Authority Pollution Prevention and Control
Local Authority Pollution Prevention and Control Enforcement
Pollution Incident to Controlled Waters
Prosecution Relating to Authorised Processes
Prosecution Relating to Controlled Waters
Registered Radioactive Substance
River Network or Water Feature
River Quality Sampling Point
Substantiated Pollution Incident Register
Water Abstraction
Water Industry Act Referral

Hazardous Substances

COMAH Site
Explosive Site
NIHHS Site
Planning Hazardous Substance Consent
Planning Hazardous Substance Enforcement

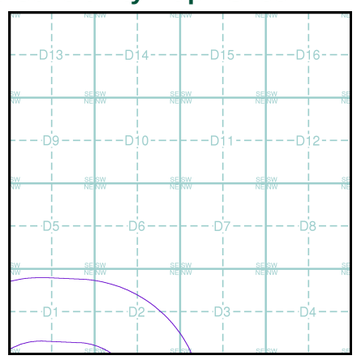
Geological

BGS Recorded Mineral Site

Waste

BGS Recorded Landfill Site (Location)
BGS Recorded Landfill Site
EA Historic Landfill (Buffered Point)
EA Historic Landfill (Polygon)
Integrated Pollution Control Registered Waste Site
Licensed Waste Management Facility (Landfill Boundary)
Licensed Waste Management Facility (Location)
Local Authority Recorded Landfill Site (Location)
Local Authority Recorded Landfill Site
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Non-water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
Potentially Infilled Land (Water)
Registered Landfill Site
Registered Landfill Site (Location)
Registered Landfill Site (Point Buffered to 100m)
Registered Landfill Site (Point Buffered to 250m)
Registered Waste Transfer Site (Location)
Registered Waste Transfer Site
Registered Waste Treatment or Disposal Site (Location)
Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice D



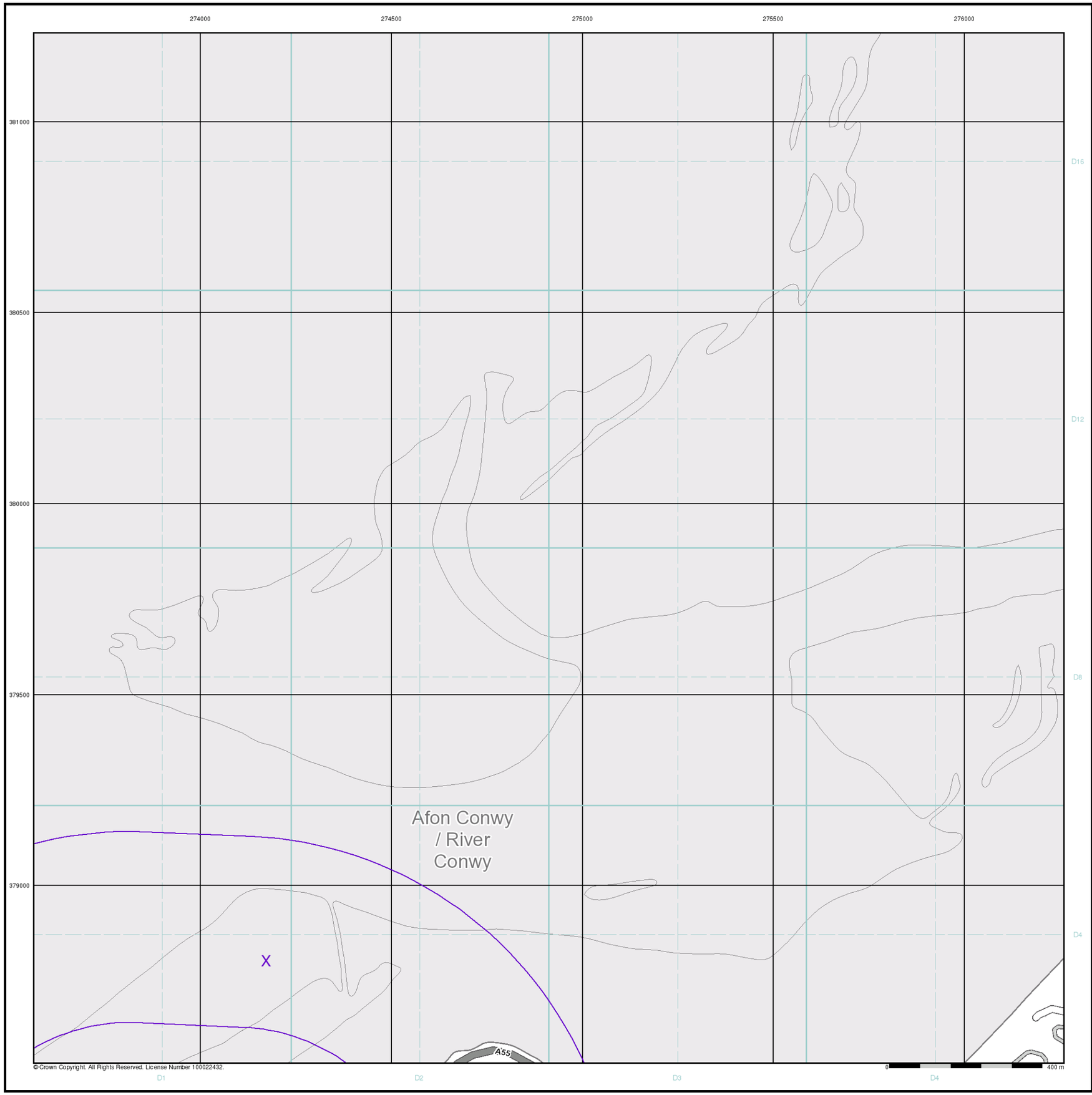
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National Grid Reference:	274170, 378800
Slice:	D
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Site Details

Site at, Penmaenmawr, Conwy

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RAMBOLL

Industrial Land Use Map

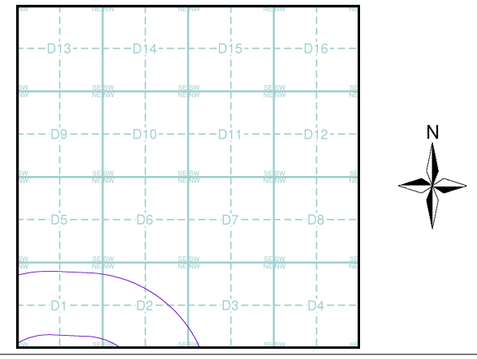
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice D



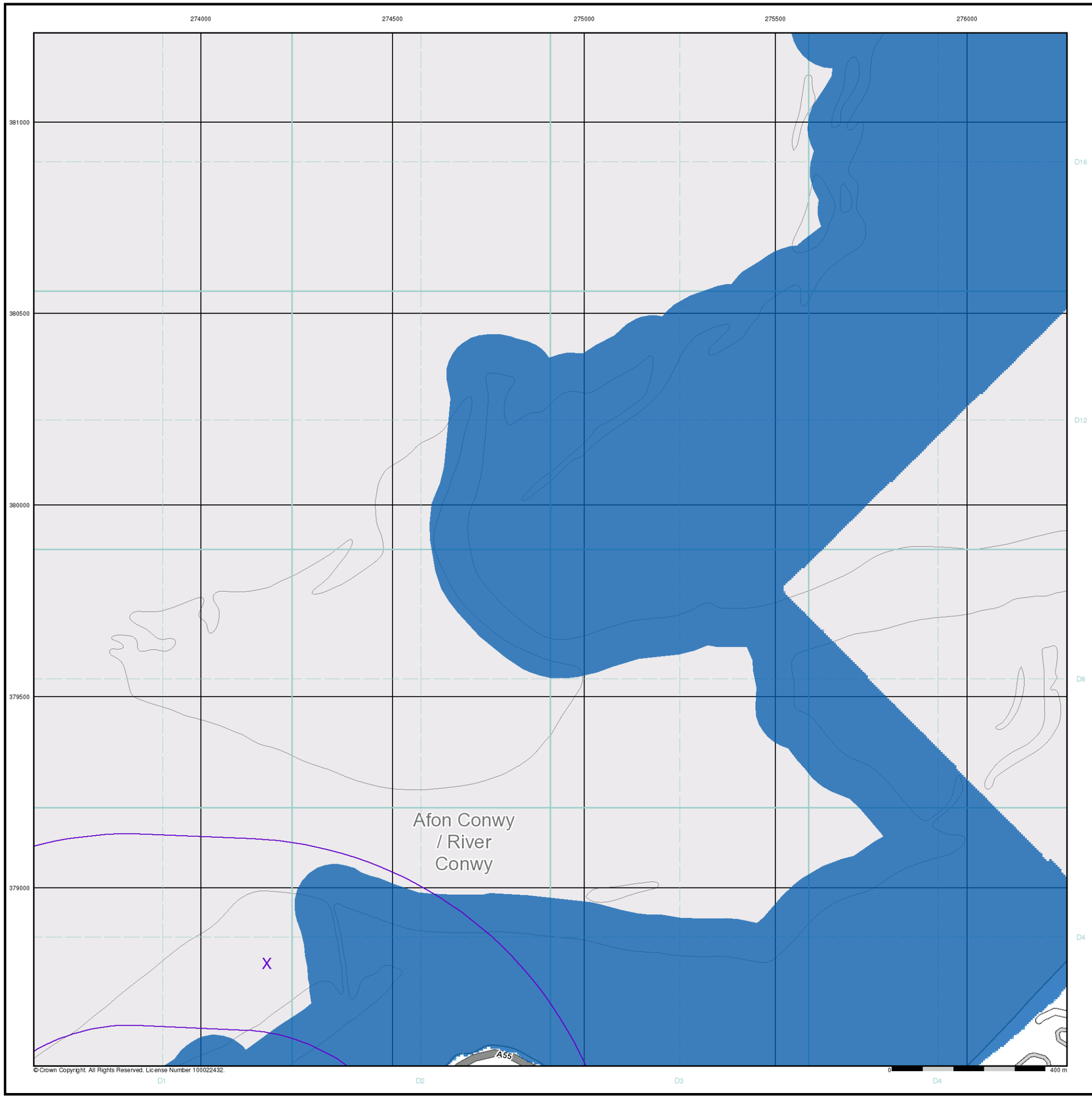
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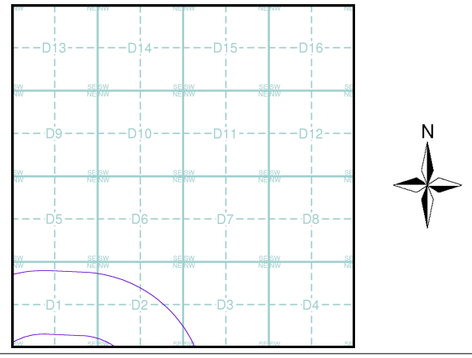
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice D



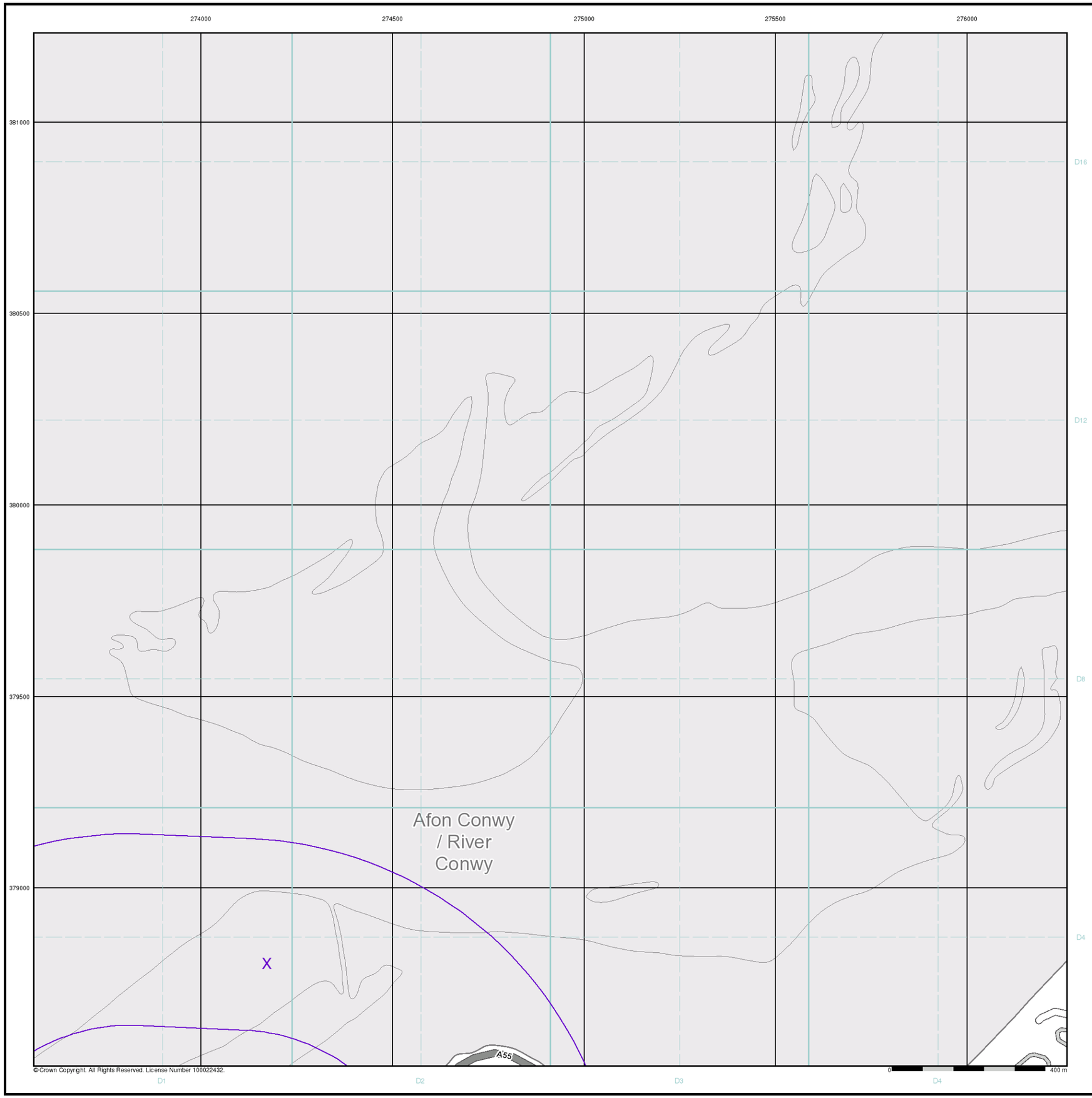
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

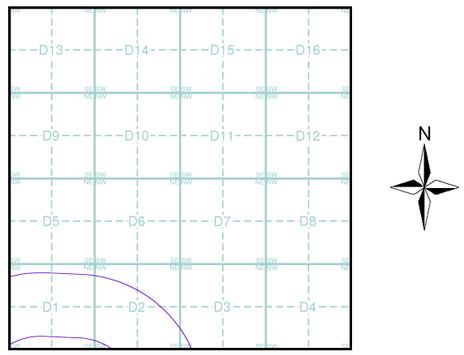
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice D



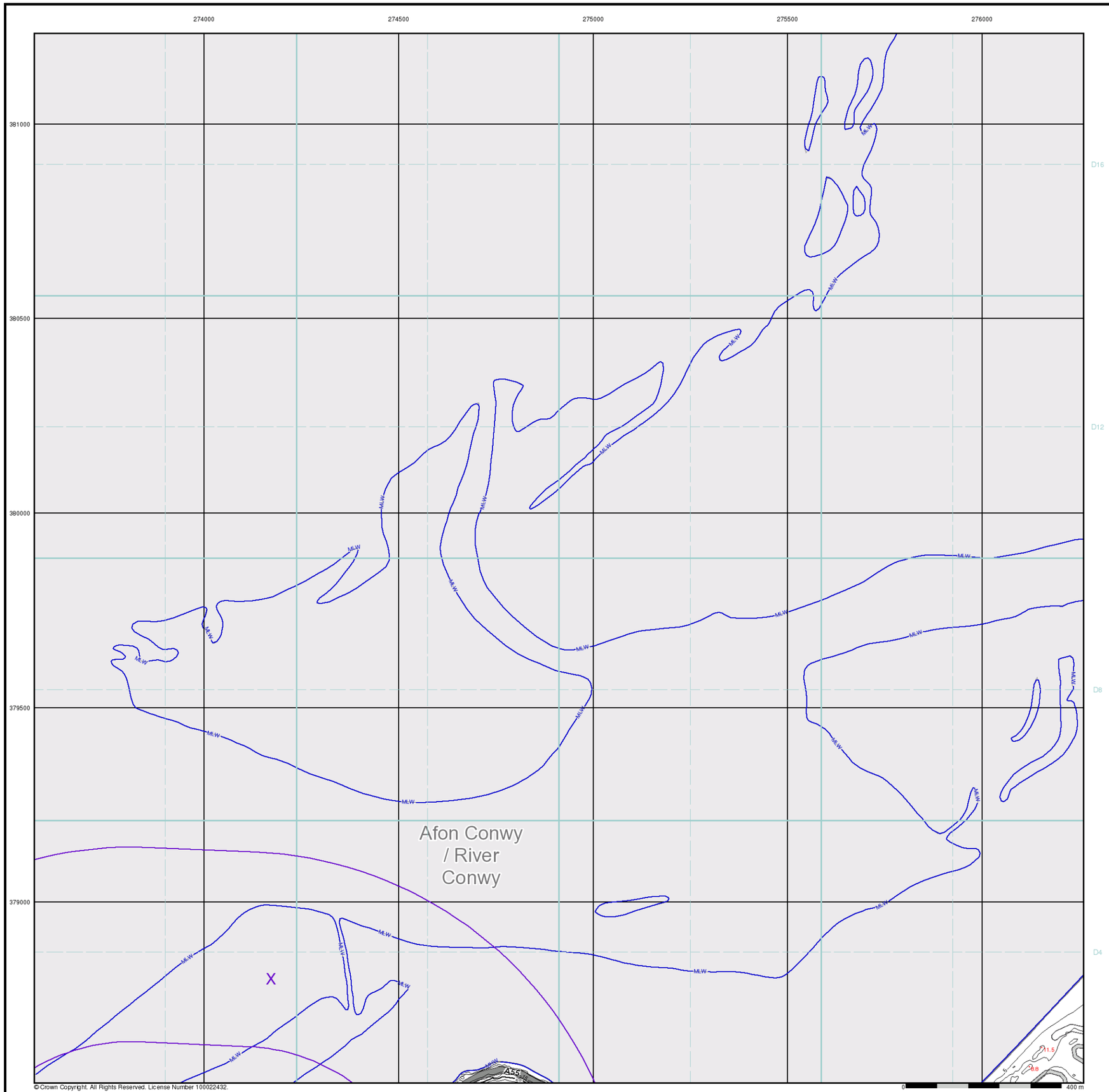
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

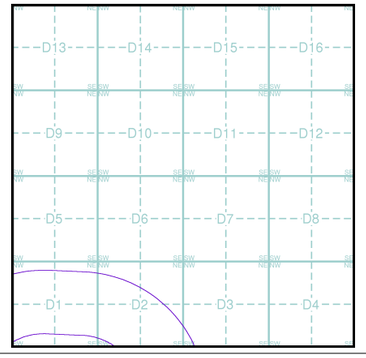
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice D



Order Details

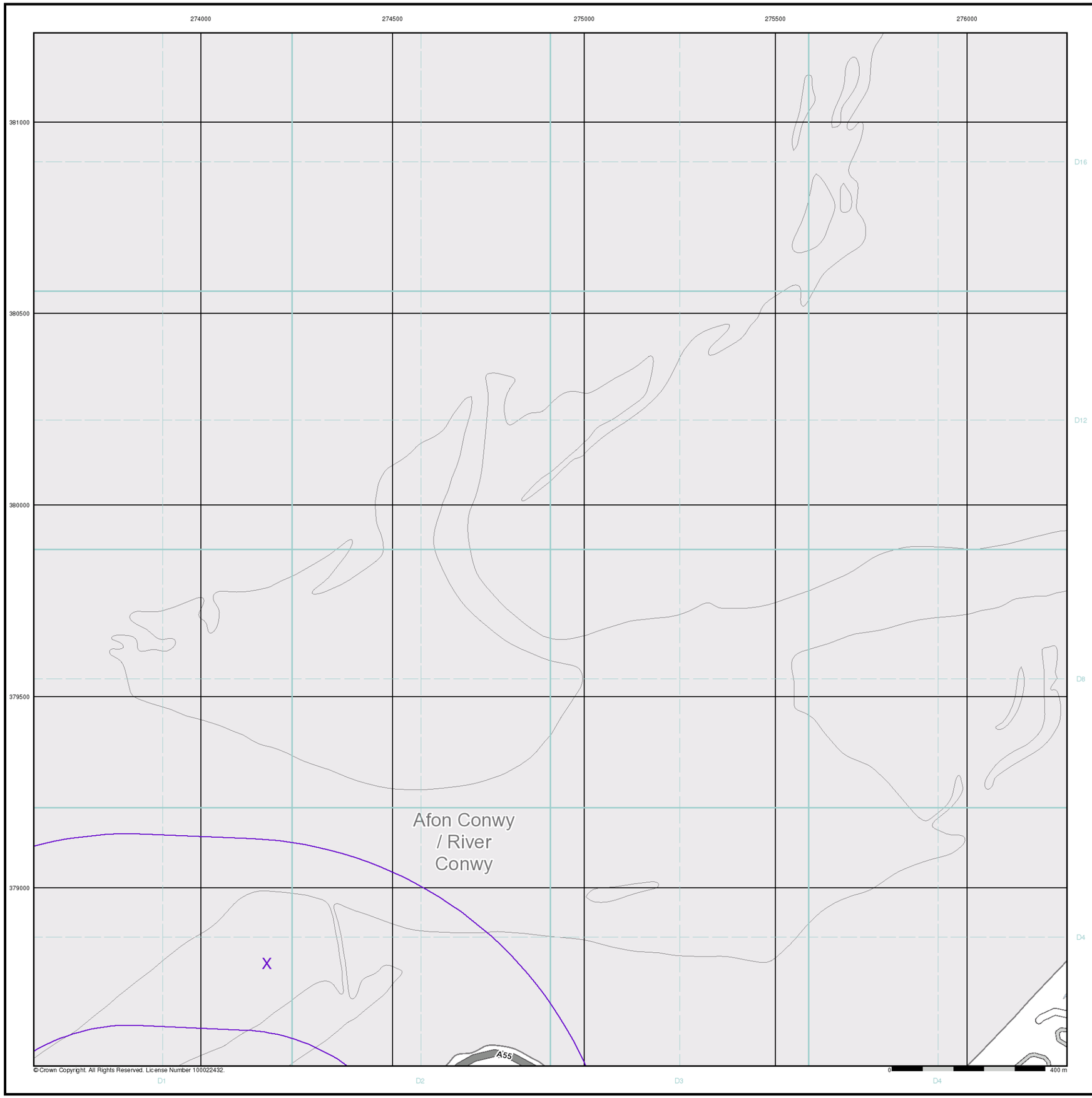
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RAMBOLL

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

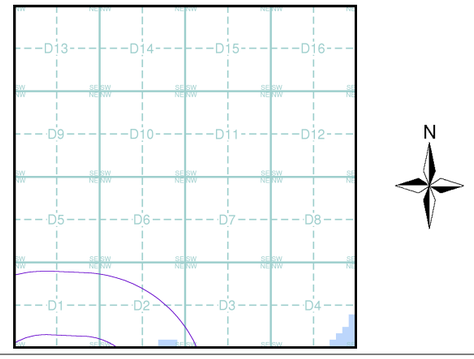
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice D



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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

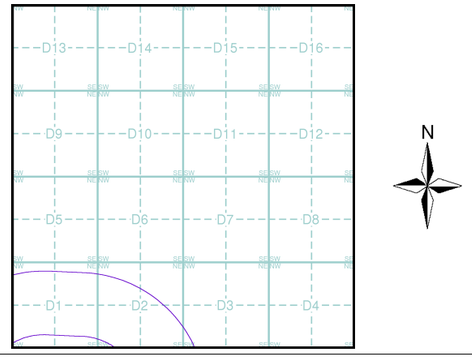
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Caernarvonshire	1:10,560	1888	2
Caernarvonshire	1:10,560	1901	3
Caernarvonshire	1:10,560	1915 - 1920	4
Caernarvonshire	1:10,560	1938 - 1951	5
Caernarvonshire	1:10,560	1953	6
Ordnance Survey Plan	1:10,000	1964	7
Ordnance Survey Plan	1:10,000	1975	8
Ordnance Survey Plan	1:10,000	1983	9
Ordnance Survey Plan	1:10,000	1990 - 1993	10
Ordnance Survey Plan	1:10,000	1993	11
10K Raster Mapping	1:10,000	2000	12
10K Raster Mapping	1:10,000	2006	13
VectorMap Local	1:10,000	2018	14

Historical Map - Slice D



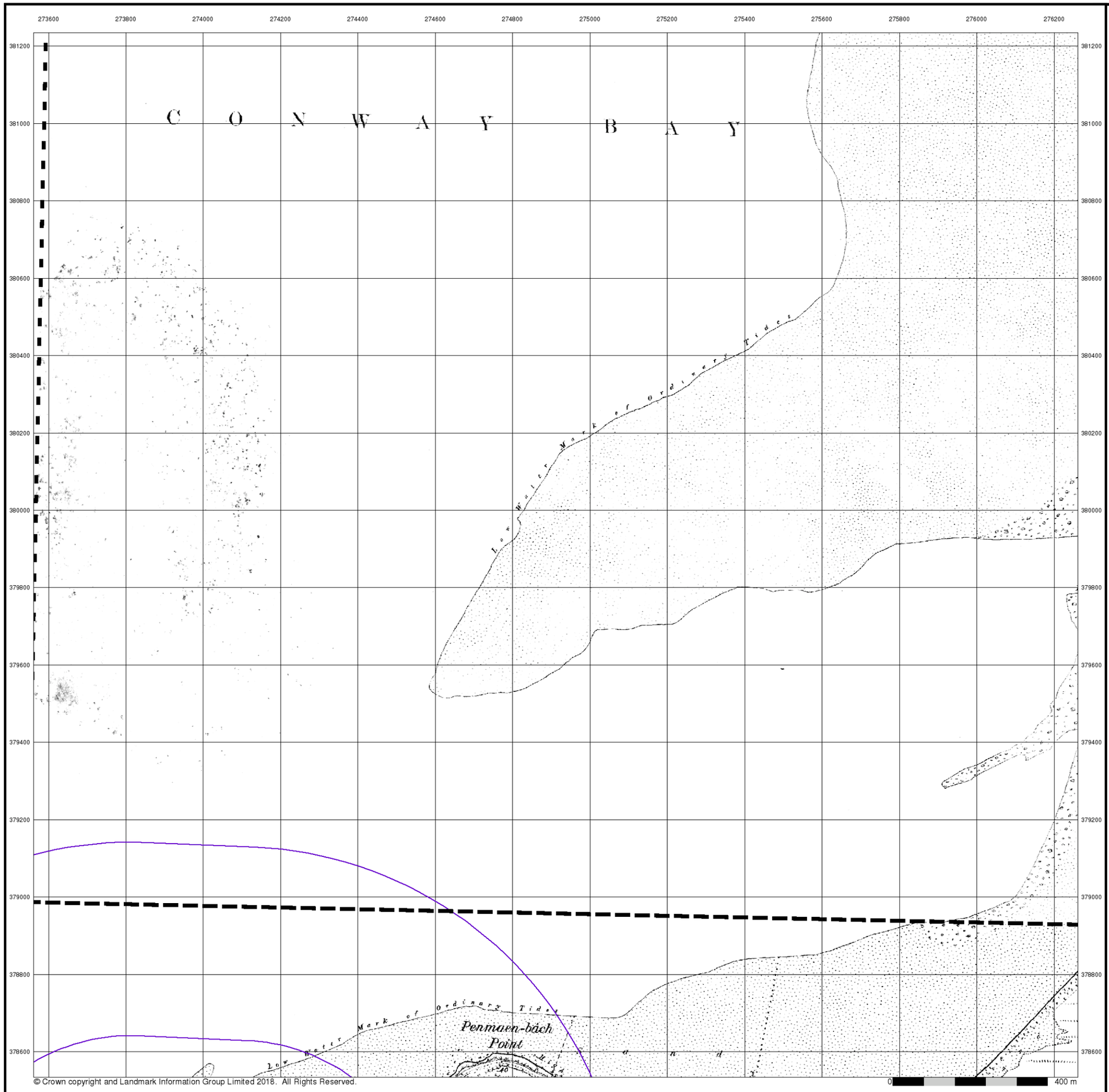
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National Grid Reference: 274170, 378800
Slice: D
Site Area (Ha): 28.4
Search Buffer (m): 1000

Site Details

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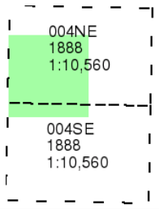
Caernarvonshire

Published 1888

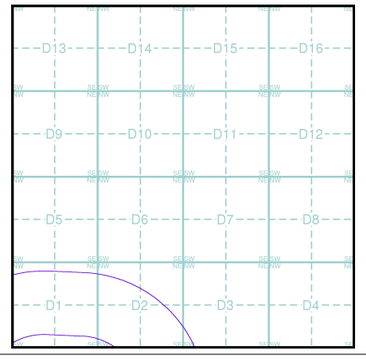
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice D



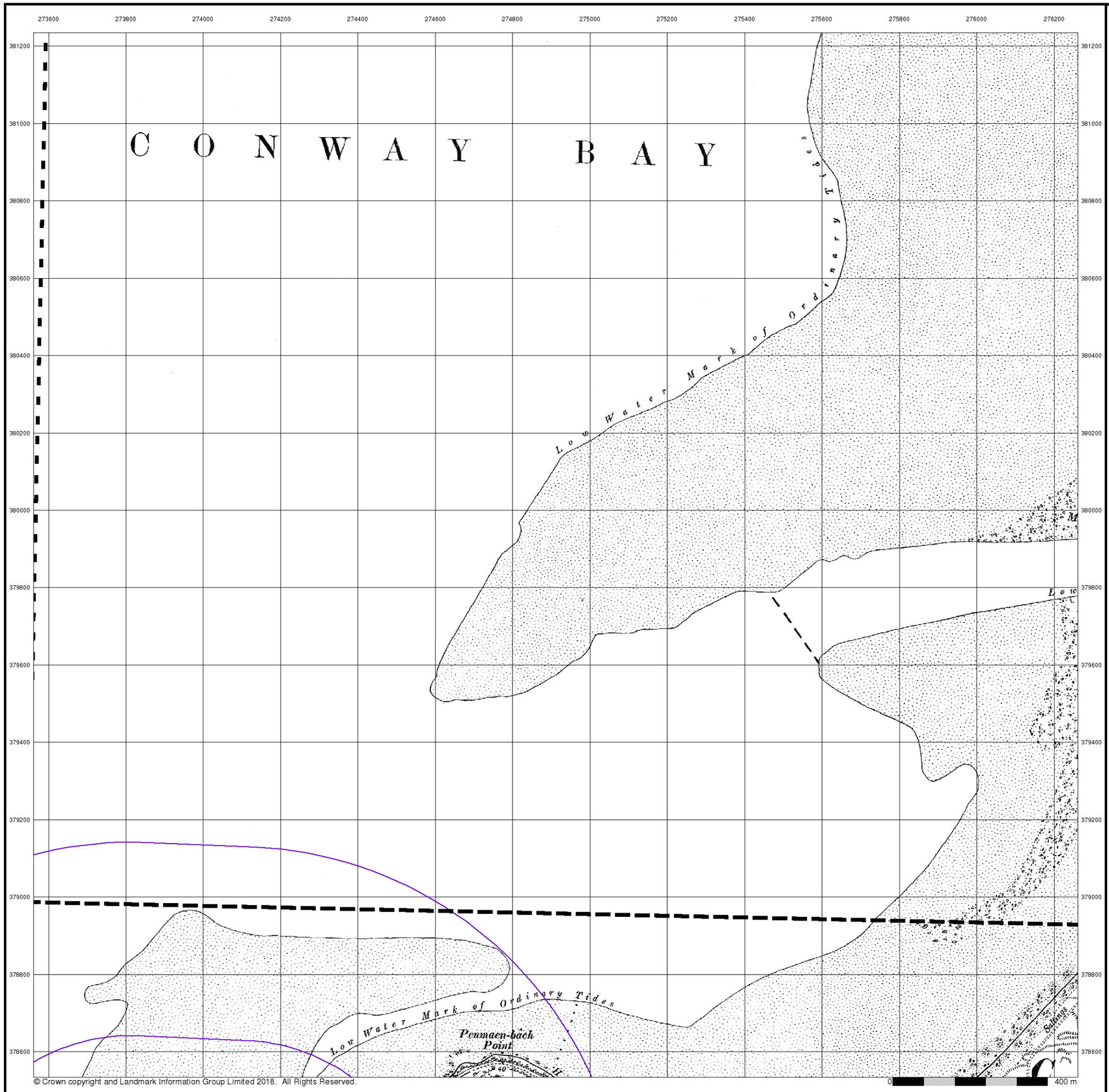
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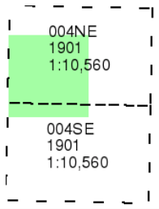
Caernarvonshire

Published 1901

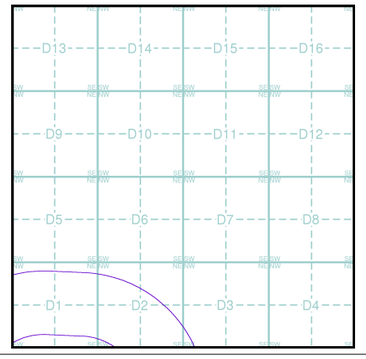
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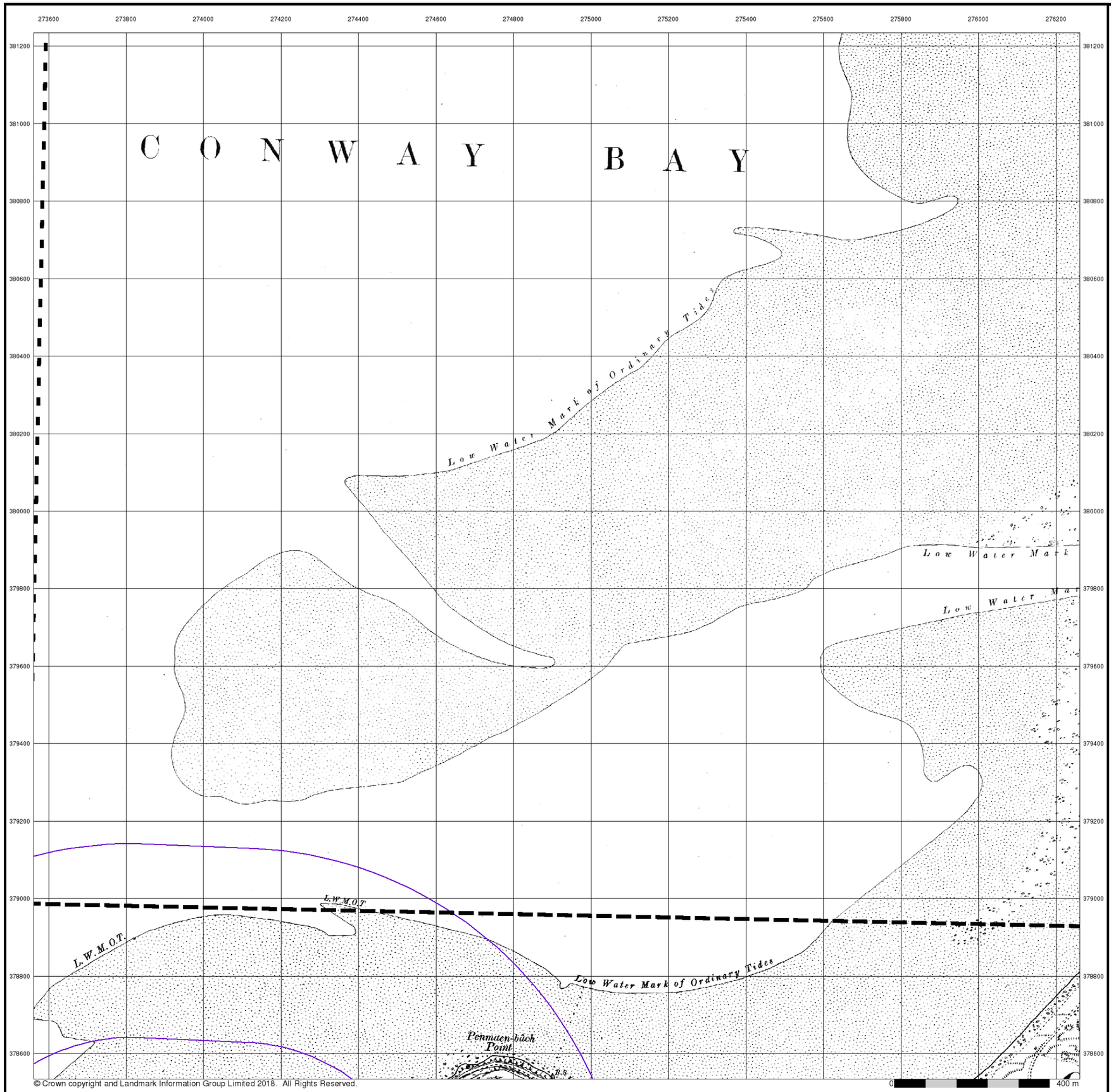
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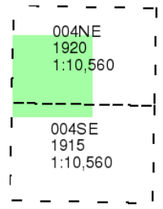
Caernarvonshire

Published 1915 - 1920

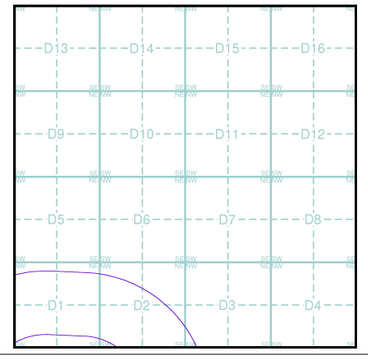
Source map scale - 1:10,560

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Historical Map - Slice D



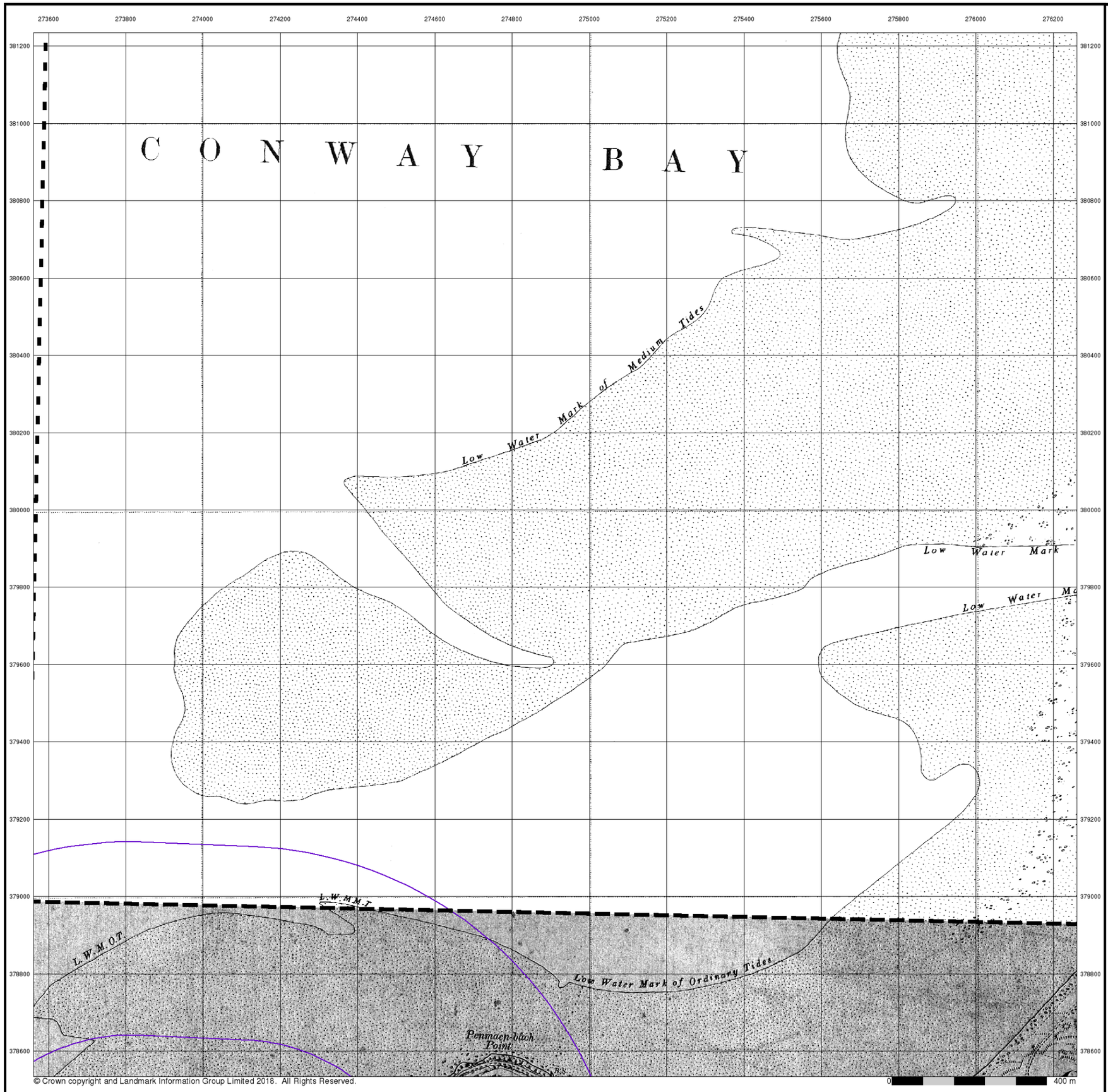
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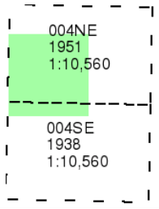
Caernarvonshire

Published 1938 - 1951

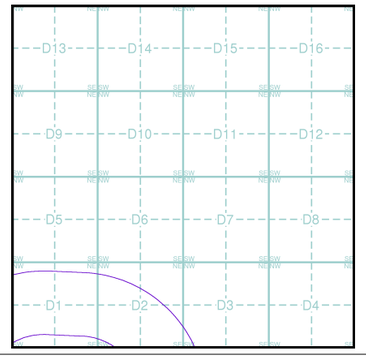
Source map scale - 1:10,560

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Historical Map - Slice D



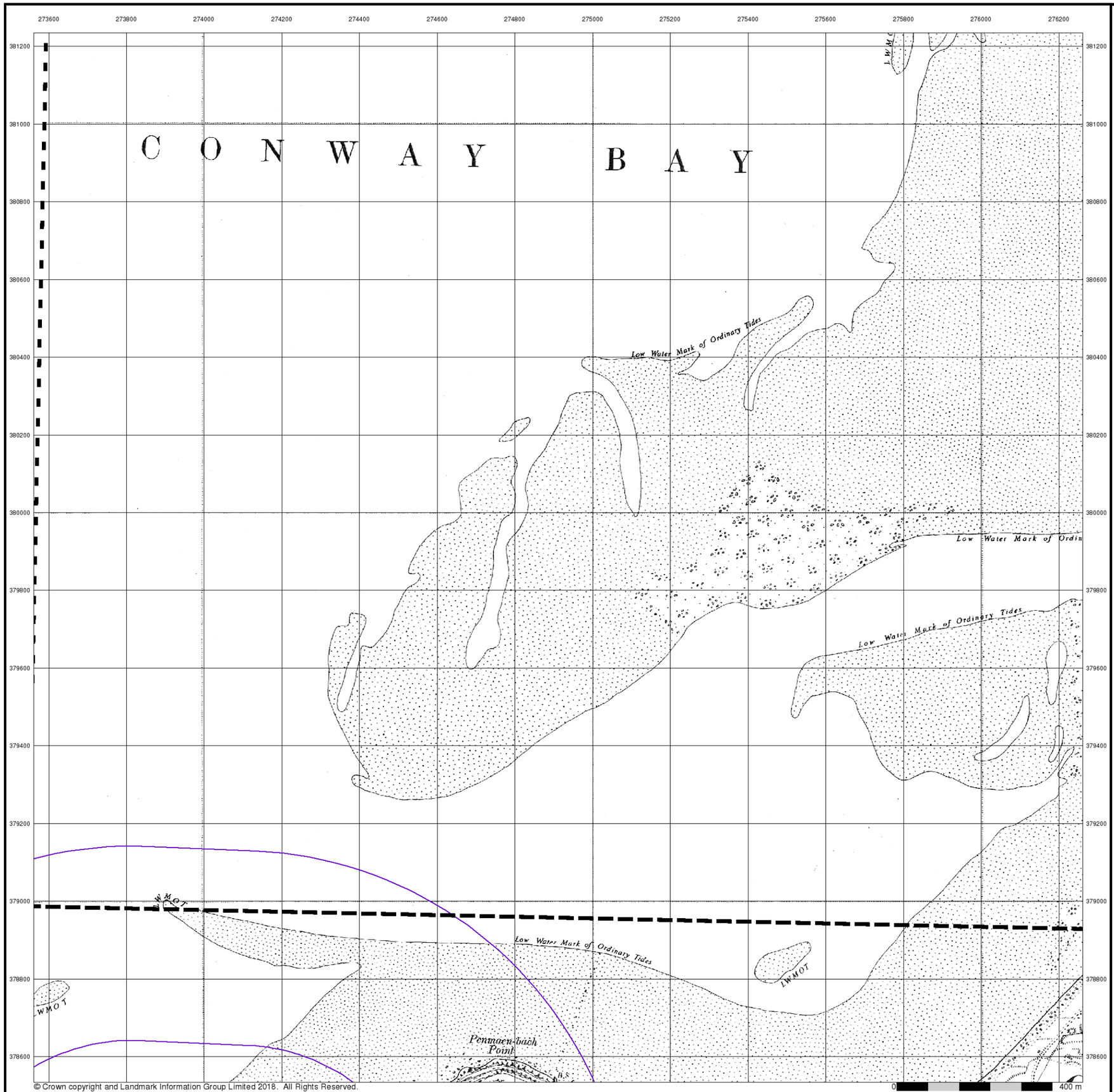
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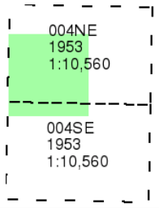
Caernarvonshire

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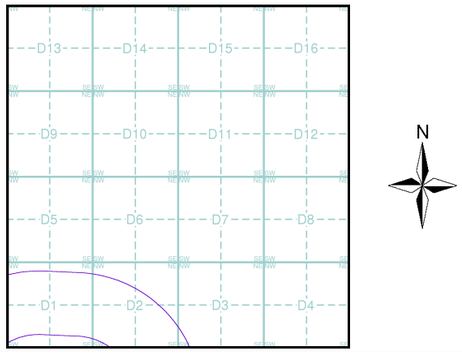
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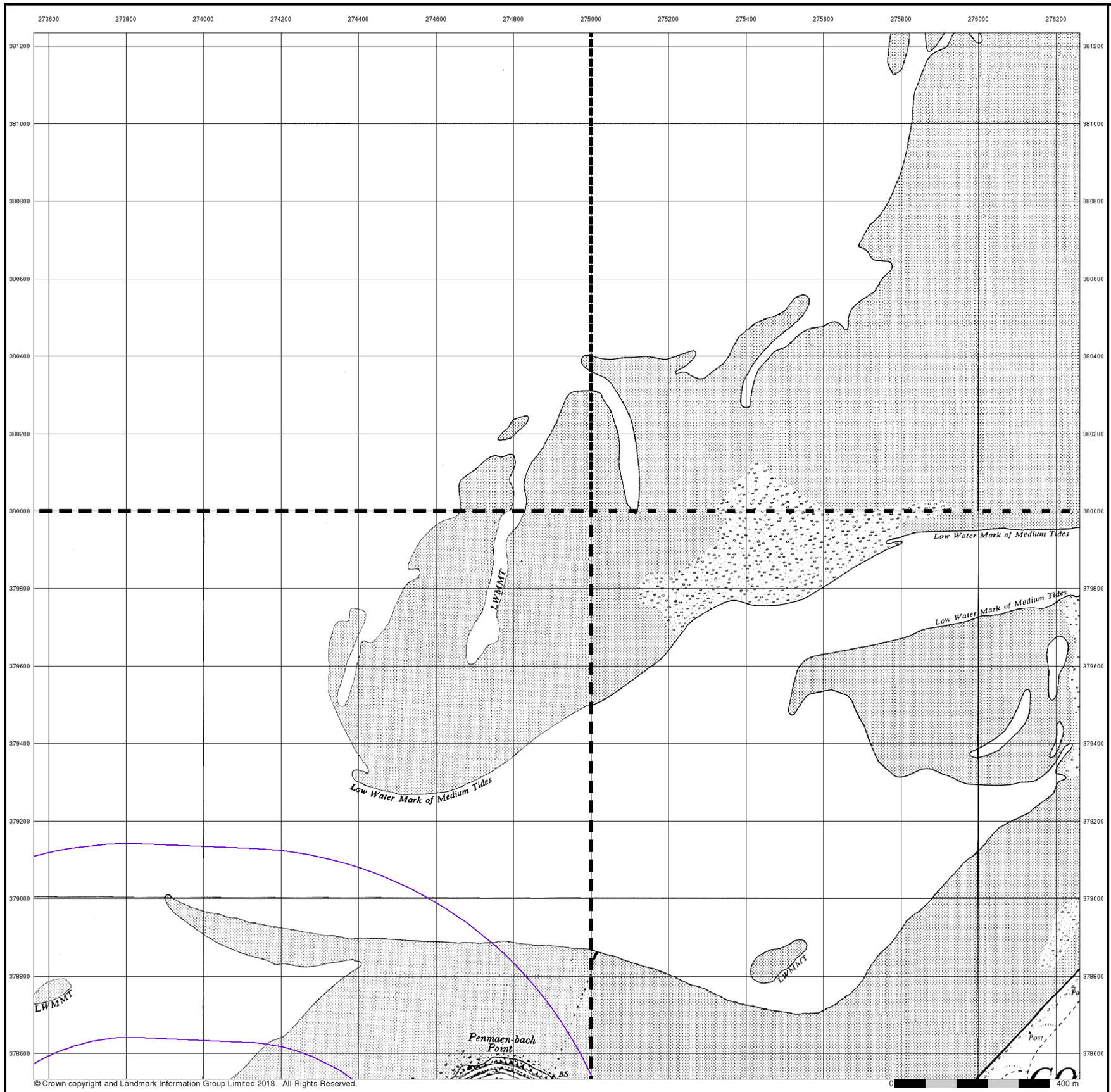
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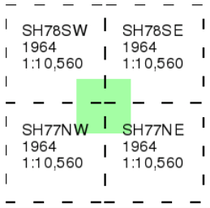
Ordnance Survey Plan

Published 1964

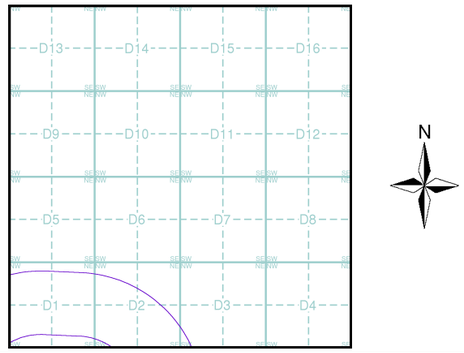
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Map Name(s) and Date(s)



Historical Map - Slice D



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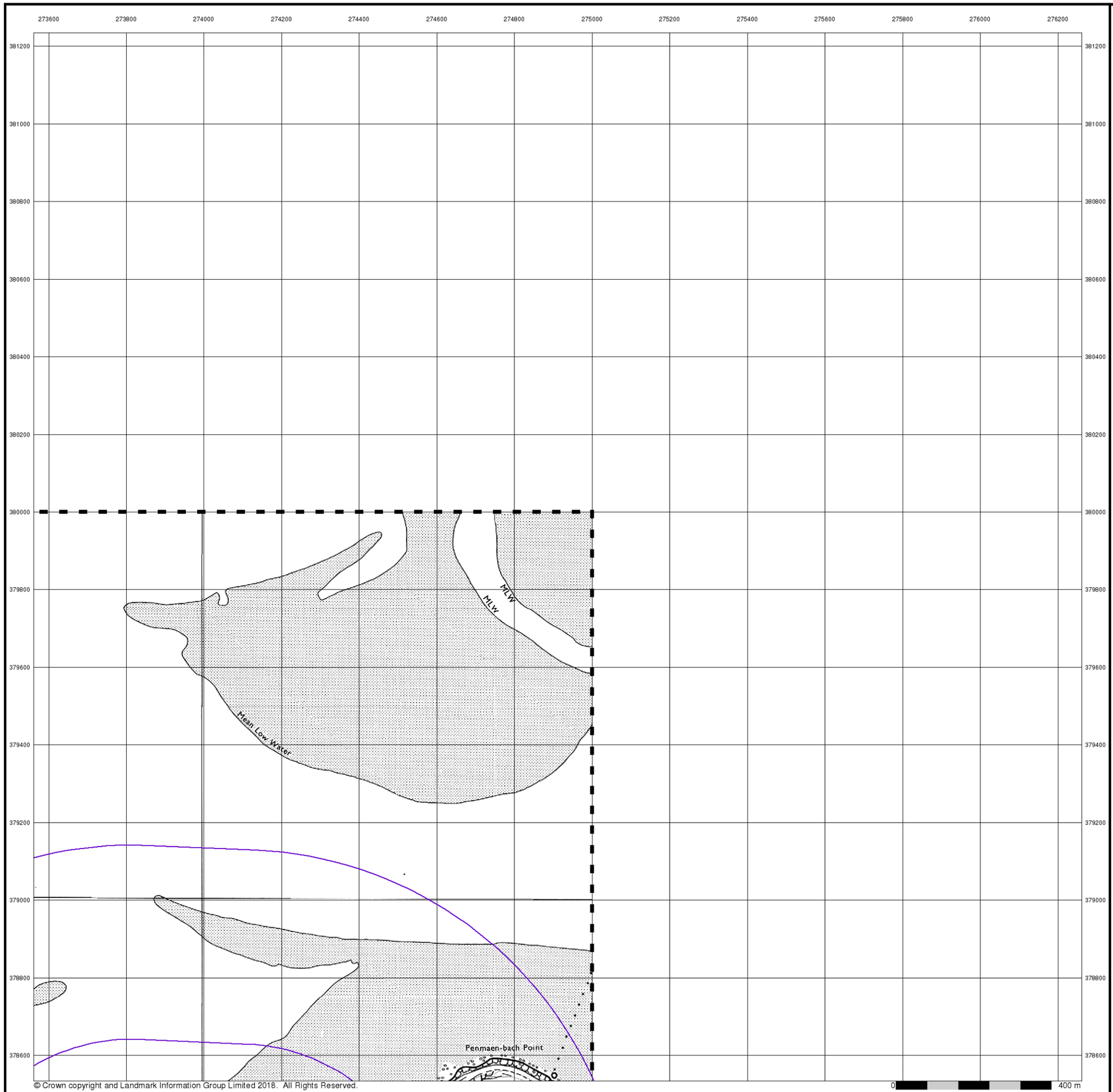
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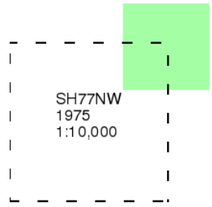
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Published 1975

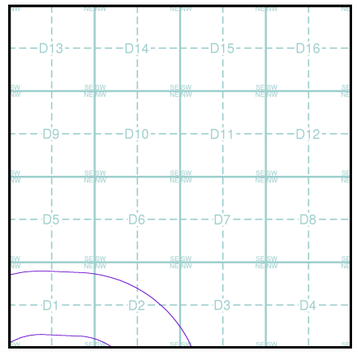
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Historical Map - Slice D



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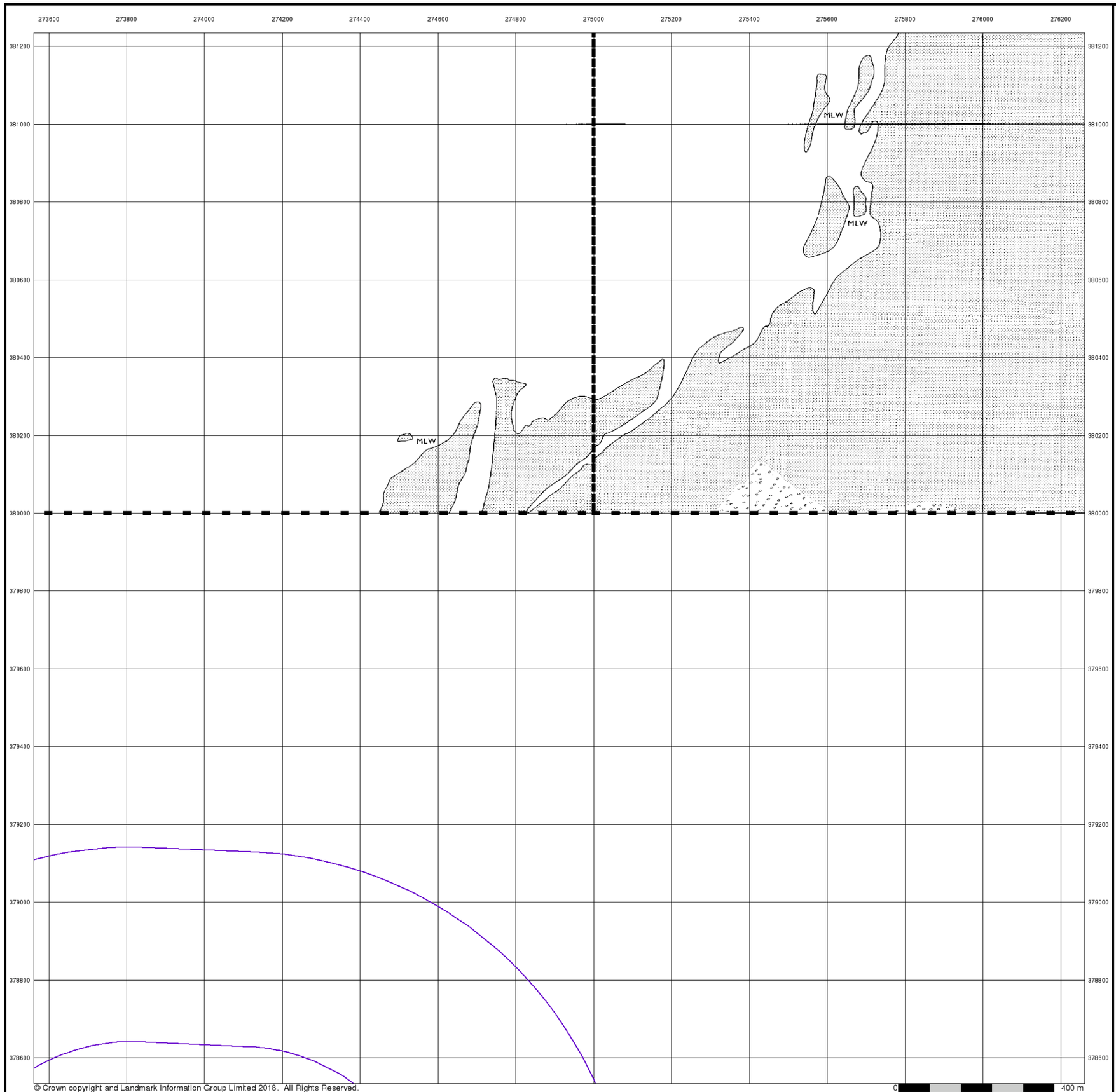
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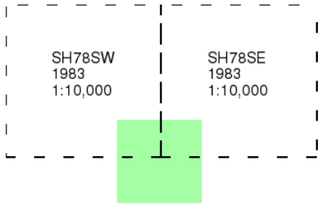
Ordnance Survey Plan

Published 1983

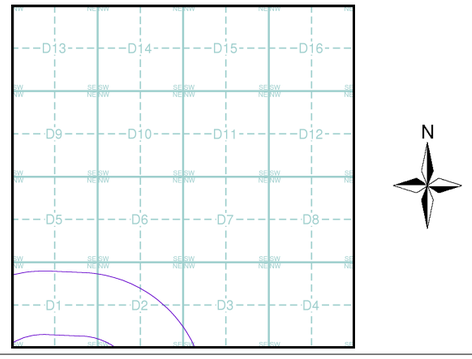
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Map Name(s) and Date(s)



Historical Map - Slice D



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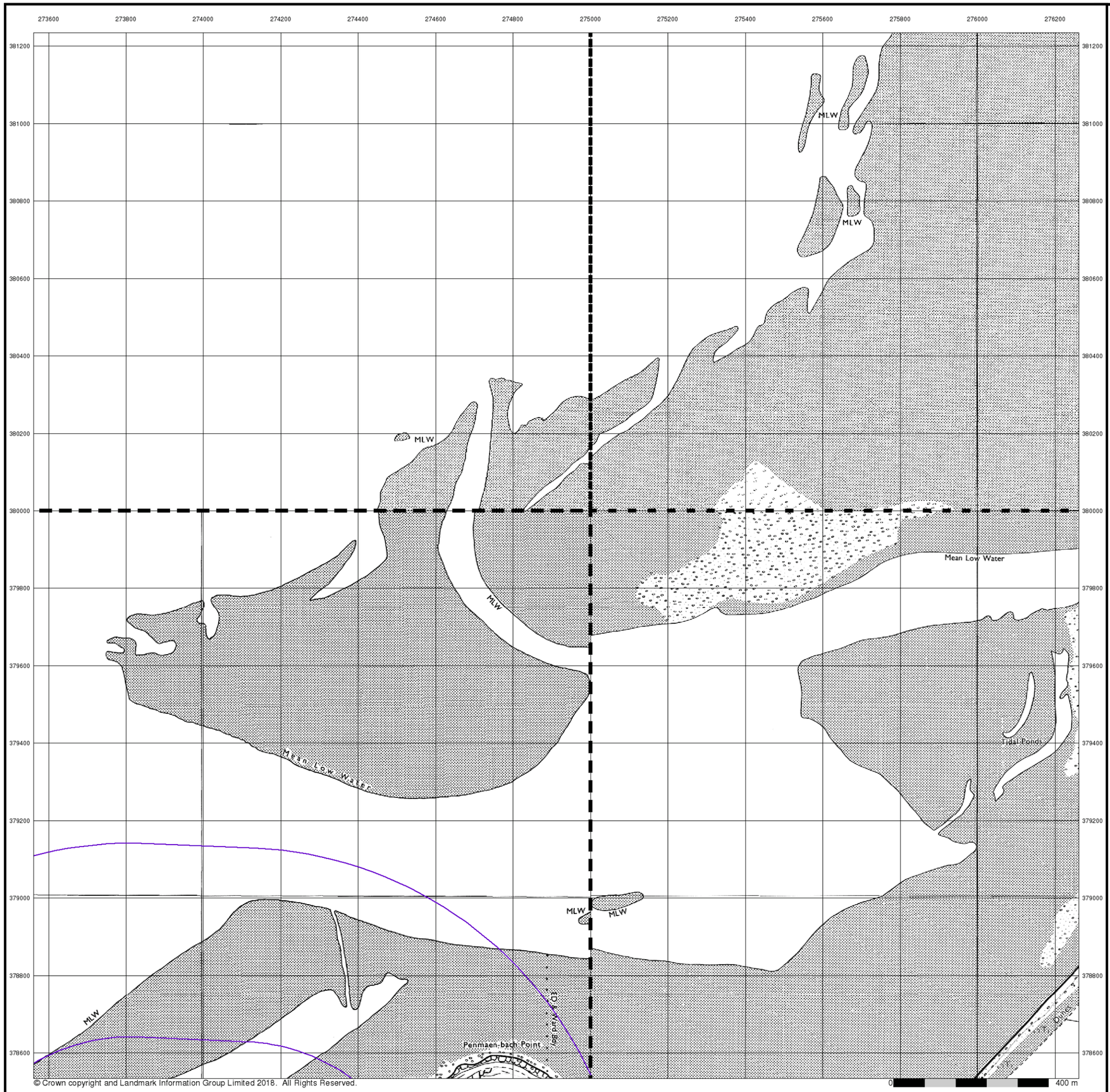
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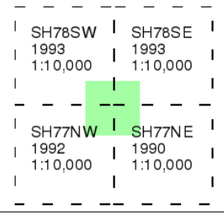
Ordnance Survey Plan

Published 1990 - 1993

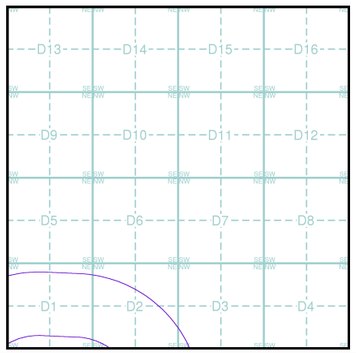
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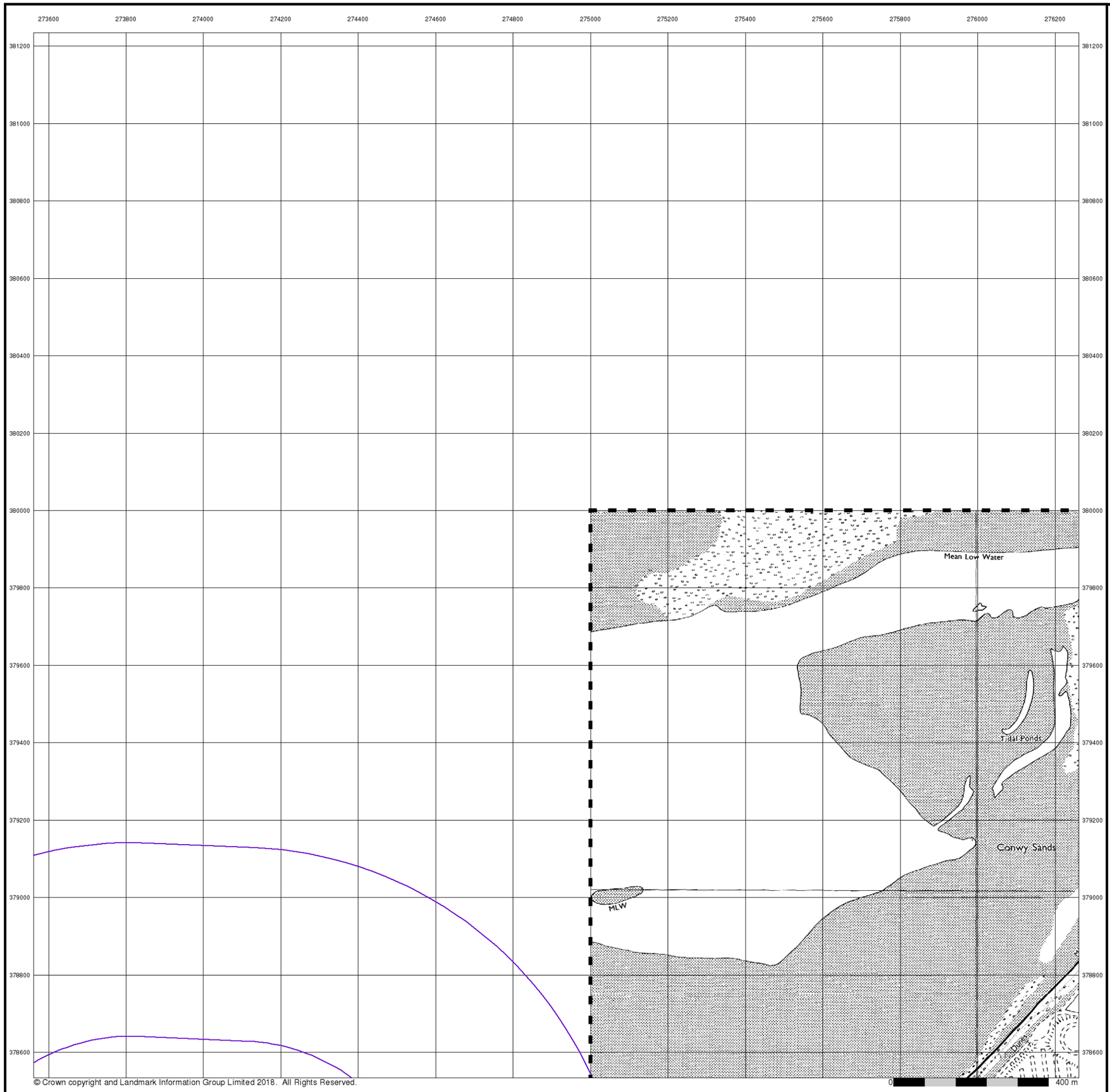
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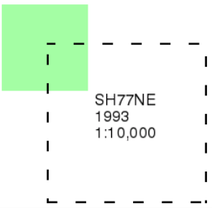
Ordnance Survey Plan

Published 1993

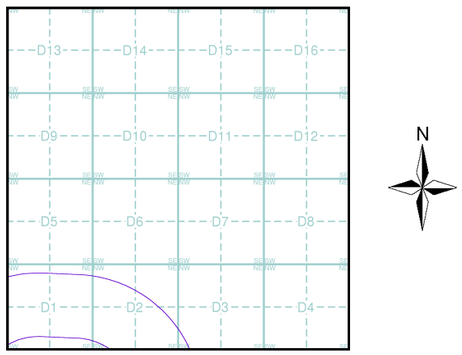
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice D



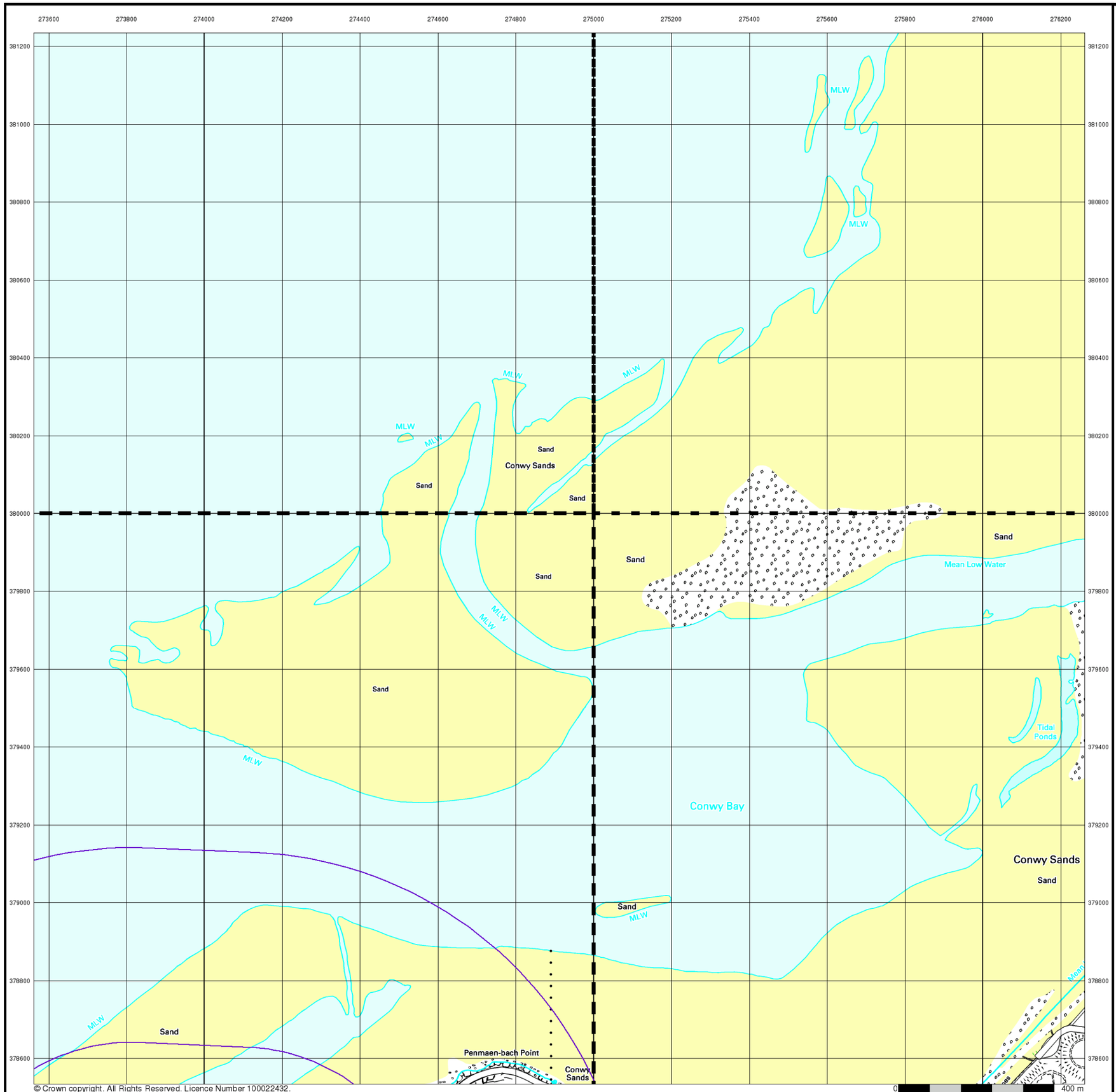
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Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

Site at, Penmaenmawr, Conwy

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RAMBOLL

10k Raster Mapping

Published 2000

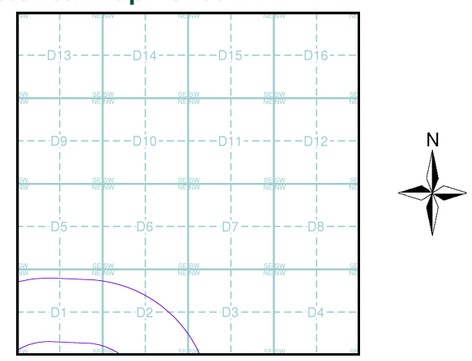
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SH78SW 2000 1:10,000	SH78SE 2000 1:10,000
SH77NW 2000 1:10,000	SH77NE 2000 1:10,000

Historical Map - Slice D



Order Details

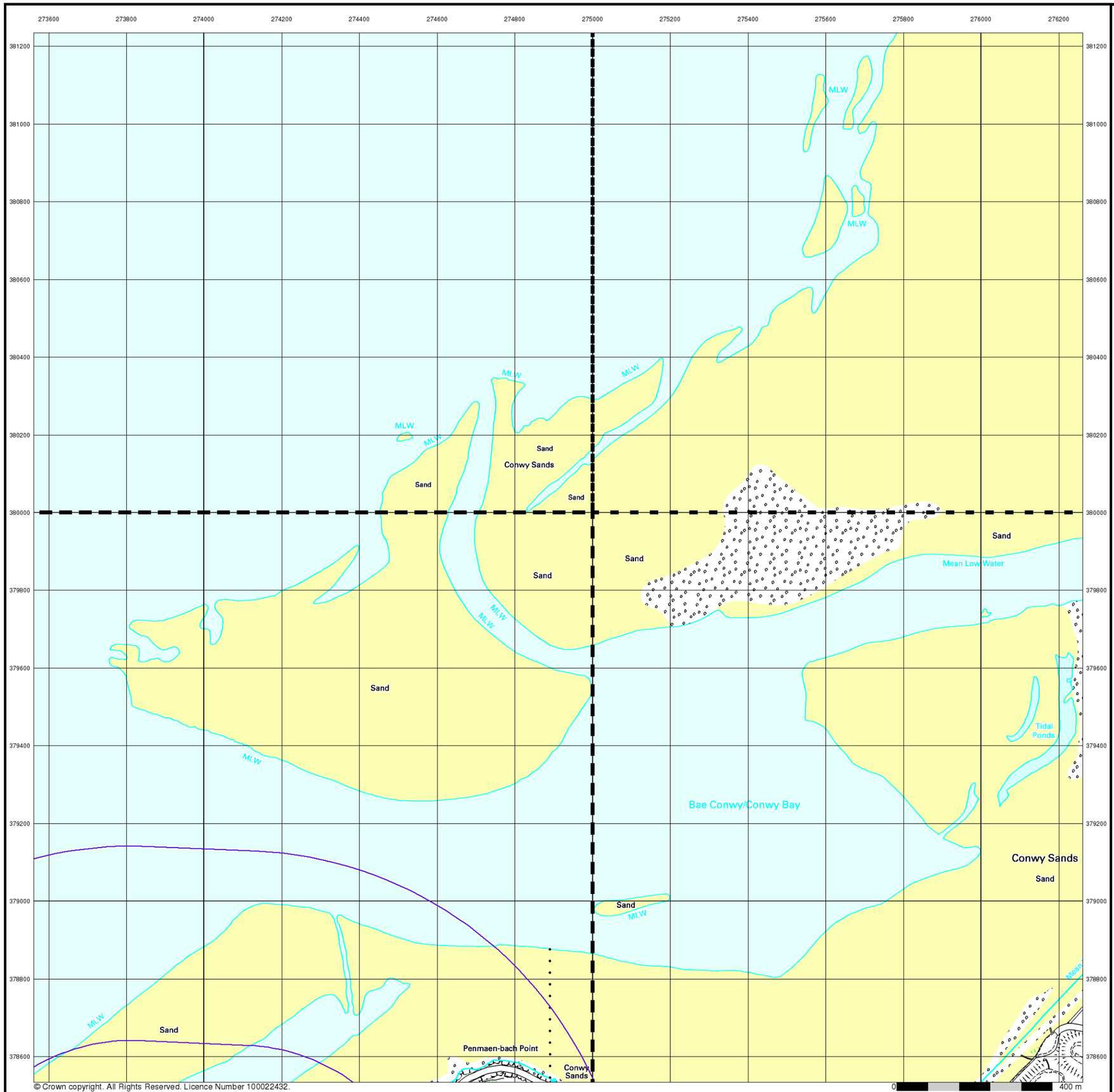
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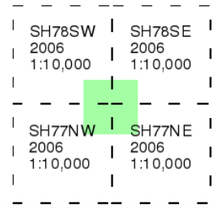
10k Raster Mapping

Published 2006

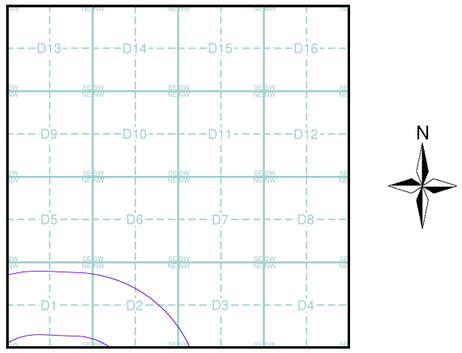
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice D



Order Details

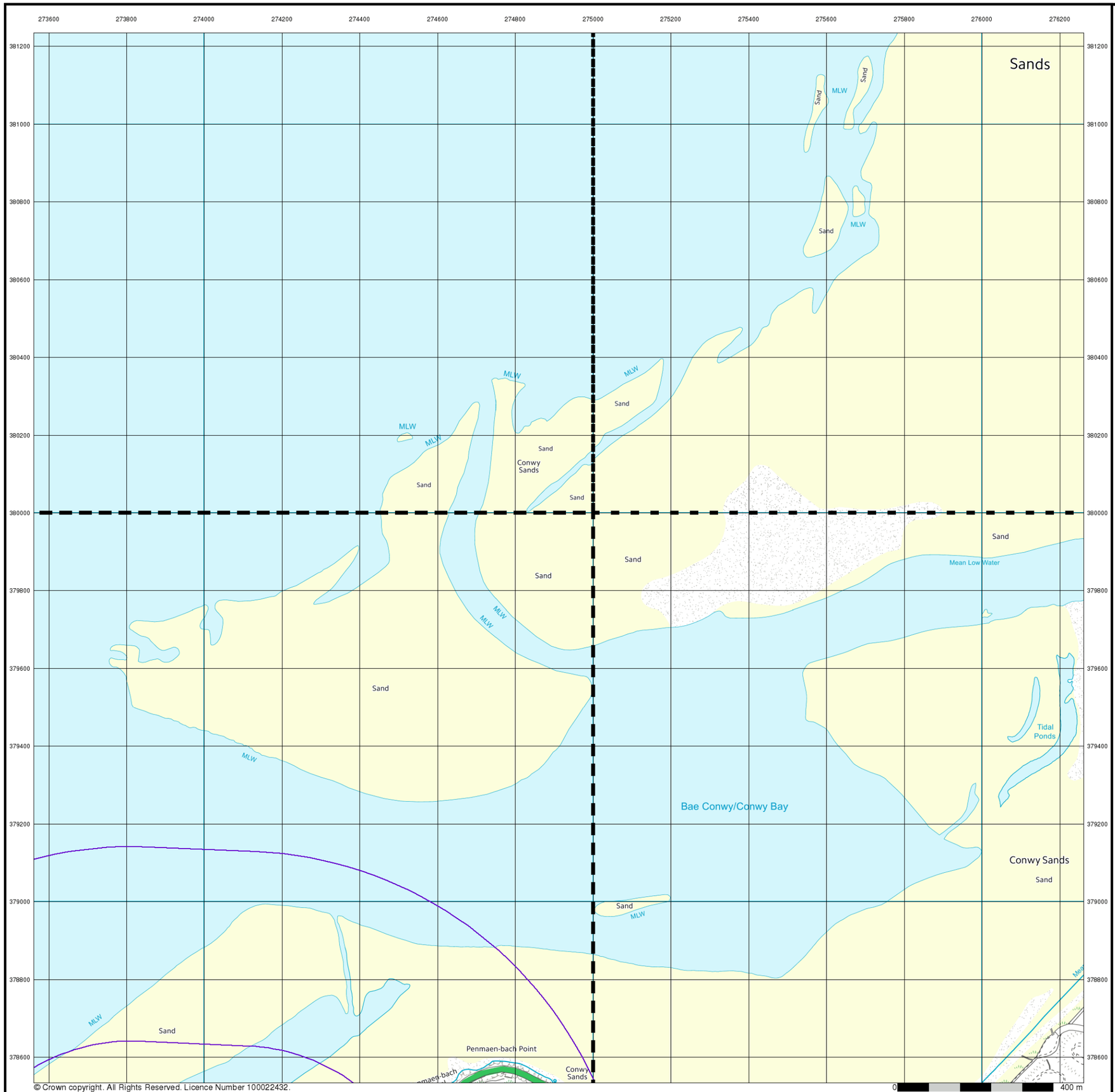
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Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
Slice:	D
Site Area (Ha):	28.4
Search Buffer (m):	1000

Site Details

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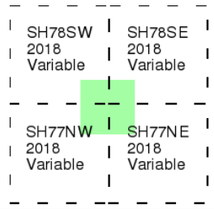
VectorMap Local

Published 2018

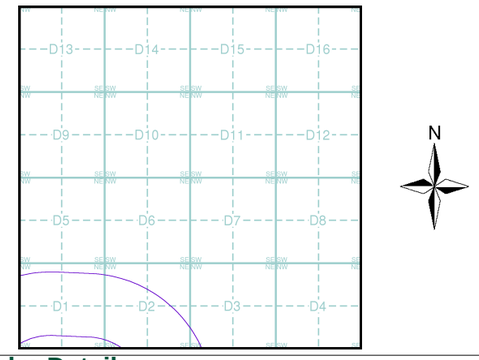
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice D



Order Details

Order Number:	175417398_1_1
Customer Ref:	1620004796 - J16
National Grid Reference:	274170, 378800
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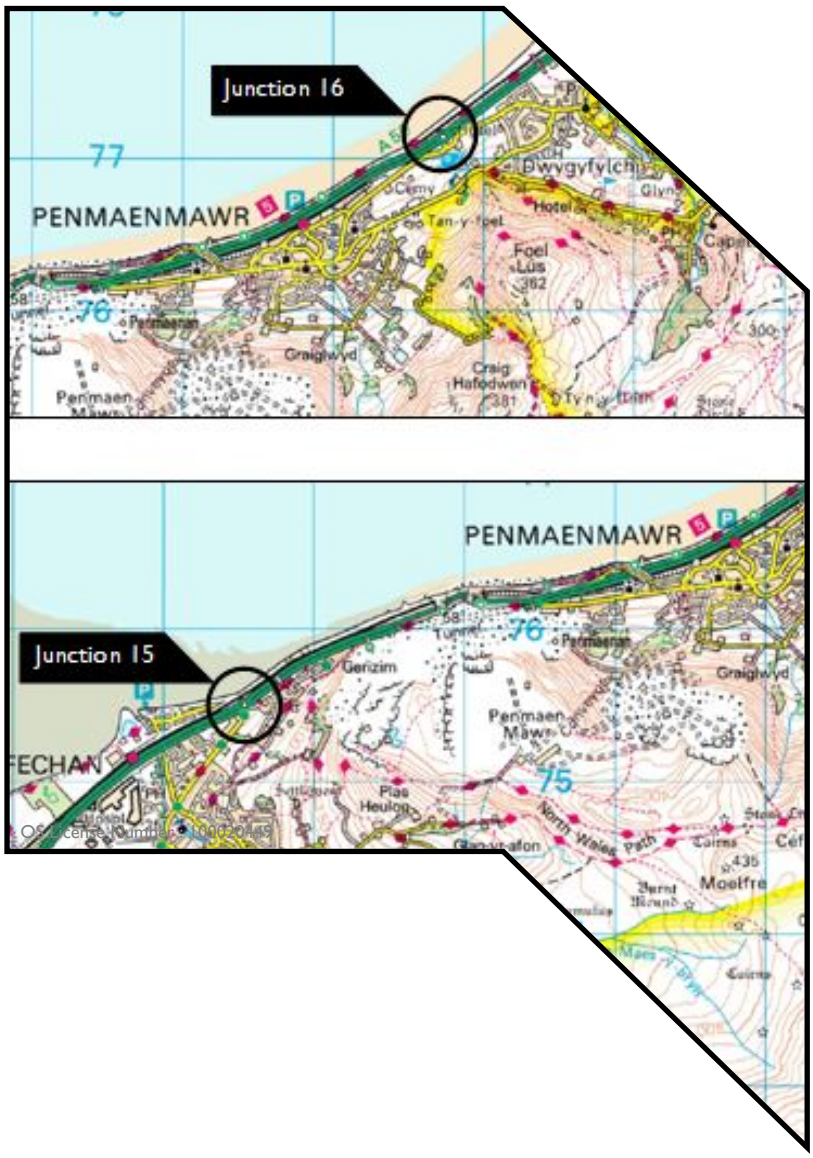
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APPENDIX 6.2
GEOTECHNICS FACTUAL GROUND INVESTIGATION REPORT

GEOTECHNICS

geotechnical and geoenvironmental specialists

Ground Investigation



www.geotechnics.co.uk

A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Factual Report

for
Ramboll UK Limited

Project Number PN193981

November 2019

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Factual Report

A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

for
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Project No:
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November 2019

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1.0 INTRODUCTION

A geotechnical and geo-environmental investigation was undertaken by Geotechnics Limited at the site of proposed highway junction improvement works at Junctions 15 and 16 on the A55 North Wales Expressway. The investigation was carried out to the instructions of Ramboll UK Limited acting in the role of both Engineer and Client. This report describes the work undertaken and presents the data obtained.

2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The investigation comprised cable percussive boreholes, some with rotary cored follow-on, rota-sonic boreholes, dynamic sample boreholes, trial pits and pavement core holes, in situ and laboratory testing and reporting. A Factual Report was also commissioned.

3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 14 of this report. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 15 to aid an understanding of the procedures followed and the context in which the report should be read.

In addition, data in electronic format in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format) are presented separately together with a copy of the report in electronic PDF format.

4.0 THE SITE

4.1 Location

The site is located around Junction 15 (Llanfairfechan) and Junction 16/16A (Penmaenmawr) of the A55 North Wales Expressway. The approximate Ordnance Survey National Grid References for the extents of the work area at each junction are as follows:

Junction 15: 268350, 375400 to 268700, 375600
Junction 16: 272500, 376950 to 274200, 378200

An extract from the relevant 1:50,000 Scale O.S. Map is included as Appendix 1.

4.2 Description

The site comprises the A55 North Wales Expressway dual carriageway and adjacent land around Junctions 15 and 16.

At Junction 15 the A55 lies on an embankment between the village of Llanfairfechan and the Chester to Holyhead railway line.

At Junction 16 the A55 lies on embankment between the villages of Penmaenmawr and Dwygyfylchi. The Chester to Holyhead railway line again lies adjacent to the north-western side of this embankment.

4.3 Site Geology

Reference has been made to the following British Geological Survey maps:

- 1:50,000 map of Llandudno (Sheet 94, Solid and Drift Edition)
- 1:50,000 map of Bangor (Sheet 106, Solid Edition)
  1:25,000 map of Conwy (Sheet SH77/78, Solid and Drift Geology)
- 1:25,000 map of Bethesda and Foel-Fras (Parts of Sheets SH66 and SH67)

- Internet-based Geology of Britain Viewer (http://mapapps.bgs.ac.uk/geologyofbritain/home.html)

At Junction 15 the maps indicate that the site is underlain by drift deposits of Glacial Till (Boulder Clay). Towards the north-eastern end of the Junction 15 site area, a ribbon of Made Ground is indicated a short distance (<50m) to the north-west; this appears to be related to the adjacent railway embankment. Beyond the ribbon of Made Ground Storm Beach Deposits are indicated.

The solid strata underlying the Junction 15 area of the site are shown to comprise rocks of the Nant Ffrancon Subgroup, these being Mudstones, silty mudstones and sandstones of Ordovician age. The conjectured trace of the Aber-Dinlle Fault is shown to pass through the Junction 15 site area, the fault trending roughly south-west to north-east. The strata to the north-west are indicated to be downthrown.

Below the Junction 16 area of the site the drift deposits again generally comprise Glacial Till. However, below the south-westernmost part of this area Made Ground is indicated to be present, this being along the line of the A55 highway and adjacent railway line. Other areas of Made Ground are also indicated on the south-eastern side of the A55 highway towards the south-western end and central part of this area of the site. In addition to the above, local areas of Peat are shown at the north-eastern end of this area, together with a zone of Blown Sand in the central part of this area of the site. Marine Alluvium (clay and silt) is indicated immediately north-west of the railway embankment.

The solid strata underlying the Junction 16 area of the site primarily comprise rocks of the Conwy Rhyolite Formation, part of the Llewelyn Volcanic Group of Ordovician age. At the north-eastern end of this area of the site, an un-named igneous intrusion (Rhyolite) is shown to be present. At the south-western end of this area of the site, Mudtone is indicated to be intercalated with the Conwy Rhyolite Formation. A series of faults are shown to pass through the site as follows:

- An un-named south-east to north-west trending fault, towards the north-eastern end of this area of the site – no downthrow indicated.
- The south-east to north-west trending Capelulo Fault, towards the centre of this area of the site – strata to the north-east are downthrown.
- An un-named north to south trending fault towards the south-western end of the Junction 16 site area – strata to the east are shown to be downthrown.

4.4 Hydrogeology

The British Geological Survey's GeoIndex website, http://mapapps2.bgs.ac.uk/geoindex/home.html, accessed on 26th June 2019, shows the superficial deposits in the vicinity of Junction 15 to be classed as a Secondary (undifferentiated) Aquifer. Immediately to the north-west a change to Secondary A Aquifer is shown. The underlying bedrock at this location is indicated to be classed as a Secondary B Aquifer.

At the Junction 16 area of the site, the superficial deposits are again shown to be classed as a Secondary (undifferentiated) Aquifer, with a Secondary A Aquifer shown immediately to the north. The underlying bedrock at this location is indicated to be classed as a Secondary B Aquifer.

5.0 PROCEDURE

5.1 Commissioning

The work was awarded following submission of a tender for work designed by Ramboll UK Limited for ground investigation of the site in accordance with their requirements.

5.2 General

The procedures followed in this site investigation are based on *BS 5930: 2015 – Code of Practice for Site Investigations* and *BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites*. The soils and rocks encountered have been described in accordance with BS5930:2015 and BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018. The exploratory hole positions are shown on the Exploratory Hole Location Plan in Appendix 14.

The Exploratory Hole locations were specified by Ramboll UK Limited. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a Leica GPS survey device. The depths quoted on the exploratory hole records are in metres below ground level.

At each exploratory hole location with the exception of the trial pits an inspection pit was excavated using hand tools to a depth of 1.20m

below ground level to check for the presence of underground services. Prior to and on completion of the excavation, the location was scanned using a cable avoidance tool (CAT). At certain locations where tarmacadam or concrete was present at ground level, 300mm diameter coring was used to advance the exploratory hole through the tarmacadam/concrete and facilitate the excavation of the inspection pit. Details of the tarmacadam/concrete coring is included on the appropriate exploratory hole records.

5.3 Boreholes

Forty-one (41 No.) boreholes (numbered BH101, BH102, BH104 to BH111, BH107A, BH109A, BH109B, BH114, BH114A, BH114B, BH201 to BH205, BH204A, BH205A, BH205B, BH205C, BH207 to BH210, BH212, BH213, BH216 to BH221, BH216A, BH220A, BH228 and BHWS101) were sunk by Cable Percussion Tool techniques to depths varying between 0.70m and 20.00m below ground level. The work was carried out using a combination of 300mm, 250mm, 200mm and 150mm diameter tools and casing between 13th May and 1st August 2019.

Representative disturbed (D and B) and driven open-tube thin-walled (UT) and thick-walled (U) samples of the soils encountered were obtained at regular intervals. In addition, environmental soil samples (ES) were recovered at the depths indicated on the Borehole Records, presented in Appendix 2.

Photo-ionisation detection (PID) tests were undertaken during the drilling of the boreholes by testing the headspace of the environmental soil samples taken. The tests were carried out using a suitably calibrated MiniRAE 2000 PID Meter fitted with a 10.6eV UV lamp. The results of the PID tests are presented on the Borehole Records with the readings reported as Volatile Organic Compounds (VOCs) recorded in parts per million.

Boreholes BH102, BH104 to BH106, BH109, BH114, BH114B, BH212, BH213, BH216A and BH217 were extended using rotary open-hole rock-roller drilling, rotary symmetrix and/or rotary coring techniques to depths varying between 6.80m and 41.00m below ground level. The rotary drilling/coring commenced through the base of the cable percussion sections of the boreholes, which had been left open and cased to facilitate drilling/coring as instructed by Ramboll UK Limited. This element of the work was carried out during the period between 24th May and 2nd August 2019.

The drilling equipment on this particular contract utilised either air-mist or drilling mud as the flushing medium. The strata descriptions in the open-hole sections of the Borehole Records are the Drilling Foreman's estimate based on sediment and chipping returns in the flushing medium. The rate of penetration is also used as an indicator of the type of material being drilled, particularly where there is loss of flush returns. Definitive classification in terms of geology or degree of disturbance is not usually possible from these sources.

A further two (2 No.) boreholes (numbered BH214 and BH215) were sunk using rota-sonic drilling techniques to depths of 40.50m (BH214) and 19.50m (BH215). This element of the work was carried out between 9th and 18th September 2019. Borehole BH215 was terminated at a depth of 19.50m below ground level after the drilling rods snapped and the core barrel could not be retrieved.

The rota-sonic samples and rotary rock cores were extruded horizontally in transparent liners and placed into suitable core boxes. Photographs of the individual core boxes are included in Appendix 3.

Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. SPT Results Summary Sheets are presented with the Borehole Records in Appendix 2.

Groundwater observations are included on the Borehole Records where appropriate and any rise in water level was recorded over 20 minutes whilst the drilling operations were suspended. It should be noted that the addition of water to the borehole as part of the drilling process may have masked the presence of groundwater in the borehole. Where water was added it has been noted on the Borehole Record.

On completion, standpipes were installed in Boreholes BH101, BH102, BH104, BH105, BH106, BH109, BH110, BH111, BH114B, BH201, BH202, BH204A, BH210, BH212, BH213, BH216A, BH217, BH218, BH219, BH220A, BH221, BH228 (see Section 5.9). The other boreholes were backfilled with bentonite and their inspection pits filled with arisings on completion.

5.4 Trial Pits

Twelve (12 No.) Trial Pits (numbered TP201 to TP208, TP210, TP210A, TP211 and TP212) were excavated to depths varying between 2.40m and

4.20m below ground level using a JCB 3CX excavator on 21st, 22nd and 23rd May and 24th July 2019. This work was supervised on site by a geotechnical / geo-environmental engineer.

The profiles of strata or other features were recorded as excavation proceeded and measurements taken from ground level. Representative samples were taken, where appropriate, for laboratory examination and analysis and in addition, environmental soil samples (ES) were recovered at the depths indicated on the Trial Pit Records. Samples were taken directly from excavated materials deposited at the surface. Groundwater observations and trench stability notes are included on the Trial Pit Records, presented in Appendix 4. Photographs of the Trial Pits are presented in Appendix 5.

5.5 Dynamic Sample Boreholes

Ten (10 No.) Dynamic Sample Boreholes (numbered WS101, WS102, WS201 to WS207 and WS205A) were undertaken at the site to depths varying between 0.08m and 5.45m below ground level. The work was carried out between 30th May and 6th June 2019.

The Dynamic Samples were taken using the super-heavy Dynamic Probe apparatus which drives lined steel tubes into the ground in 1m lengths. Samples are retrieved in the plastic liners from which disturbed (D and B) and environmental soil (ES) sub-samples are taken. The hole is not cased and progress depends on the nature of the strata penetrated.

Photo-ionisation detection (PID) tests were undertaken during the drilling of the boreholes by testing the headspace of the environmental soil samples taken. The tests were carried out using a suitably calibrated MiniRAE 2000 PID Meter fitted with a 10.6eV UV lamp. The results of the PID tests are presented on the Borehole Records with the readings reported as Volatile Organic Compounds (VOCs) recorded in parts per million. The Dynamic Sample Borehole Records are presented in Appendix 6.

Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. SPT Results Summary Sheets are presented with the Borehole Records in Appendix 6.

Groundwater observations are included on the Borehole Records where appropriate and any rise in water level was recorded over 20 minutes whilst drilling operations were suspended.

On completion, standpipes were installed in Boreholes WS201 to WS204, WS205A and WS207 (see Section 5.9). The other boreholes were backfilled with bentonite and their inspection pits filled with arisings on completion.

5.6 Pavement Coring

Eight (8 No.) Pavement Cores (numbered PC101 to PC104 and PC201 to PC204) were carried out using a concrete coring rig to depths varying between 0.32m and 0.39m below ground level. The cores were taken vertically and obtained using a 150mm diameter barrel. The cores were extracted from the core-barrel, photographed and logged.

PAK marker spray was used in order to test for the presence of Polycyclic Aromatic Hydrocarbons (PAHs) which could indicate the presence of carcinogenic coal tar within the composition of the pavement materials.

The white spray was applied to the Pavement Cores and should PAHs be present, then the spray should become light yellow/brown in colour. A clear discoloration would indicate a PAH concentration in excess of 150 parts per million.

The use of the PAK marker spray is referred to on the core photograph sheets, presented in Appendix 7 together with the Pavement Core Records. The PAK results were all negative.

5.7 Dynamic Cone Penetration Tests

Twelve (12 No.) Dynamic Cone Penetration (DCP) Tests were carried out through the Pavement Core Holes and numbered PC101 Test 1, PC101 Test 2, PC102 Test 1, PC102 Test 2, PC103 Test 1, PC103 Test 2, PC104 Test 1, PC201 Test 1, PC202 Test 1, PC203 Test 1, PC204 Test 1 and PC204 Test 2. The tests were commenced at depths of 0.32m to 0.34m below ground level and were performed to give an indication of CBR values at shallow depths to aid pavement design. The test comprises the measurement of increments of penetration of a 60° cone driven into the ground using an 8kg hammer falling a distance of 575mm. The CBR is obtained

from the relationship between the CBR and the DCP readings;

$$Log_{10}(CBR) = 2.48 - 1.057 \times Log_{10}(mm/blow)$$

as defined in Interim Advice Note 73/06 Revision 1 (2009) "Design Guidance for Road Pavement Foundations (Draft HD25)" published by the Highways Agency. The test results are presented in Appendix 8.

5.8 Plate Load Tests

Eleven (11 No.) Plate Load Tests were carried out in Trial Pits TP201 to TP208, TP210, TP211 and TP212 at depths of between 0.25m and 0.50m below ground level. The incremental loading tests were carried out in accordance with *BS 1377-9:1990, Test 4.1* using 300mm diameter plate, in order to determine an equivalent CBR value for the soils underlying the plate. The reaction for the test was provided by a JCB 3CX excavator. The test loads were specified by Ramboll UK Limited and the results are presented in Appendix 9.

5.9 Instrumentation and Monitoring

Long-term monitoring of the gas and groundwater levels was made possible by the installation of standpipes as follows:

Exploratory Hole	Standpipe Slotted Pipe & Filter Zone (m)
BH101	3.00 to 7.00
BH102	3.00 to 5.00
BH104	3.00 to 7.00
BH105	3.00 to 6.00
BH106	5.00 to 10.00
BH109	1.00 to 9.60
BH110	3.00 to 4.40
BH111	0.50 to 2.00
BH114B	6.00 to 12.00
BH201	1.00 to 6.50
BH202	11.00 to 14.70
BH204A	8.00 to 10.00
BH210	5.00 to 8.00
BH212	6.00 to 12.00
BH213	15.00 to 20.00
BH216A	10.00 to 15.00
BH217	3.00 to 8.00
BH218	6.00 to 10.00
BH219	5.00 to 9.00
BH220A	10.00 to 12.70
BH221	1.00 to 6.00
BH228	7.00 to 9.00
WS201	1.50 to 4.50
WS202	1.00 to 3.50
WS203	1.00 to 5.00
WS204	1.00 to 5.00
WS205A	1.00 to 3.00
WS207	1.00 to 5.00

Monitoring of the gas and groundwater levels at the site commenced on 8th July 2019 with further visits on 23rd/24th July, 6th, 14th and 28th August and 17th September 2019.

On each of the monitoring visits a record of the groundwater level in the standpipes was obtained. On 14th August 2019 visit where water was recorded, samples were obtained (where possible) following a purging of three volumes of water in the standpipe. A further visit to obtain water samples was carried out on 14th October 2019.

In addition to the groundwater levels, an interface meter was used to determine if any free-product was present within the standpipes and the following parameters were also measured and recorded in each standpipe using a Geotechnical Instruments Limited GA5000 or Gas Data Limited LMSxi Gas Analyser:-

- Concentrations (% Vol) of CH_4, O_2, CO_2, along with (ppm) H_2S, CO
- Flow Rate
- Differential Pressure
- Barometric Pressure

In addition to the above, an automatic VanEssen Barologger and Levelloggers were installed in the monitoring standpipes in Boreholes BH101, BH102, BH104 and BH114B. These dataloggers were set to record measurements every 15 minutes commencing at 12:00 UTC on 12th July 2019. The data were downloaded during a subsequent visit on 14th October 2019, the levelloggers being returned to their respective standpipes following download to allow continuation of monitoring.

The results of the monitoring are presented in Appendix 10.

6.0 LABORATORY TESTING

6.1 Geotechnical

The laboratory testing schedule was specified by Ramboll UK Limited. Unless otherwise stated, the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365) and

were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Summary Sheets in Appendix 11. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

BS EN ISO 17892-1:2014

137 No. Water Content Determination

BS EN ISO 17892-2:2014

6 No. Bulk Density Determination

BS EN ISO 17892-4:2016

82 No. Particle Size Distribution Determination – Sieving Method

52 No. Particle Size Distribution Determination – Pipette Method

BS EN ISO 17892-5:2017

12 No. Incremental loading oedometer test

BS EN ISO 17892-12:2017

105 No. Liquid and Plastic Limit Determination

BS 1377:1990

Test No.		**Test Description**
Part 4		
3.5	16 No.	Dry Density/Moisture Content relationship determination. Compaction Test - Modified (4.5 kg Hammer).
Part 7		
3	14 No.	Shear Strength Estimation using Laboratory Vane
8	16 No.	Shear Strength Measurement - 100mm diameter (Single Stage) Quick Undrained Triaxial Compression Test

The following testing was carried out at the laboratories of Professional Soils Laboratory Limited (UKAS Accredited Laboratory, Number 4043).

BS 1377 :1990

Test No.		**Test Description**
Part 2		
9.2 & 9.3	5 No.	Mechanical Analysis - Sieving
9.4	5 No.	Mechanical Analysis - Sedimentation
Part 4		
3.5	6 No.	Dry Density/Moisture Content relationship determination. Compaction Test - Modified (4.5 kg Hammer).
Part 7		
8	6 No.	Shear Strength Measurement - 100mm diameter (Single Stage) Quick Undrained Triaxial Compression Test

The following testing was carried out at the laboratories of Structural Soils Limited (UKAS Accredited Laboratory, Number 1774).

BS 1377 :1990

Test No.		**Test Description**
Part 8		
7.1	1 No.	Shear Strength Measurement - Consolidated Undrained Triaxial Compression Test with pore water pressure measurement.

The following testing was carried out at the laboratories of Geolabs Limited (UKAS Accredited Laboratory, Number 1982).

ISRM Testing Methods

1 No. Unconfined Compressive Strength Determination

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory, Number 2139).

1 No. Loss on Ignition

6 No. Organic Matter

BRE Special Digest 1 Suite A

23 No. Suites comprising:-
Soluble Sulphate
pH

BRE Special Digest 1 Suite B

6 No. Suites comprising:-
- Soluble Sulphate
- Acid Soluble Sulphate
- Total Sulphur
- pH

The results of these tests are also presented in Appendix 11.

6.2 Contamination

Selected samples of soil, rock and groundwater were tested at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory No. 2139) for a number of determinands in order to check on potential site contamination. The determinands were specified by Ramboll UK Limited and are detailed on the results sheets in Appendix 12 (soils/rock) and Appendix 13 (groundwater) together with the test result as well as the test method, accreditation and detection limit.

Signed for and on behalf of Geotechnics Limited.

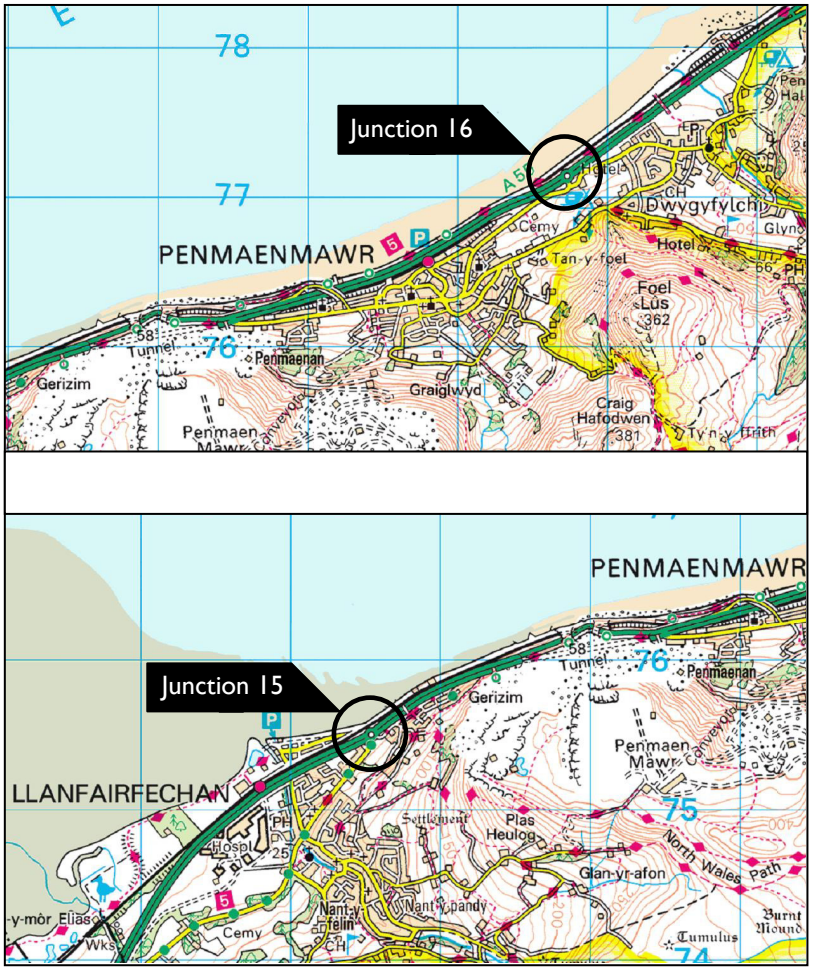
Prepared by: ……
Colin Dodd BSc (Hons), MSc, CEng, MICE
Principal Engineer

Reviewed by: ……...
John Knowles BSc (Hons), PGCE, MSc, CGeol, FGS
Principal Engineer

APPENDIX I

Site Location Plan

SITE LOCATION PLAN



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PN193981

Ground Investigation
at
A55 JUNCTIONS 15 AND 16 IMPROVEMENTS
for
Ramboll UK Limited

GEOTECHNICS
geotechnical and geoenvironmental specialists

APPENDIX 2

Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation



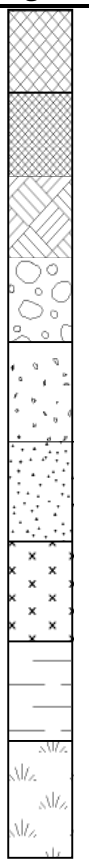
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

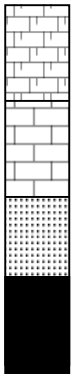
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



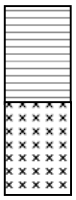
Chalk

Limestone

Sandstone

Coal

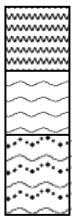
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

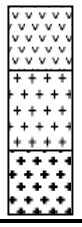


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials



Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

BOREHOLE RECORD – Cable Percussion

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Borehole	BH101
				Project No	PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	268445.0 E 375404.3 N	Ground Level	5.84 m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Level m OD
							G.L.	5.84
0.00- 0.60	B					MADE GROUND: Reddish black sandy slightly clayey angular to subrounded fine to coarse gravel of various lithologies, tarmacadam and concrete. Medium subangular cobble content of various lithologies, tarmacadam and concrete.		
0.20	ES						0.60	5.24
0.50	ES					MADE GROUND: Soft dark brown mottled black slightly sandy gravelly clay with a low cobble content of various lithologies and brick. Gravel is angular to subrounded fine to coarse of various lithologies and brick fragments. Below 1.20m, firm.		
0.60- 1.20	B							
1.00	ES							
1.20- 1.65	B							
1.20- 1.65		(DRY)			C9			
2.00- 2.45	B						2.00	3.84
2.00	ES					Spongy greyish blue clayey pseudofibrous PEAT with many rootlets and wood fragments. Organic odour.		
2.00- 2.45		2.00 (DRY)			C13			
2.80	B							
2.80	D							
2.80	ES							
3.00- 3.45	UT16	3.00 (DRY)						
3.50	D							
4.00- 4.45	B						4.00	1.84
4.00- 4.45		4.00 (3.00)			C25	Medium dense bluish grey gravelly slightly silty fine to coarse SAND with a low subrounded cobble and boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.		
5.00- 5.45	B					At 5.00m, dense, locally grading to very sandy gravel.		
5.00- 5.45		5.00 (3.00)			C48			
6.00- 6.45	B					At 6.00m, very dense.		
6.00- 6.24		6.00 (5.80)			C50/88			
							7.10	-1.26
7.30	B					Very dense grey sandy angular to subangular fine to coarse GRAVEL of various lithologies. Medium cobble and boulder content. At 7.31m, obstruction - possible cobble/boulder.	7.31	-1.47
7.30- 7.31		7.30 (7.00)			C50/7			
						End of Borehole		

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
7.31	0.20	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			28/05/19	08:00
6.00	6.00	3.00	28/05/19	18:00
6.00	6.00	3.00	29/05/19	08:00
7.31	7.30	5.00	29/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
3.00	3.00	2.90	20		Slow inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 7.31m on encountering an obstruction - possible cobble/boulder.
A 50mm standpipe was installed to 7.00m with a geowrapped slotted section from 3.00m to 7.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 7.00m, gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JN

Figure 1 of 2

13/11/2019

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**
Engineer **RAMBOLL UK LIMITED**
Borehole **BH101**
Project No **PN193981**

Client **RAMBOLL UK LIMITED**
National Grid Coordinates **268445.0** E **375404.3** N
Ground Level **5.84** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **Chiselling: 5.80-6.00m for 60 minutes and 7.00-7.10m for 60 minutes and 7.20-7.30m for 60 minutes.**

Logged by **JN**

Figure **2 of 2**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH102** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268443.8** E **375487.1** N Ground Level **4.34** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Level m OD
							G.L.	4.34
						MADE GROUND: Black asphalt.	0.15	4.19
0.20	ES					MADE GROUND: Grey slate waste with pieces of concrete.		
0.50- 0.70	B							
0.50	ES							
						MADE GROUND: Concrete sewer pipe.	0.75	3.59
1.00	ES							
1.10- 1.55	B						1.10	3.24
1.10- 1.55	D					MADE GROUND: Medium dense dark grey gravelly slightly clayey fine to coarse sand. Gravel is angular to subangular fine to coarse of various lithologies, concrete fragments, plastic and metal.		
1.10- 1.55	ES							
1.10- 1.55		(DRY)			C18			
							1.90	2.44
2.00- 2.45	U30	1.80 (DRY)		75		Soft dark grey slightly gravelly CLAY with occasional bands (up to 50mm thick) of brown sandy silt. Gravel is rounded to subrounded fine to coarse of mudstone.	2.10	2.24
2.50	D					Soft fibrous black mottled orange PEAT with frequent small wood fragments. Slight putrid odour.		
							2.90	1.44
3.00- 3.45	B					Loose dark brownish grey slightly gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium of various lithologies.		
3.00- 3.45	D	3.00 (2.90)			S9			
4.00- 4.45	B					Below 4.00m, medium dense. Gravel is fine to coarse. Low subrounded cobble content of various lithologies.		
4.00- 4.45		4.00 (3.00)			C14			
5.00- 5.45	B							
5.00- 5.45		4.80			C11		5.10	-0.76
5.10	D	(3.00)				Soft to firm grey slightly sandy SILT.		
						Loose to medium dense grey fine to coarse SAND.	5.30	-0.96
6.00- 6.45	B					Between 6.00-6.45m, slightly gravelly slightly silty.		
6.00- 6.45	D	6.00 (3.00)			S7			
7.50- 7.95	B							
7.50- 7.95	D	7.50 (3.50)			S16			
						Very soft to soft grey slightly sandy CLAY with occasional pockets of sandy silt.	8.20	-3.86
9.00- 9.45	B			40				
9.00- 9.45	D	9.00 (3.00)			S7			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	TH/JH
13.80	0.25	Cable Percussion	TH/JH
14.60	0.20	Cable Percussion	TH/JH
39.01	0.10	Rotary Core	TH/JH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			21/05/19	08:00
10.95	10.50	3.50	21/05/19	18:00
10.95	10.50	3.00	22/05/19	08:00
14.20	14.20	12.20	22/05/19	18:00
14.20	14.20	2.10	23/05/19	08:00
14.60	14.50	2.50	23/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
2.90	1.90	2.80	20		Slow inflow.

Remarks

Inspection pit hand excavated to 1.20m depth. Concrete sewer pipe encountered between 0.75m and 1.10m.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 5.00m with a geowrapped slotted section from 3.00m to 5.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 5.00m, gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 0.75-1.10m for 30 minutes and 13.70-14.20m for 180 minutes and 14.20-14.60m for

Logged by **MM**

Figure **1 of 4**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **BH102** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268443.8** E **375487.1** N Ground Level **4.34** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50-10.95	B			56					
10.50-10.95	D	10.50 (3.90)			S6				
							11.80		-7.46
12.00-12.45	B					Medium dense brownish grey gravelly slightly clayey fine to coarse SAND with a low subrounded cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
12.00-12.45		12.00 (3.00)			C19				
13.00-13.50	B					Between 13.00-13.50m, locally grading to very sandy clayey gravel.			
13.50-13.85		13.00 (3.00)			C50/ 200	At 13.50m, very dense.			
							14.20		-9.86
14.20-14.60	B					Grey slightly gravelly fine to coarse SAND with a low subrounded cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
							14.60		-10.26

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	Continued by Rotary techniques General	Detail
14.60-15.00 (102mm) (40mins)	14.50 (1.90)	100 0		0	Stiff brown very gravelly CLAY with a medium to high cobble content of limestone. Gravel is angular to subrounded fine to coarse of various lithologies.	
15.00-15.50 (102mm) (55mins)	14.50 (ADDED)	100 0		0		
15.50-16.50 (102mm) (32mins)	14.50 (ADDED)	100 0		0		
16.50-17.25 (102mm) (28mins)	14.50 (ADDED)	100 0		0		
						17.25 -12.91
17.25-17.90 (102mm) (28mins)	14.50 (0.40)	54 0		0	Grey angular to subrounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content of sandstone, dolerite and limestone.	
17.90-18.30 (102mm) (23mins)	14.50 (ADDED)	96 0		0		
18.30-18.70 (102mm) (19mins)	14.50 (ADDED)	65 0		0		
18.70-19.10 (102mm) (24mins)	14.50 (ADDED)	100 0		0		
19.10-20.20 (102mm) (29mins)	14.50 (ADDED)	55 0		0		
					Very stiff brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of	19.50 -15.16

Boring

Depth	Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
14.60	14.50	1.90	28/05/19	08:00
17.25	14.50	1.30	28/05/19	18:00
17.25	14.50	0.40	29/05/19	08:00
31.50	14.50	0.00	29/05/19	18:00
31.50	14.50	0.00	30/05/19	08:00
37.50	14.50	0.00	30/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

180 minutes.
Flush: 14.60-28.50m, Mud, 90% returns; 28.50-38.80m, Mud, 80% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 4**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH102** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268443.8** E **375487.1** N Ground Level **4.34** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						various lithologies.	Below 20.20m, medium to high cobble content.			
20.20-21.40 (102mm) (33mins)	14.50 (ADDED)	34 0		0						
20.20-20.65	14.50 (ADDED)				C37					
								21.30		-16.96
21.40-22.50 (102mm) (20mins)	14.50 (ADDED)	50 0		0		Stiff to very stiff brown slightly sandy slightly gravelly to gravelly CLAY with a low cobble content of limestone. Gravel is subangular to subrounded fine to coarse of various lithologies.				
21.40-21.65		C								
21.40	HV	Strength,kPa=	Av=140		361					
							Below 22.50m, very stiff.			
22.50-24.00 (102mm) (19mins)	14.50 (ADDED)	67 0		0						
22.50-22.95	14.50 (ADDED)				C40					
24.00-25.50 (102mm) (22mins)	14.50 (ADDED)	74 0		0						
							Below 25.50m, mottled grey.			
								25.90		-21.56
25.50-27.00 (102mm) (18mins)	14.50 (ADDED)	94 0		0		Firm becoming stiff to very stiff indistinctly laminated brown slightly gravelly CLAY. Gravel is subrounded fine to coarse of various lithologies.				
25.50-25.95	14.50 (ADDED)				C33					
25.90-26.25		C					Below 26.40m, stiff.			
26.00	HV	Strength,kPa=	Av=65		103					
26.40	HV		Av=118							
27.00-28.50 (102mm) (21mins)	14.50 (ADDED)	88 0		0						
27.00-27.30		C					Below 27.30m, very stiff.			
27.30	HV		Av=140				Below 27.50m, occasional lenses of reddish brown sand.			
27.90-28.20		C								
28.00	HV		Av=140							
								28.50		-24.16
28.50-30.00 (102mm) (4mins)	14.50 (ADDED)	80 0		0		Medium dense brown fine to coarse SAND with bands of soft clay.				
28.50-28.95	14.50 (ADDED)				C19					
								30.00		-25.66

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
37.50	14.50	0.00	31/05/19	08:00
39.01	14.50	0.00	31/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **3 of 4**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH102** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268443.8** E **375487.1** N Ground Level **4.34** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
30.00-31.50 (102mm) (4mins)	14.50 (ADDED)	47 0		0		Brown fine to coarse SAND.		30.00		-25.66
31.50-32.10 (102mm) (24mins)	14.50 (0.00)	50 0		0		Brown very sandy CLAY.		31.50		-27.16
32.10-33.00 (102mm) (18mins)	14.50 (ADDED)	100 0		0		Stiff to very stiff indistinctly laminated brown mottled grey slightly gravelly CLAY with medium to widely spaced lenses of fine sand. Gravel is subangular to subrounded fine to medium of various lithologies.		32.10		-27.76
32.40-32.70		C								
32.50	HV	Strength,kPa=	Av=108	77						
33.00-33.75 (102mm) (21mins)	14.50 (ADDED)	48 0		0						
33.00-33.45	14.50 (ADDED)				C57					
33.75-34.50 (102mm) (18mins)	14.50 (ADDED)	100 0		0		Stiff to very stiff fissured indistinctly laminated brown slightly gravelly CLAY with widely spaced lenses of sand. Gravel is subangular to subrounded of various lithologies.		33.75		-29.41
33.90-34.25		C								
33.90	HV	Strength,kPa=	Av=82	103						
34.50-36.00 (102mm) (23mins)	14.50 (ADDED)	- -		-						
34.40	HV		Av=122							
36.00-37.50 (102mm) (24mins)	14.50 (ADDED)	54 0		0						
36.00-36.45	14.50 (ADDED)				C49					
37.50-38.80 (102mm) (17mins)	14.50 (0.00)	18 0		0		Grey slightly clayey angular to subangular fine to coarse GRAVEL of various lithologies. Medium cobble content.	At 38.80m, very dense.	37.50		-33.16
38.80-39.01	14.50 (ADDED)				C50/60	End of Borehole		39.01		-34.67

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **4 of 4**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268479.9** E **375437.4** N Ground Level **3.97** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		3.97
0.00- 1.00	B					MADE GROUND: Grey angular medium to coarse gravel of slate and brick.			
0.20	ES								
0.50	ES								
1.00- 1.20	B			66			1.00		2.97
1.00	ES					Soft to firm dark grey mottled light grey slightly sandy slightly gravelly CLAY with bands of organic silt and some decayed rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies. Below 1.20m, low to medium cobble content.			
1.20- 1.65	B								
1.20- 1.65		1.20			C10				
1.50	ES	(DRY)							
2.00- 2.45	B		276	12		Below 2.00m, sandy to very sandy.			
				67					
2.00- 2.45	ES	2.00 (DRY)			C13				
2.60	B						2.60		1.37
2.60	D					Very dense grey gravelly slightly silty fine to coarse SAND with a medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
3.00- 3.45	B								
3.00- 3.45		3.00 (2.50)			C56				
4.00- 4.45	B								
4.00- 4.03		4.00 (2.80)			C50/22				
5.00- 5.45	B						5.00		-1.03
5.00- 5.45		5.00 (3.00)			C43	Dense grey slightly sandy slightly silty subangular to subrounded fine to coarse GRAVEL of various lithologies. High cobble and medium boulder content.			
6.00- 6.45	B					At 6.00m, very dense.			
6.00- 6.32		6.00 (3.20)			C50/ 174				
7.20	B						7.20		-3.23
7.20	D					Stiff to very stiff grey slightly sandy gravelly CLAY with a medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
7.50- 7.95	B			13					
7.50- 7.95	D	7.50 (1.00)			S21				
9.00- 9.45	B								
9.00- 9.45	D	9.00 (1.00)			S34				

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
4.50	0.25	Cable Percussion	CC/KD
10.50	0.20	Cable Percussion	CC/KD
20.00	0.10	Rotary Core	TH/JH
30.40	0.12	Rotary Open Hole	TH/JH
41.00	0.10	Rotary Core	TH/JH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			30/05/19	08:00
7.50	7.50	4.00	30/05/19	18:00
7.50	7.50	1.00	31/05/19	08:00
10.50	10.50	1.00	31/05/19	18:00
10.50	10.50	1.00	04/06/19	08:00
13.50	13.50	ADDED	04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
7.50	7.50	1.00	840		Overnight inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 2.60m and 7.20m.
A 50mm standpipe was installed to 7.00m with a geowrapped slotted section from 3.00m to 7.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 7.00m, gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 4.00-4.50m for 120 minutes and 10.49-10.50m for 150 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **1 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **BH104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268479.9** E **375437.4** N Ground Level **3.97** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
10.50-10.95 10.50-10.51	B	10.50 (1.00)			C50/8	**BOULDER of very strong grey limestone.**	10.50		-6.53
Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General / Detail	10.90		-6.93
10.50-11.20 (32mins)	10.50 (1.00)	90 -		-		**Stiff brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.**	11.20		-7.23
11.20-12.00 (25mins)	10.50 (ADDED)	44 -		-		**Grey subangular to subrounded GRAVEL of various lithologies. High cobble content.**	12.20		-8.23
12.00-13.50 (36mins)	10.50 (ADDED)	38 -		-		**Firm to stiff grey slightly sandy gravelly CLAY with a medium cobble content. Gravel is subangular to subrounded medium to coarse of various lithologies.**			
13.50-14.00 (32mins)	13.50 (ADDED)	76 -		-					
13.50-13.95	10.50 (ADDED)				C27				
14.00-15.00 (47mins)	13.50 (ADDED)	85 -		-					
14.40-14.67		C Strength,kPa=		258	(NI)	**Stiff brown slightly sandy gravelly CLAY with a low cobble content. Gravel is angular medium to coarse of mudstone.**	14.55		-10.58
15.00-16.50 (42mins)	13.50 (ADDED)	65 -		-					
15.25-15.40		C				**Between 16.15-16.35m, boulder of limestone.** **Between 16.50-16.65m, boulder of limestone.**	16.65		-12.68
16.50-16.60 (14mins)	13.50 (ADDED)	100 -		-		**Firm greyish brown gravelly CLAY. Gravel is angular medium to coarse of mudstone.**	17.20		-13.23
16.50-16.57	13.50 (ADDED)				C50/55				
16.60-18.00 (29mins)	13.50 (ADDED)	100 -		-		**Stiff dark grey very gravelly CLAY. Gravel is angular fine to coarse of mudstone.**			
17.50-17.75		C							
18.00-19.50 (44mins)	13.50 (ADDED)	100 -		-					
19.20-19.40		C				**Between 19.20-19.40m, locally grading to very sandy clayey gravel.**	19.50		-15.53
19.50-20.00 (40mins)	19.50 (ADDED)	0 0	- -	0	(NI)	**Extremely weak black MUDSTONE. Discontinuities are extremely closely spaced**			
19.50-19.94	13.50 (ADDED)				C147/ 285		20.00		-16.03

Boring

Depth	Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
13.50	13.50	ADDED	05/06/19	08:00
19.50	19.50	ADDED	05/06/19	18:00
19.50	19.50	ADDED	07/06/19	08:00
20.60	19.50	ADDED	07/06/19	18:00
20.60	19.50	ADDED	10/06/19	08:00
21.00	20.40	17.30	10/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Flush: 10.50-11.20m, Mud, 100% returns; 11.20-12.00m, Mud, 60% returns; 12.00-13.50m, Mud, 80% returns; 13.50-18.00m, Mud, 100% returns; 18.00-19.50m, Mud, 90% returns; 19.50-20.00m, Mud, 100% returns; 20.00-20.60m, Mud, 0% returns; 20.60-27.40m, Air/Mist, 0% returns; 27.40-28.15m, Water, 100% returns; 28.15-33.60m, Air/Mist, 0% returns; 33.60-41.00m, Air/Mist, 100% return.

Logged in accordance with BS5930:2015

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BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268479.9** E **375437.4** N Ground Level **3.97** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
						smooth undulating with grey clay infill.		20.00		-16.03
						Strong dark grey MUDSTONE with occasional veins of quartz (Recovered as angular fine to coarse gravel).				
21.10-21.47	21.10 (0.00)	D			S100/ 220					
21.11-22.80		D								
22.80-24.40		D								
24.40-24.80	24.40 (ADDED)	0 0	- -	0						
24.40-24.82	24.40 (ADDED)	D			S100/ 270					
24.41-27.40		D			(NR)					
27.40-28.15	27.40 (11.40)	0 0	- -	0						
27.40-27.79	27.40 (11.40)	D			S100/ 236					
27.41-30.40		D								

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
21.00	20.40	0.00	11/06/19	08:00
27.40	27.40	24.80	11/06/19	18:00
27.40	27.40	11.40	12/06/19	08:00
33.60	32.60	29.70	12/06/19	18:00
33.60	32.60	10.90	13/06/19	08:00
41.00	38.00	38.70	13/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **3 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268479.9** E **375437.4** N Ground Level **3.97** m OD

Drilling | Properties/Sampling | Strata Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
								30.40		**-26.43**
30.40-31.10 (8mins)	**30.40** (ADDED)	**100** **0**	**0.01** **0.01**	**0**		**Extremely weak dark grey MUDSTONE with occasional bands (up to 40mm thick) of quartz and nodules of pyrite. Discontinuities are subvertical, extremely closely spaced, rough, undulating and clean.**				
30.40-30.70	**30.40** (ADDED)	**D**			**S78/ 150**					
31.10-32.60 (12mins)	**30.40** (ADDED)	**87** **0**	**0.01** **0.01**	**0**	**(NI)**					
					(AZCL)					
32.60-33.60 (12mins)	**32.60** (ADDED)	**100** **0**	**0.01** **0.01**	**0**						
32.60-32.82	**32.60** (ADDED)	**D**			**S50/70**					
								33.60		**-29.63**
33.60-34.20 (14mins)	**33.60** (10.90)	**100** **0**	**0.01** **0.01**	**0**		**Weak to medium strong dark grey MUDSTONE with widely spaced bands (up to 40mm thick) of quartz. Discontinuities are subvertical, extremely closely spaced, rough, undulating with occasional clay infill.**				
34.20-35.30 (21mins)	**34.20** (ADDED)	**91** **0**	**0.01** **0.01**	**0**						
35.30-36.80 (21mins)	**35.30** (ADDED)	**90** **0**	**0.01** **0.01**	**0**						
35.30-35.44	**35.30** (ADDED)				**C50/60**					
					(NI)					
36.80-38.00 (22mins)	**36.80** (ADDED)	**83** **0**	**0.01** **0.01**	**0**			**Between 37.20-37.50m, recovered as gravelly clay.**			
38.00-39.50 (24mins)	**38.00** (ADDED)	**66** **0**	**0.01** **0.01**	**0**						
38.00-38.22	**38.00** (ADDED)				**C50/65**					
39.50-41.00 (22mins)	**38.00** (ADDED)	**100** **0**	**0.01** **0.01**	**0**						

Drilling | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **4 of 5**

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BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268479.9** E **375437.4** N Ground Level **3.97** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
								41.00		**-37.03**
41.00-41.15	**38.00 (ADDED)**				**C50/70**	**End of Borehole**				

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **5 of 5**

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BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH105** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268533.7** E **375437.9** N Ground Level **9.75** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		9.75
0.20- 0.50	B					MADE GROUND: Light grey slightly sandy angular to subangular fine to medium gravel of limestone.	0.10		9.65
0.20	ES								
0.50- 1.00	B					MADE GROUND: Brown gravelly fine to coarse sand with a low cobble content. Gravel is subangular to rounded fine to coarse of sandstone and mudstone.	0.50		9.25
0.50	ES								
1.00- 1.20	B					Brown slightly gravelly clayey fine to coarse SAND with a low cobble and boulder content. Gravel is subangular to subrounded fine to medium of rhyolite, sandstone and mudstone. Between 1.00-1.20m, grading to clayey sand and gravel.	1.20		8.55
1.00	ES								
1.20- 1.75	B								
1.20- 1.65		(DRY)			C20				
2.00- 2.45	B			16		Stiff brown slightly sandy slightly gravelly CLAY with a low cobble and boulder content. Gravel is subrounded to rounded fine to coarse of rhyolite, sandstone and mudstone.			
2.00- 2.45		2.00 (DRY)			C27				
3.00- 3.45	B			17					
3.00- 3.45		3.00 (DRY)			C27				
4.00- 4.45	B			15					
4.00- 4.22		4.00 (DRY)			C50/65				
5.00- 5.45	B					Stiff to very stiff grey slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse of rhyolite, sandstone and mudstone.	4.80		4.95
5.00- 5.45		5.00 (DRY)			C66				
6.00- 6.45	B			14					
6.00- 6.45		6.00 (DRY)			C74				
						Below 7.00m, sandy slightly gravelly.			
7.50- 7.95	B			12		Between 7.50-7.95m, grading to slightly gravelly sandy clayey silt.			
7.50- 7.95		7.50 (DRY)			C21				
9.00- 9.45	B								
9.00- 9.45		9.00 (DRY)			C21		9.10		0.65
						Medium dense brown slightly gravelly slightly silty fine to coarse SAND. Gravel is subrounded to rounded fine to coarse of sandstone, siltstone and mudstone.			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	TH/A
12.90	0.22	Cable Percussion	TH/A
21.90	0.10	Rotary Core	TH/A
22.50	0.14	Rotary Open Hole	TH/A
23.80	0.10	Rotary Core	TH/A
24.00	0.14	Rotary Open Hole	TH/A

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			17/07/19	08:00
5.50	5.50	DRY	17/07/19	18:00
5.50	5.50	DRY	18/07/19	08:00
12.90	12.90	WET	18/07/19	18:00
12.90	12.90	6.90	19/07/19	08:00
16.50	12.90	4.70	19/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
9.10	9.00	9.00	20		Slow rise.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 9.10m and 12.90m.
A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 3.00m to 6.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 6.00m, gravel filter up to 3.00m, bentonite seal up to ground level.
Chiselling: 2.80-3.00m for 135 minutes and 3.90-5.00m for 105 minutes and 12.80-12.90m for 120 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 5**

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BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **BH105** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268533.7** E **375437.9** N Ground Level **9.75** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
10.40	D								
10.50-10.95	B			14		Firm brown slightly gravelly sandy CLAY with pockets (up to 75mm) of soft brown silt. Gravel is subrounded to rounded fine to coarse of sandstone, siltstone and mudstone. Below 10.60m, slightly sandy.	10.30		-0.55
10.50-10.95	D	10.50 (WET)			S16				
12.00-12.45	B								
12.00-12.45	D	12.00 (WET)			S8				
12.90	D						12.90		-3.15

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General	Detail	Depth	Legend	Level m OD
12.90-13.50 (102mm) (32mins)	12.90 (6.90)	83 0	- -	0	(NI)	Grey BOULDER of microdiorite with horizontal and subvertical fractures.				
13.50-14.40 (102mm) (47mins)	12.90 (ADDED)	89 0	- -	0	(NI)	Stiff grey slightly sandy slightly gravelly CLAY with a medium cobble content of diorite. Gravel is subangular to subrounded fine to coarse of various lithologies.		14.00		-4.25
14.40-15.00 (102mm) (28mins)	12.90 (ADDED)	100 0	- -	0	(NI)		At 14.70m, boulder of granite.			
15.00-16.50 (102mm) (49mins)	12.90 (ADDED)	100 0	- -	0						
15.10	HV		Av=94		(NI)	Dark grey MUDSTONE (Recovered as clayey angular fine to coarse gravel).		15.40		-5.65
15.35	HV		Av= >130							
15.45	HV		Av=62							
15.52	HV		Av=68							
15.65	HV		Av=94							
15.70	HV		Av=76							
15.87	HV		Av=70							
15.95	HV		Av=108							
16.05	HV		Av=110							
16.11	HV		Av=58							
16.50-18.00 (102mm) (64mins)	12.90 (6.30)	60 0	- -	0	(NI)					
16.50-16.95	12.90 (4.70)				C53					
16.25	HV		Av=110							
18.00-19.50 (102mm) (56mins)	18.00 (ADDED)	67 0	- -	0	(NI)					
19.50-20.30 (102mm) (42mins)	18.00 (ADDED)	0 0	- -	0	(NR)					
19.50-19.95	18.00 (DRY)				C90					

Boring

Depth	Dia	Technique	Crew
25.20	0.10	Rotary Core	TH/A
25.50	0.14	Rotary Open Hole	TH/A
26.60	0.10	Rotary Core	TH/A
27.00	0.14	Rotary Open Hole	TH/A
27.80	0.10	Rotary Core	TH/A
28.50	0.14	Rotary Open Hole	TH/A

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
16.50	12.90	6.30	22/07/19	08:00
21.00	20.00	0.40	22/07/19	18:00
21.00	20.00	3.80	23/07/19	08:00
27.80	27.00	26.20	23/07/19	18:00
27.80	27.00	20.60	24/07/19	08:00
34.50	34.50	34.00	24/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Flush: 12.90-16.50m, Mud, 80% returns; 16.50-18.00m, Mud, 40% returns; 18.00-19.50m, Mud, 60% returns; 19.50-21.00m, Mud, 80% returns; 21.00-40.50m, Air/Mist, 100% return.

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 5**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH105** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268533.7** E **375437.9** N Ground Level **9.75** m OD

Scale 1:50

Drilling: Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Properties/Sampling: Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Strata: Description General	Description Detail	Depth	Legend	Level m OD
20.30-21.00 (102mm) (37mins)	20.00 (ADDED)	100 0	- -	0	(NI)					
21.00-21.90 (102mm) (13mins)	21.00 (3.80)	78 0	- -	0	(NI)					
						Strong dark grey MUDSTONE with widely spaced bands of quartz and nodules of pyrite. Discontinuities are subvertical to inclined (up to 55 deg.), extremely closely spaced, planar, rough to smooth with rare clay infill.		21.90		-12.15
22.50-23.80 (102mm) (28mins)	22.50	100 0	0.01 0.01	0						
22.50-22.56	22.50 (DRY)				(NI) C11*/ 60					
24.00-24.70 (102mm) (12mins)	24.00	0 0	- -	0	(NR)					
24.70-25.20 (102mm) (14mins)	24.60	0 0	- -	0	(NR)					
25.50-26.60 (102mm) (18mins)	25.50	0 0	- -	0	(NR)					
25.50-25.63	25.50 (DRY)				C25*/ 130					
27.00-27.50 (102mm) (14mins)	27.00	70 0	0.01 0.01	0	(NI)					
27.50-28.00 (102mm)	27.50	0 0	- -	0	(NR)					
28.50-28.90 (102mm) (9mins)	28.50 (20.60)	0 0	- -	0	(NR)					
28.50-28.55	28.50 (DRY)				C22*/ 50					
29.00-29.70 (102mm) (16mins)	29.00	0 0	- -	0	(NR)					

Drilling: Depth	Hole Dia	Technique	Crew	Progress: Depth of Hole	Depth Cased	Depth to Water	Date	Time	Groundwater: Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
28.90	0.10	Rotary Core	TH/A	34.50	34.50	28.60	25/07/19	08:00						
29.00	0.14	Rotary Open Hole	TH/A	40.50	39.00	WET	26/07/19	18:00						
29.70	0.10	Rotary Core	TH/A											
30.00	0.14	Rotary Open Hole	TH/A											
30.90	0.10	Rotary Core	TH/A											
31.50	0.14	Rotary Open Hole	TH/A											

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **3 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH105**
Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268533.7** E **375437.9** N Ground Level **9.75** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
30.00-30.90 (102mm) (22mins)	30.00	55 0	0.01 0.01	0	(NI)					
31.50-33.00 (102mm) (34mins)	31.50	66 0	0.01 0.01	0						
31.50-31.57	31.50 (DRY)				C32*/ 65 (NI)					
33.00-33.80 (102mm) (19mins)	33.00	56 0	0.01 0.01	0	(NI)					
34.50-35.80 (102mm) (18mins)	34.50 (28.60)	7 0	0.01 0.01	0	(NI)					
34.50-34.57	34.50 (DRY)				C25*/ 70					
36.00-36.50 (102mm) (9mins)	36.00	0 0	- -	0	(NR)					
36.50-36.80 (102mm) (6mins)	36.50	0 0	- -	0	(NR)					
37.50-39.00 (102mm) (28mins)	37.50	66 0	0.01 0.01	0						
37.50-37.56	37.50 (DRY)				C32*/ 60 (NI)					
39.00-40.50 (102mm) (12mins)	39.00	86 0	0.01 0.01	0	(NI)					

Drilling | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
33.80	0.10	Rotary Core	TH/A											
34.50	0.14	Rotary Open Hole	TH/A											
35.80	0.10	Rotary Core	TH/A											
36.00	0.14	Rotary Open Hole	TH/A											
36.40	0.10	Rotary Core	TH/A											
36.50	0.14	Rotary Open Hole	TH/A											

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **4 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH105** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268533.7** E **375437.9** N Ground Level **9.75** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
						End of Borehole		**40.50**		**-30.75**

Drilling

Depth	Hole Dia	Technique	Crew
36.80	**0.10**	**Rotary Core**	**TH/A**
37.50	**0.14**	**Rotary Open Hole**	**TH/A**
40.50	**0.10**	**Rotary Core**	**TH/A**

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **5 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH106** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268527.5** E **375536.9** N Ground Level **6.41** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		6.41
						MADE GROUND: Dark grey slightly sandy clayey angular fine to coarse gravel of various lithologies. Medium cobble content.			
							0.80		5.61
						MADE GROUND: Grey slightly sandy angular to subangular fine to coarse gravel of slate.			
2.00- 2.45	B					Between 2.00-2.45m, very sandy slightly clayey.			
2.00- 2.45		2.00			C11	Below 2.00m, medium dense.			
							2.70		3.71
3.00- 3.45		3.00 (2.50)			C27	Medium dense brown slightly sandy clayey angular to subangular fine to coarse GRAVEL of various lithologies. Medium cobble content of diorite and rhyolite.			
4.00- 4.45	B					Between 4.00-4.45m, dense sandy and slightly clayey.			
4.00- 4.45		4.00 (3.00)			C33				
5.00- 5.45	B								
5.00- 5.45		5.00 (3.50)			C28				
5.45- 6.50	D								
6.50- 6.95		6.50 (5.00)			C20				
7.70	D						7.70		-1.29
8.00- 8.45	B					Medium dense grey slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to medium of various lithologies.			
8.00- 8.45	D	8.00 (5.00)			S13				
8.45- 9.50	D								
9.50- 9.95	B					At 9.50m, medium dense/dense slightly silty.			
9.50- 9.95	D	9.50 (4.00)			S30				
9.95-11.00	D								

Boring

Depth	Hole Dia	Technique	Crew
2.00		Trial Pit	LP
6.00	0.30	Cable Percussion	MM/TH
14.20	0.25	Cable Percussion	MM/TH
22.55	0.17	Rotary Core	PH/TH
37.60	0.14	Rotary Core	PH/TH
40.50	0.09	Rotary Core	PH/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
2.00			14/06/19	08:00
4.00	4.00	2.50	14/06/19	18:00
4.00	4.00	3.00	17/06/19	08:00
6.00	6.00	3.50	17/06/19	18:00
6.00	6.00	5.00	18/06/19	08:00
8.45	8.00	5.00	18/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
3.00	3.00	2.80	20		Slow inflow.

Remarks

The position was pre-excavated to 2.00m depth using a JCB 3CX due to obstructions.
A 50mm standpipe was installed to 10.00m with a geowrapped slotted section from 5.00m to 10.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 10.00m, gravel filter up to 5.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 2.50-3.00m for 60 minutes and 3.40-4.00m for 50 minutes and 6.80-7.00m for 45 minutes and 11.60-11.90m for 90 minutes and 11.90-12.10m for 45 minutes.
Flush: 14.20-15.00m, Mud, 100% returns; 15.00-15.75m, Mud, 50% returns; 15.75-16.50m, Mud,

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 5**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **BH106** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268527.5** E **375536.9** N Ground Level **6.41** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
10.20	B			20			10.20		-3.79
						Soft grey slightly gravelly sandy CLAY with fragments of organic material and many pockets of peat. Gravel is subangular to subrounded fine to medium of various lithologies.			
11.00-11.31	#	11.00 (4.00)			S50/ 160	At 11.00m, becoming stiff and gravelly. Below 11.10m, pockets of peat absent.			
							12.10		-5.69
						Very stiff brown slightly sandy gravelly CLAY with a medium cobble and boulder content of rhyolite and diorite. Gravel is angular to subrounded fine to coarse of rhyolite, limestone and sandstone. Between 12.50-12.95m, boulder.			
12.50-12.51	#	12.50 (6.00)			S50/5				
12.50-12.95	B								
							14.20		-7.79

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General	Detail
14.20-15.00 (92mm) (52mins)	14.20 (4.30)	56 -	- -	-		Very stiff brown slightly sandy gravelly CLAY with a medium cobble and boulder content of rhyolite and diorite. Gravel is angular to subrounded fine to coarse of rhyolite, limestone and sandstone.	
15.00-15.75 (92mm) (39mins)	14.20 (ADDED)	87 -	- -	-			
15.75-16.50 (92mm) (24mins)	14.20 (ADDED)	53 -	- -	-			
16.50-16.70 (92mm) (14mins)	14.20 (ADDED)	50 -	- -	-			
16.50-16.95	14.20				C31		
16.70-17.70 (92mm) (29mins)	14.20 (ADDED)	70 -	- -	-			
17.70-18.85 (92mm) (38mins)	14.20 (ADDED)	74 -	- -	-			
18.85-19.50 (92mm) (49mins)	14.20 (ADDED)	30 -	- -	-			
19.50-20.25 (92mm) (34mins)	19.10 (2.70)	100 -	- -	-			
19.50-19.73	14.20				C50/75	Stiff to very stiff grey	
19.93-20.10		C					

Boring				Progress					Groundwater					
Depth	Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				8.45	8.00	4.00	19/06/19	08:00						
				11.31	11.00	4.00	19/06/19	18:00						
				11.31	11.00		21/06/19	08:00						
				12.10	12.00		21/06/19	18:00						
				12.10	12.00		03/07/19	08:00						
				13.90	13.90		03/07/19	18:00						

Remarks

80% returns; 16.50-19.50m, Mud, 0% returns; 19.50-21.00m, Mud, 100% returns; 21.00-22.50m, Mud, 80% returns; 22.50-22.90m, Mud, 50% returns; 22.90-27.75m, Mud, 0% returns; 27.75-40.50m, Air/Mist, 100% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 5**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH106** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268527.5** E **375536.9** N Ground Level **6.41** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
						mottled orange and yellow slightly gravelly sandy CLAY, locally grading to silt. Gravel is subangular to rounded fine to coarse of various lithologies.	At 20.20m, boulder of diorite.			
20.25-21.00 (92mm) (22mins) 20.62-20.75	19.10 (ADDED)	100 - C	- -	-						
21.00-22.50 (92mm) (47mins) 21.00-21.30 21.21-21.42 21.82-22.00 22.05-22.30	19.10 (ADDED) 19.10	83 - C C C	- -	-	C50/ 154					
						Stiff black very gravelly CLAY, locally grading to silt. Gravel is angular to subrounded of mudstone.	Below 22.80m, bands of quartz and mudstone.	21.90		-15.49
22.90-24.00 (92mm) (47mins)	22.85 (2.60)	60 -	- -	-						
24.00-24.75 (92mm) (34mins)	22.85 (ADDED)	53 -	- -	-						
								24.75		-18.34
24.75-25.50 (92mm) (52mins)	22.85 (ADDED)	13 -	0.01 0.01	-		Extremely weak dark grey MUDSTONE with widely spaced bands of quartz (up to 30mm). Discontinuities are subvertical to inclined (45 deg.), extremely closely spaced, planar and rough with occasional clay infill.				
25.50-26.25 (92mm) (28mins) 25.50-25.92	22.85 (ADDED) 22.55	50 -	0.01 0.01	-	C50/ 272					
26.25-27.00 (92mm) (37mins)	22.85 (ADDED)	86 -	0.01 0.01	-						
27.00-27.75 (92mm) (32mins)	22.85 (ADDED)	0 -	0.01 0.01	-						
27.75-28.75 (92mm) (13mins) 27.75-28.15	22.85 (0.00) 25.90	0 -	0.01 0.01	-	C50/ 252					
28.75-29.35 (92mm) (9mins)	28.50 (ADDED)	0 -	0.01 0.01	-						

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
13.90	13.90		04/07/19	08:00
14.20	14.20		04/07/19	18:00
14.20	14.20	4.30	09/07/19	08:00
19.50	14.20	0.60	09/07/19	18:00
19.50	19.50	2.70	10/07/19	08:00
22.90	22.55	0.20	10/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **3 of 5**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH106** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268527.5** E **375536.9** N Ground Level **6.41** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
30.00-31.50 (92mm) (19mins)	30.00 (ADDED)	50 -	0.01 0.01	-						
30.00-30.36	30.00				C49/ 212					
31.50-33.00 (92mm) (24mins)	31.50 (ADDED)	86 -	0.01 0.01	-						
					(NI)					
33.00-34.50 (92mm) (30mins)	33.00 (30.00)	86 -	0.01 0.01	-			Below 33.00m, occasional subhorizontal discontinuity.			
33.00-33.06	31.50				C50/60					
34.50-36.00 (92mm) (26mins)	33.00 (ADDED)	80 -	0.01 0.01	-			Below 34.60m, rare nodules of pyrite.			
36.00-37.50 (92mm) (14mins)	36.00 (ADDED)	66 -	0.01 0.01	-						
36.00-36.23	36.00				C50/ 150					
37.50-39.00 (92mm) (19mins)	37.50 (ADDED)	60 -	0.01 0.01	-						
39.00-40.50 (92mm) (17mins)	37.50 (ADDED)	80 -	0.01 0.01	-						

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
22.90	22.55	2.60	11/07/19	08:00
27.75	25.90	0.00	11/07/19	18:00
27.75	25.90	0.00	12/07/19	08:00
33.06	33.00	32.00	12/07/19	18:00
33.06	33.00	30.00	15/07/19	08:00
40.50	37.60	9.70	15/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **4 of 5**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH106** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268527.5** E **375536.9** N Ground Level **6.41** m OD

Scale 1:50

Drilling: Core Run/Depth (Core Dia/Time)	Drilling: Depth Cased & (to Water)	Properties/Sampling: Type TCR/SCR%	Properties/Sampling: Length Max/Min	Properties/Sampling: RQD %	Properties/Sampling: SPT N (FI)	Strata: Description General	Strata: Description Detail	Depth	Legend	Level m OD
						End of Borehole		**40.50**		**-34.09**

Drilling: Depth	Hole Dia	Technique	Crew	Progress: Depth of Hole	Depth Cased	Depth to Water	Date	Time	Groundwater: Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **5 of 5**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH107** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268546.1** E **375349.5** N Ground Level **18.42** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		18.42
0.00- 0.30	B				Grass over TOPSOIL: Brown slightly sandy slightly gravelly clay with a low cobble content. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and limestone. Occasional rootlets.	0.30		18.12
0.20	ES							
0.30- 1.00	B				Soft brown slightly gravelly sandy CLAY with a low cobble and boulder content. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and limestone. At 1.00m, obstruction - probable cobble/boulder.	1.00		17.42
0.50	ES							
1.00	ES				End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.00	0.40	Inspection Pit	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/06/19	08:00
1.00		DRY	04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.00m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The borehole was terminated at a depth of 1.00m on encountering an obstruction - probable cobble/boulder.
Backfill details from base of hole: arisings up to ground level.
Chiselling: 1.00-1.00m for 60 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH107A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268553.6** E **375352.4** N Ground Level **18.97** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		18.97
0.00- 0.30	B					Grass over TOPSOIL: Brown slightly gravelly clayey fine to coarse sand with a low subangular to subrounded cobble content. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, limestone and quartz. Occasional rootlets.	0.30		18.67
0.20	ES								
0.30- 1.20	B								
0.50	ES								
1.00	ES					Firm to stiff brown slightly sandy gravelly CLAY with a medium subangular to subrounded cobble content and a low subangular to subrounded boulder content. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, limestone and quartz.			
1.20- 1.65	B			16					
1.20- 1.65		(DRY)			C23				
2.00- 2.45	B			24			2.00		16.97
2.00- 2.45		2.00 (DRY)			C38	Soft to firm brown slightly sandy gravelly SILT, locally grading to clay, with a medium subangular to subrounded cobble content and a low subangular to subrounded boulder content. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, limestone and quartz.			
3.00- 3.45	B						3.00		15.97
3.00- 3.45		3.00 (DRY)			C34	Firm to stiff brown slightly sandy gravelly CLAY with a medium subangular to subrounded cobble content and a low subangular to subrounded boulder content. Gravel is angular to subangular fine to coarse of mudstone, sandstone and limestone.			
4.00- 4.45	B						4.00		14.97
4.00- 4.45	D	4.00 (DRY)			S21	Stiff to very stiff bluish grey slightly sandy gravelly CLAY with a low to medium subangular to subrounded cobble content. Gravel is angular to subangular fine to coarse of mudstone, sandstone and limestone.			
5.00- 5.39	B			15					
5.00- 5.39		5.00 (DRY)			C50/ 241				
6.00- 6.44	B								
6.00- 6.44		6.00 (DRY)			C50/ 285				
7.50- 7.95	B			18		Between 7.50-7.95m, slightly gravelly.			
7.50- 7.95		7.50 (DRY)			C39				
9.00- 9.45	B								
9.00- 9.45		9.00 (DRY)			C43				

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
7.00	0.20	Cable Percussion	CC/KD
12.51	0.15	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/06/19	08:00
2.00	2.00	DRY	04/06/19	18:00
2.00	2.00	DRY	05/06/19	08:00
10.81	10.50	DRY	05/06/19	18:00
10.81	10.50	DRY	06/06/19	08:00
12.51	10.50	DRY	06/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Borehole terminated at 12.51m depth on encountering an obstruction - possible cobble/boulder or bedrock.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 12.50-12.50m for 60 minutes.

Logged by **JN**

Figure **1 of 2** 13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH107A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268553.6** E **375352.4** N Ground Level **18.97** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50-10.81	**B**								
10.50-10.81		**10.50 (DRY)**			**C50/ 157**				
11.80	**B**								
11.80	**D**						**11.80**		**7.17**
12.00-12.45	**B**					**Stiff to very stiff friable orangish brown sandy gravelly CLAY with a medium subrounded cobble content of mudstone. Gravel is angular to subrounded fine to coarse of mudstone, sandstone and limestone. At 12.51m, obstruction - possible cobble/boulder or bedrock.**			
12.00-12.23	**D**	**10.50 (DRY)**			**S50/82**				
12.50-12.51	**D**	**10.50 (DRY)**			**S50/2**		**12.51**		**6.46**
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH108** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268594.0** E **375462.8** N Ground Level **12.15** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		12.15
0.20	ES					Grass over TOPSOIL: Brown slightly clayey fine to coarse sand with rootlets.			
0.30- 1.20	B						0.30		11.85
0.50	ES					MADE GROUND: Greyish brown very gravelly fine to coarse sand with a medium to high subrounded cobble content of limestone, tarmacadam and brick fragments. Gravel is angular to subrounded fine to coarse of limestone, coal, concrete, glass and brick fragments.	0.80		11.35
1.00- 1.20	B								
1.00	ES								
1.20- 1.65	B								
1.20- 1.65		(DRY)			C20	MADE GROUND: Medium dense greyish brown gravelly slightly clayey fine to coarse sand with a low cobble content of limestone. Gravel is subangular to subrounded fine to coarse of limestone, coal and brick fragments.			
1.80- 2.20	D								
2.20- 2.65	B						2.20		9.95
2.20- 2.65		2.20 (DRY)			C41	Very stiff brown slightly gravelly sandy CLAY with a low cobble content of diorite. Gravel is subangular to rounded fine to medium of mudstone, sandstone and diorite.			
2.65- 3.20	D			7.5					
3.20- 3.64		3.20 (DRY)			C50/ 290				
3.65- 4.20	D								
4.20- 4.65	#					Below 4.20m, medium cobble content.			
4.20- 4.65	B								
						At 5.10m, obstruction - probable cobble/boulder.			
						End of Borehole	5.10		7.05

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PB/LP
3.64	0.20	Cable Percussion	PB/LP
5.10	0.20	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/07/19	08:00
1.80	1.80	DRY	04/07/19	18:00
1.80	1.80	DRY	05/07/19	08:00
3.64	3.20	DRY	05/07/19	18:00
3.64	3.20	DRY	09/07/19	08:00
4.65	4.65	DRY	09/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The borehole was terminated at a depth of 5.10m on encountering an obstruction - probable cobble/boulder.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 1.70-1.80m for 60 minutes and 1.80-2.10m for 105 minutes and 2.60-3.20m for 195 minutes and 3.60-3.90m for 45 minutes and 3.90-4.10m for 195 minutes and 4.10-4.20m for 150 minutes and 4.90-5.10m for 390 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH108** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268594.0** E **375462.8** N Ground Level **12.15** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
4.65	**4.65**	**DRY**	**10/07/19**	**08:00**
5.10	**4.90**	**DRY**	**10/07/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH109** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268584.7** E **375573.7** N Ground Level **7.25** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		7.25
0.00- 0.60	B					MADE GROUND: Dark grey slightly sandy clayey angular fine to coarse gravel of various lithologies. Medium cobble content.			
0.20	ES								
0.50	ES								
0.60- 1.20	B					MADE GROUND: Soft greyish blue slightly sandy gravelly clay with a low cobble and boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.	0.60		6.65
1.00	ES								
1.20- 1.40	B								
1.20- 1.30		1.20 (DRY)			C50/17	** Slightly clayey GRAVEL with high cobble and boulder content. At 1.40m, obstruction - cobble/boulder.	1.40		5.85
2.30- 2.75	D	2.30 (DRY)			S8	Loose light greyish brown slightly sandy angular to subangular fine to medium gravel of various lithologies in SPT split spoon sample between 2.30-2.75m.			
3.80- 4.25	D	3.80 (DRY)			S22	Medium dense light greyish brown slightly sandy slightly clayey angular to subrounded fine to coarse gravel of various lithologies in SPT split spoon sample between 3.80-4.25m.			
4.70- 5.00	D						4.70		2.55
5.00- 5.45	D	5.00 (DRY)			S24	Loose to medium dense dark brown and greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subrounded fine to medium of various lithologies. Below 5.45m, slight organic odour.			
5.45- 6.50	D								
6.50- 6.95	D	6.50 (DRY)			S7	Below 6.50m, slightly silty.			
							7.10		0.15
7.50- 7.95	B					Medium dense grey slightly gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse of various lithologies.			
7.50- 7.95	D	7.50 (DRY)			S13	Between 7.50-7.95m, gravelly, silty. Below 7.95m, low to medium cobble content.			
7.95- 8.70	D								
9.00- 9.34	B					At 9.00m, very dense.			
9.00- 9.37		9.00 (5.00)			C50/ 215				
9.60	D			10			9.60		-2.35
9.60-10.05	UT100	9.60 (6.10)				Stiff greyish brown slightly sandy gravelly CLAY with a medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
1.40	0.25	Cable Percussion	CC/KD
6.95	0.15	Rotary Open Hole	PB/LP
8.70	0.25	Cable Percussion	PB/LP
16.15	0.20	Cable Percussion	PB/LP
17.40	0.15	Cable Percussion	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			23/05/19	08:00
1.40	1.20	DRY	23/05/19	18:00
G.L.			06/06/19	08:00
6.95	6.95	DRY	06/06/19	18:00
6.95	6.95	DRY	10/06/19	08:00
8.70	8.70	DRY	10/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Initially, Borehole BH109 was terminated at a depth of 1.40m on encountering an obstruction - cobble/boulder and the rig was moved to BH109A then BH109B. On encountering an obstruction at the location of BH109B, Client instructed the rig to move back to the location of BH109 and continue borehole by open hole techniques. The hole was taken to 6.95m depth using open hole techniques before a cable percussion rig was used to take the hole to 13.30m depth.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 4**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **BH109** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268584.7** E **375573.7** N Ground Level **7.25** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
10.05-11.10	D			16		Stiff brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies.	10.05		-2.80
11.10-11.45	B								
11.10-11.41		11.10 (4.50)			C50/ 155				
11.45-12.60	D			11					
12.60-12.81	B								
12.60-12.86		12.60 (6.80)			C50/ 135				
13.10-13.55	B						13.10		-5.85
13.10	D					Soft brown slightly sandy slightly gravelly SILT. Gravel is angular fine of diorite and rhyolite.			
13.10-13.55	UTF 100	13.10 (4.90)					13.30		-6.05
13.60-14.03	B					Dense to very dense brown gravelly slightly clayey fine to coarse SAND with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
13.60-14.03		13.60 (6.00)			C50/ 280				
14.03-15.00	D								
15.00-15.45	B								
15.00-15.45		15.00 (6.90)			C40				
15.50-15.95	UT80	15.50 (7.30)				Firm to stiff grey slightly sandy slightly gravelly CLAY with a low to medium cobble content and low boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies.	15.30		-8.05
15.95-17.00	D			26					
17.00-17.32	B								
17.00-17.32	D	17.00 (6.80)			S50/ 170		17.40		-10.15

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General	Detail		
17.40-18.00 (92mm) (90mins)	17.40 (4.30)	58 0	0.02 0.01	0		** LARGE BOULDER of dolerite.			
18.00-18.00	18.00 (ADDED)				C50/0				
18.90-19.60 (92mm) (90mins)	18.90 (7.40)	0 0	0.00 0.00	0		** GRAVEL and COBBLES of dolerite and quartz.		19.00	-11.75
18.90-18.96	18.90 (ADDED)				C50/30				

Boring

Depth	Dia	Technique	Crew
18.00	0.12	Rotary Core	DP/LP
18.90	0.12	Rotary Symmetrix	DP/LP
19.60	0.12	Rotary Core	DP/LP
23.40	0.12	Rotary Symmetrix	DP/LP
31.00	0.12	Rotary Core	DP/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
8.70	8.70	4.20	11/06/19	08:00
11.10	11.10	6.10	11/06/19	18:00
11.10	11.10	4.50	12/06/19	08:00
13.10	13.10	6.80	12/06/19	18:00
13.10	13.10	4.90	13/06/19	08:00
15.95	15.95	7.30	13/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

** Driller's description.
A 50mm standpipe was installed to 9.60m with a geowrapped slotted section from 1.00m to 9.60m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 9.60m, gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 1.30-1.40m for 60 minutes and 9.00-9.60m for 75 minutes and 10.50-11.10m for 75 minutes and 11.10-12.30m for 180 minutes and 12.30-12.60m for 45 minutes and 12.60-13.10m for 135 minutes and 13.70-14.70m for 210 minutes and 14.70-15.00m for 60 minutes and

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **2 of 4**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH109** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268584.7 E 375573.7 N** Ground Level **7.25** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
20.40-20.40	20.40 (ADDED)				C50/0					
21.90-21.93	21.90 (ADDED)				C50/10					
						Medium strong black MUDSTONE. (Recovered as angular fine to medium gravel).		22.90		-15.65
23.40-24.90 (92mm)	23.40 (3.90)	0 0	0.00 0.00	0						
24.90-26.50 (92mm)	24.90 (ADDED)	0 0	0.00 0.00	0						
24.90-24.93	24.90 (ADDED)				(NI) C50/10					
								26.50		-19.25
26.50-28.00 (92mm) (85mins)	26.50 (4.60)	20 0	0.01 0.01	0		Medium strong to strong laminated black MUDSTONE with widely spaced bands (up to 20mm thick) of pyrite and quartz. Discontinuities are subvertical to vertical, closely spaced, smooth and rough, undulating and clean.				
28.00-29.50 (92mm) (75mins)	28.00 (ADDED)	66 30	0.02 0.01	30	(10)					
28.00-28.03	28.00 (ADDED)				C50/15 (NI) (10)		Below 29.00m, discontinuities are subvertical to horizontal, closely spaced, smooth, planar and clean.			
					(NR)					
29.50-31.00 (92mm) (75mins)	28.00 (ADDED)	100 80	0.07 0.01	57	(NI)					

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
15.95	15.95	4.90	14/06/19	08:00
17.32	17.30	7.50	14/06/19	18:00
17.32	17.30	4.60	17/06/19	08:00
17.40	17.40	4.80	17/06/19	18:00
17.40	17.40	4.30	19/06/19	08:00
23.40	23.40	21.90	19/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks AGS **15.10-15.40m for 120 minutes and 15.95-16.80m for 195 minutes and 16.80-17.00m for 45 minutes and 17.00-17.32m for 105 minutes and 17.32-17.40m for 480 minutes.**
Flush: 17.40-19.60m, Air/Mist, 100% returns; 23.40-31.00m, Air/Mist, 100% return.

Logged by **JN**

Figure **3 of 4**
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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH109** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268584.7** E **375573.7** N Ground Level **7.25** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
					(20)					
					(NI)					
					(10)			31.00		-23.75
						End of Borehole				

Drilling | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				23.40	23.40	3.90	20/06/19	08:00						
				26.50	24.90	ADDED	20/06/19	18:00						
				26.50	24.90	4.60	21/06/19	08:00						
				31.00	28.00	ADDED	21/06/19	18:00						

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **4 of 4**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH109A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268585.7** E **375574.0** N Ground Level **7.08** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
						MADE GROUND: Dark grey slightly sandy clayey angular fine to coarse gravel of various lithologies. Medium cobble content.	**G.L.**		**7.08**
						MADE GROUND: Soft greyish blue slightly sandy gravelly clay with a low cobble and boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.	**0.60**		**6.48**
1.20- 1.51		**(DRY)**			**C50/ 155**	**Below 1.20m, stiff.**			
						At 1.51m, obstruction - probable cobble/boulder.	**1.51**		**5.57**
						End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20	**0.40**	**Inspection Pit**	**CC/KD**	**G.L.**			**23/05/19**	**08:00**						**None encountered.**
1.51	**0.25**	**Cable Percussion**	**CC/KD**	**1.51**	**1.20**	**DRY**	**23/05/19**	**18:00**						

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
The borehole was terminated at a depth of 1.51m on encountering an obstruction and the rig was moved to Borehole BH109B.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.

Logged by **JN**

Figure **1 of 1**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH109B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268584.8** E **375573.6** N Ground Level **7.08** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		7.08
0.00- 0.70	B					MADE GROUND: Dark grey slightly sandy clayey angular to subangular fine to coarse gravel of various lithologies. Medium cobble content.			
0.70- 1.20	B						0.70		6.38
1.20- 1.65	B					MADE GROUND: Soft grey mottled orange slightly sandy gravelly clay with a medium cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
1.20- 1.65		1.20 (DRY)			C27	Between 1.20-1.65m. stiff.			
2.00- 2.45	B						2.00		5.08
2.00- 2.01		2.00 (DRY)			C50/3	MADE GROUND: Soft bluish grey slightly sandy gravelly clay with a low boulder content. Gravel is angular to subangular fine to coarse of various lithologies and brick fragments. At 2.20m, obstruction - probable cobble/boulder.	2.20		4.88
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
2.20	0.25	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			24/05/19	08:00
2.20	2.20	DRY	24/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
The Borehole was terminated at a depth of 2.20m on encountering an obstruction - probable cobble/boulder. Rig was moved back to initial position of Borehole BH109.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 2.01-2.20m for 60 minutes.

Logged by **JN**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH110** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268595.2** E **375395.6** N Ground Level **20.53** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		20.53
0.00- 0.30	B					Grass over TOPSOIL: Brown gravelly silty fine to coarse sand with a low subangular cobble content. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, limestone and quartz. Many rootlets.	0.30		20.23
0.20	ES								
0.30- 1.20	B								
0.50	ES								
1.00	ES					Soft brown slightly sandy to sandy gravelly CLAY with a medium cobble content and low boulder content. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, limestone and quartz.			
1.20- 1.65	B			18					
1.20- 1.58		1.20 (DRY)			C50/ 232				
2.00- 2.45	B					Below 2.00m, firm to stiff.			
2.00- 2.17		2.00 (DRY)			C50/97				
3.00- 3.45	B			18					
3.00- 3.17		3.00 (DRY)			C50/90				
4.00- 4.40	B								
4.00- 4.01		4.00 (DRY)			C50/2				
						At 4.40m, obstruction - probable cobble/boulder.	4.40		16.13
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
3.30	0.20	Cable Percussion	CC/KD
4.40	0.15	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			06/06/19	08:00
3.30	3.30	DRY	06/06/19	18:00
3.30	3.30	DRY	07/06/19	08:00
4.40	4.40	DRY	07/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 4.45m on encountering an obstruction - probable cobble/boulder.
A 50mm standpipe was installed to 4.40m with a geowrapped slotted section from 3.00m to 4.40m with upright lockable protective cover. Backfill details from base of hole: gravel filter up to 3.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 1.00-1.00m for 60 minutes and 3.40-3.50m for 60 minutes and 4.10-4.20m for 60

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 2**

13/11/2019

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**
Engineer **RAMBOLL UK LIMITED**
Borehole **BH110**
Project No **PN193981**

Client **RAMBOLL UK LIMITED**
National Grid Coordinates **268595.2** E **375395.6** N
Ground Level **20.53** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **minutes and 4.40-4.40m for 120 minutes.**

Logged by **JN**

Figure **2 of 2**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH111** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268703.1** E **375589.8** N Ground Level **12.31** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		12.31
0.00- 0.20	B					MADE GROUND: Brown slightly gravelly slightly silty fine to coarse sand. Gravel is angular to subangular fine to coarse of various lithologies, ceramic, tin, wood and glass fragments. Many roots and rootlets.	0.20		12.11
0.20- 1.20	B								
0.20	ES								
0.50	D								
0.50	ES								
1.00	ES					MADE GROUND: Brown gravelly slightly clayey fine to coarse sand with a medium subrounded cobble content. Gravel is angular to subrounded fine to coarse of various lithologies, wood and metal fragments. In places grading to very sandy very clayey gravel. Below 0.80m, low boulder content. Gravel includes brick fragments. At 1.20m, medium dense.			
1.20- 1.65	D	(DRY)			S17				
1.60- 1.80	D								
2.00- 2.45	D	(DRY)			S25				
2.00	ES					Soft to firm brown mottled orange slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of mudstone, sandstone and limestone. At 2.45m, obstruction - probable cobble/boulder.	2.00		10.31
							2.45		9.86
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	GM/AL
2.45	0.10	Dynamic Sampler	GM/AL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			10/06/19	08:00
2.45		DRY	10/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 2.45m on encountering an obstruction - probable cobble/boulder.
A 50mm standpipe was installed to 2.00m with a geowrapped slotted section from 0.50m to 2.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 2.00m, gravel filter up to 0.50m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 1**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268419.2** E **375395.8** N Ground Level **6.04** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		6.04
0.20- 0.60	B					MADE GROUND: Black asphalt.			
0.20	ES						0.20		5.84
						MADE GROUND: Grey sandy angular to subangular fine to coarse gravel of limestone (sub base).			
0.60- 1.20	B						0.60		5.44
0.70	ES					MADE GROUND: Greyish brown sandy clayey angular to subangular fine to coarse gravel of limestone and brick fragments. Medium subangular cobble content and low subangular boulder content of limestone and bricks.			
1.00	ES								
1.20- 1.65	B								
1.20- 1.65		(DRY)			C22	Below 1.20m, medium dense.			
2.00- 2.45	B								
2.00	ES								
2.00- 2.45		2.00 (DRY)			C18				
2.70	B						2.70		3.34
2.70	D					Spongy grey mottled black clayey pseudofibrous PEAT with occasional rootlets and wood fragments. Organic odour.			
2.70	ES								
3.00- 3.45	B			56					
3.00- 3.45	D	3.00			S4				
3.00	ES	(DRY)							
4.00- 4.45	B						4.00		2.04
4.00- 4.45		4.00 (3.80)			C26	Medium dense greyish blue gravelly fine to coarse SAND with a high subangular to subrounded cobble content and a medium subangular to subrounded boulder content of mudstone, sandstone, limestone and quartz. Gravel is angular to subangular fine to coarse of various lithologies.			
5.00- 5.45	B					Below 5.00m, dense. Locally very gravelly,			
5.00- 5.45		5.00 (4.00)			C39	slightly silty.			
6.00- 6.45	B						6.02		0.02
6.00- 6.02		6.00 (5.00)			C50/11	Very dense brown and grey very sandy subangular to rounded fine to coarse GRAVEL of various lithologies. Medium subrounded to rounded cobble content.			
						At 6.80m, obstruction - probable cobble/boulder.			
							6.80		-0.76
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
6.02	0.20	Cable Percussion	CC/KD
6.80	0.12	Rotary Open Hole	TH/JH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			11/06/19	08:00
6.02	6.00	5.00	11/06/19	18:00
6.02	6.00		18/06/19	08:00
6.80	6.80		18/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 4.00m and 6.00m.
The Borehole was terminated at a depth of 6.02m on encountering an obstruction - probable cobble/boulder and the rig was moved to the location of BH114A.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 4.80-5.00m for 60 minutes and 5.60-5.70m for 60 minutes and 6.00-6.00m for 180 minutes.

Logged by **JN**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268423.3** E **375396.1** N Ground Level **6.07** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		6.07
						MADE GROUND: Black asphalt.	0.08		5.99
0.30- 0.50	B					MADE GROUND: Greyish brown slightly gravelly slightly clayey fine to coarse sand with a low cobble content. Gravel is angular to subangular fine to coarse of diorite, limestone and brick fragments.	0.50		5.57
0.30	ES								
0.50- 1.00	B								
0.50	ES								
1.00- 1.20	B								
1.00	ES								
1.20- 1.65	B					MADE GROUND: Grey gravelly slightly clayey fine to coarse sand with a medium cobble content. Gravel is angular to subangular fine to coarse of various lithologies. Below 1.20m, loose.			
1.20- 1.65		1.20			C8				
							1.90		4.17
2.00- 2.45	UTF 50	2.00				Soft grey mottled yellow CLAY with many decayed rootlets and bands of peat.			
2.45- 2.60	D			91					
2.50	ES								
2.60- 3.00	B								
3.00- 4.00	B					Below 3.30m, firm.			
3.00- 3.45	D	3.00			S13				
							3.60		2.47
						Grey silty fine to coarse SAND and subangular fine to coarse GRAVEL of various lithologies.			
4.00- 5.00	B						4.00		2.07
4.00- 4.45		4.00			C7	Loose brown very sandy subrounded to rounded fine to coarse GRAVEL of various lithologies with a low cobble content.			
5.00- 6.00	B					Below 5.00m, medium dense.			
5.00- 5.45		5.00			C19				
6.00- 6.23		6.00			C50/75				
						At 6.30m, obstruction - probable cobble/boulder.			
							6.30		-0.23
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	TH/JH
6.30	0.25	Cable Percussion	TH/JH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			19/06/19	08:00
6.30	6.30	3.60	19/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 1.80m and 6.30m.
The Borehole was terminated at a depth of 6.30m on encountering an obstruction - probable cobble/boulder and the rig was moved to BH114B.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 6.00-6.30m for 145 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268422.7** E **375394.4** N Ground Level **6.12** m OD

Scale 1:50

Sampling: Depth	Sample Type	Depth Cased & (to Water)	Properties: Strength kPa	w %	SPT N	Strata: Description	Depth	Legend	Level m OD
							G.L.		6.12
						MADE GROUND: Black asphalt.	0.08		6.04
						MADE GROUND: Greyish brown slightly gravelly slightly clayey fine to coarse sand with a low cobble content. Gravel is angular to subangular fine to coarse of diorite, limestone and brick fragments.	0.50		5.62
						MADE GROUND: Grey gravelly slightly clayey fine to coarse sand with a medium cobble content. Gravel is angular to subangular fine to coarse of various lithologies.	1.90		4.22
						Soft grey mottled yellow CLAY with frequent decayed rootlets and bands of peat.	3.60		2.52
						Grey silty fine to coarse SAND and subangular fine to coarse GRAVEL of various lithologies.	4.00		2.12
						Brown very sandy subrounded to rounded fine to coarse GRAVEL of various lithologies. Low cobble content.			
6.30- 6.75	B								
6.30- 6.75		6.30 (3.00)			C26	**Stiff yellowish brown slightly sandy gravelly CLAY with a medium cobble content of diorite and rhyolite. Gravel is angular to subangular fine to coarse of various lithologies.**	6.30		-0.18
7.50- 7.80	D			9.8					
7.50- 7.77		7.50 (2.90)			C50/ 115				
8.50- 9.00	B					**Stiff brownish grey slightly sandy slightly gravelly CLAY with a low cobble content of diorite. Gravel is angular to subrounded fine to coarse of various lithologies.**	8.30		-2.18
9.00- 9.45		9.00 (5.00)			C27	**Between 9.50-9.95m, band of fine to coarse sand.**			
10.00-10.50	B			12					

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PH/TH
6.20	0.25	Cable Percussion	PH/TH
11.60	0.20	Cable Percussion	PH/TH
30.33	0.12	Rotary Core	PH/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			20/06/19	08:00
6.30	6.30	3.60	20/06/19	18:00
6.30	6.30	2.60	21/06/19	08:00
10.60	10.60	6.20	21/06/19	18:00
10.60	10.60	2.90	24/06/19	08:00
11.60	11.60	11.00	24/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
6.30	6.30	2.60	900		Overnight inflow. Artesian conditions noted
30.00					

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
No sampling above 6.30m as strata is the same as BH114A.
Water was added to assist boring between 3.60m and 6.30m.
A 50mm standpipe was installed to 12.00m with a geowrapped slotted section from 6.00m to 12.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 12.00m, gravel filter up to 6.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 4**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268422.7 E 375394.4 N** Ground Level **6.12** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
10.50-10.64		10.50 (6.00)			C50/60				
11.00-11.50	B								
11.60-11.60		11.60 (11.00)			C50/0		11.60		-5.48
Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %		Continued by Rotary techniques General	Detail		
11.60-13.10 (70mins)	11.60 (3.10)	27 -	- -	-		Stiff grey slightly sandy very gravelly CLAY with a medium cobble and low boulder content. Gravel is angular to subrounded fine to coarse of diorite.	At 11.60m, diorite boulder.		
13.10-13.70 (35mins)	13.10 (2.60)	50 -	- -	-					
13.10-13.23	11.60 (ADDED)				C50/50		Between 13.70-13.80m, band of gravel.		
13.70-15.00 (39mins)	13.10 (ADDED)	54 -	- -	-					
15.00-15.90 (52mins)	13.10 (ADDED)	100 -	- -	-					
15.00-15.45	13.10 (ADDED)				C21		At 15.60m, diorite boulder.		
15.90-16.50	13.10 (ADDED)	100 -	- -	-					
16.50-17.50	13.10 (ADDED)	70 -	- -	-					
17.00	HV		Av=115			Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content of diorite. Gravel is angular fine to medium of diorite.		16.90	-10.78
17.20-17.35		C					Below 17.50m, very gravelly, medium cobble content.		
17.50-18.00	13.10 (ADDED)	80 -	- -	-				18.00	-11.88
18.00-18.40 (32mins)	17.50 (ADDED)	100 -	- -	-		Dense grey slightly sandy angular to subrounded fine to coarse GRAVEL of diorite. Medium cobble content.			
18.00-18.45	13.10 (ADDED)				C50				
18.40-19.00 (22mins)	17.50 (2.90)	66 -	- -	-					
19.00-19.10 (18mins)	17.50 (ADDED)	100 -	- -	-					
19.10-19.50 (14mins)	17.50 (ADDED)	100 -	- -	-		Stiff grey slightly sandy		19.80	-13.68

Boring

Depth	Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
11.60	11.60	3.10	25/06/19	08:00
13.10	11.60	ADDED	25/06/19	18:00
13.10	11.60	2.60	26/06/19	08:00
18.45	17.50	1.00	26/06/19	18:00
18.45	17.50	2.90	27/06/19	08:00
25.50	17.50	4.40	27/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Chiselling: 6.00-6.30m for 120 minutes and 7.80-8.10m for 120 minutes and 9.80-10.00m for 150 minutes and 10.30-10.50m for 90 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 4**

13/11/2019

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268422.7** E **375394.4** N Ground Level **6.12** m OD

Scale 1:50

Drilling: Core Run/Depth (Core Dia/Time)	Drilling: Depth Cased & (to Water)	Properties/Sampling: Type TCR/SCR%	Properties/Sampling: Length Max/Min	Properties/Sampling: RQD %	Properties/Sampling: SPT N	Strata: Description General	Strata: Description Detail	Depth	Legend	Level m OD
						gravelly CLAY with a medium cobble content of diorite. Gravel is angular to rounded fine to coarse of various lithologies.				
19.50-20.50 (36mins)	17.50 (ADDED)	50 -	- -	-			Between 20.30-20.40m, grading to slightly sandy gravelly clayey silt.			
20.30-20.40		C								
20.50-21.90 (46mins)	17.50 (ADDED)	71 -	- -	-						
20.50-20.68	17.50 (ADDED)				C50/75					
21.90-22.90 (38mins)	17.50 (ADDED)	70 -	- -	-						
22.90-24.40 (18mins)	17.50 (ADDED)	70 -	- -	-						
24.00-24.45	17.50 (ADDED)				C42					
24.40-25.50 (37mins)	17.50 (ADDED)	60 -	- -	-						
24.70	HV		Av=150							
25.10-25.30		C								
25.50-27.00 (41mins)	17.50 (ADDED)	66 -	- -	-			Below 25.50m, firm.			
25.50	HV		Av=57							
26.00-26.20		C								
26.30-26.50		C								
27.00-27.90 (58mins)	26.40 (ADDED)	88 -	- -	-			Below 27.10m, bands of soft brown clay.			
27.00-27.45	26.40 (3.00)				C50		At 27.50m, boulder of diorite.			
27.00	HV		Av=70							
27.30	HV		Av=33							
27.55-27.70		C					Below 28.00m, brown, gravelly.			
27.90-28.00 (31mins)	26.40 (ADDED)	100 -	- -	-						
28.00-28.50 (20mins)	26.40 (ADDED)	100 -	- -	-						
28.50-28.90 (30mins)	26.40 (ADDED)	75 -	- -	-						
28.90-29.30 (43mins)	26.40 (ADDED)	100 -	- -	-						

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
25.50	17.50	ADDED	28/06/19	08:00
30.33	26.40	0.00	28/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **3 of 4**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH114B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268422.7** E **375394.4** N Ground Level **6.12** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
29.30-29.70 (26mins)	26.40 (ADDED)	75 -	- -	-						
29.70-30.00 (21mins)	26.40 (ADDED)	33 -	- -	-						
30.00-30.33	26.40 (ADDED)				C67/ 175					
						End of Borehole		30.33		-24.21

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **4 of 4**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH201** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272728.9** E **377089.2** N Ground Level **16.11** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		16.11
0.10- 0.30	B					Vegetation over TOPSOIL: Brown slightly gravelly fine sand with some rootlets.			
0.10- 0.30	D								
0.10- 0.30	ES						0.40		15.71
0.40- 0.60	B					MADE GROUND: Firm brown slightly sandy slightly gravelly clay. Gravel is angular fine to coarse of brick and concrete.			
0.40- 0.60	D						0.70		15.41
0.40- 0.60	ES								
0.70- 1.20	B			10		MADE GROUND: Firm brown slightly sandy to sandy slightly gravelly to gravelly clay with a low cobble content. Gravel is angular fine to coarse of limestone.			
0.70- 1.20	D								
0.70	ES								
1.20- 1.65	D	(DRY)			S25				
1.50	ES					Below 1.20m, stiff.			
2.00- 2.45	B		77	12			2.00		14.11
2.00- 2.45	D	2.00 (DRY)			S41	Stiff to very stiff grey slightly sandy slightly gravelly to gravelly CLAY with a low to medium cobble content. Gravel is subangular fine to coarse of various lithologies.			
2.45- 3.00	D			15					
2.50	D								
2.50	ES								
3.00- 3.11	#	3.00			S50/20	Below 3.00m, very gravelly.			
3.00- 3.11	B	(DRY)							
3.11- 4.00	D								
4.00- 4.45	B					Below 4.00m, with occasional bands of sand.			
4.00- 4.45		4.00 (DRY)			C46				
4.45- 5.00	D								
5.00- 5.50	B								
5.00- 5.45	D	4.70 (2.50)			S29				
5.45- 6.00	D								
6.00- 6.30	UT70	6.00 (5.50)							
6.30- 6.35	D								
						At 6.50m, obstruction - boulder.	6.50		9.61
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PB/LP
6.50	0.20	Cable Percussion	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			25/06/19	21:00
4.45	4.45	DRY	26/06/19	05:00
4.45	4.45	1.40	26/06/19	21:00
6.50	6.50	1.40	27/06/19	05:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
4.45					Overnight inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 6.50m on encountering an obstruction - boulder.
A 50mm standpipe was installed to 6.50m with a geowrapped slotted section from 1.00m to 6.50m with upright lockable protective cover. Backfill details from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 3.10-3.30m for 60 minutes and 6.30-6.50m for 150 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH202** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272771.8** E **377084.4** N Ground Level **19.19** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		19.19
0.20	B					Grass over TOPSOIL: Yellowish brown slightly gravelly clayey fine to coarse sand. Gravel is angular to subrounded fine to medium of various lithologies. Some rootlets.	0.10		19.09
0.20	ES								
0.50	B								
0.50	ES								
						POSSIBLE MADE GROUND: Firm to stiff yellowish brown slightly sandy gravelly clay with a low cobble content. Gravel is angular to subangular fine to coarse of various lithologies.			
1.00	B								
1.00	ES								
1.20- 1.65	D	1.20 (DRY)			S42				
2.00- 2.45	B		45	10		Below 2.00m, slightly gravelly.			
2.00- 2.45	D	2.00 (DRY)			S17				
2.45- 3.00	D			11					
3.00- 3.45	B								
3.00- 3.45	D	3.00 (DRY)			S35				
3.45- 4.00	D								
4.00- 4.45	B						4.00		15.19
4.00- 4.37	D	4.00 (DRY)			S50/ 220	Stiff to very stiff yellowish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to subangular fine to coarse of various lithologies.			
4.45- 5.00	D								
5.00- 5.45	UT37	5.00 (DRY)	109	19					
5.45- 5.60	D			19					
5.60- 6.50	D								
6.50- 6.95	B								
6.50- 6.95	D	6.50 (DRY)			S30				
6.95- 8.00	D			13					
8.00- 8.45	UT100	8.00 (DRY)							
8.45- 8.60	D								
8.60- 9.50	D								
9.50- 9.95	#	9.50 (DRY)			S43				
9.50- 9.95	B								

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
14.75	0.20	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			26/06/19	08:00
3.00	3.00	DRY	26/06/19	18:00
3.00	3.00	DRY	27/06/19	08:00
8.00	8.00	DRY	27/06/19	18:00
8.00	8.00	DRY	28/06/19	08:00
9.95	9.50	DRY	28/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 14.75m on encountering an obstruction - boulder.
A 50mm standpipe was installed to 14.75m with a geowrapped slotted section from 11.00m to 14.70m with upright lockable protective cover. Backfill details from base of hole: gravel filter up to 11.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 1.00-1.20m for 75 minutes and 9.00-9.30m for 70 minutes and 11.40-12.20m for 180 minutes and 13.80-14.00m for 45 minutes and 14.60-14.75m for 90 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH202** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272771.8** E **377084.4** N Ground Level **19.19** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
11.00-11.45	B								
11.00-11.13	D	11.00 (DRY)			S50/20				
11.45-12.50	D								
12.50-12.95	#	12.50			S33				
12.50-12.95	B	(DRY)							
12.95-14.00	D								
14.00-14.45	B					Dense brownish grey sandy angular to subangular fine to coarse GRAVEL of various lithologies. Medium cobble content.	13.80		5.39
14.00-14.45		14.00 (DRY)			C36	At 14.70m, obstruction - boulder.			
						End of Borehole	14.75		4.44

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
9.95	9.50	DRY	01/07/19	08:00
14.75	14.70	DRY	01/07/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH203** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272783.6** E **377155.3** N Ground Level **15.12** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		15.12
0.00- 0.50	B					Grass over TOPSOIL: Brown silty fine to coarse sand with some rootlets.			
0.25	ES						0.20		14.92
0.25			PID=0.0						
0.50- 1.20	B					Brown gravelly silty fine to medium SAND with a low cobble content. Gravel is angular to subrounded of various lithologies.			
0.50	ES								
0.50			PID=0.0						
1.00	ES						1.00		14.12
1.00			PID=0.0			Stiff greyish brown mottled yellow slightly sandy gravelly CLAY with a low to medium cobble content. Gravel is subangular to rounded fine to coarse of various lithologies.			
1.20- 1.65	B			7.7					
1.20- 1.65	D	(DRY)			S24				
1.80	D								
2.00- 2.45	#	1.70			S37				
2.00- 2.45	B	(DRY)		11					
2.80	D								
3.00- 3.45	B								
3.00- 3.45	D	3.00 (DRY)			S10	Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of sandstone, siltstone and mudstone.	3.10		12.02
3.80	D								
4.00- 4.45	UT39	4.00 (DRY)	76	9.7					
							4.40		10.72
4.50	D					Stiff to very stiff grey slightly sandy gravelly CLAY with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
4.80	D								
5.00- 5.45	B								
5.00- 5.45	D	4.70 (3.50)			S47				
6.00	D								
6.50- 6.95	UT89	6.00 (6.20)							
7.00	D								
7.50	D								
8.00- 8.45	B								
8.00- 8.45	D	7.50 (7.80)			S25				
							8.30		6.82
9.00	D					Firm to stiff thinly laminated grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.			
9.50- 9.95	UT76	9.00 (9.30)							
10.00	D						9.80		5.32

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
8.50	0.20	Cable Percussion	SL/JL
13.16	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			13/05/19	08:00
5.00	4.50	DRY	13/05/19	18:00
5.00	4.50	3.50	14/05/19	08:00
13.16	13.10	12.80	14/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
5.00	4.50	3.50	840		Overnight inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring.
PID meter readings were undertaken during boring at depths of 0.25m, 0.50m and 1.00m and the results in ppm are presented above.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 2.30-2.60m for 45 minutes and 7.20-7.30m for 30 minutes and 10.60-10.80m for 35 minutes and 13.00-13.10m for 80 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH203** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272783.6** E **377155.3** N Ground Level **15.12** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
						Stiff grey slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of various lithologies.			
10.50	**D**								
11.00-11.45	**B**								
11.00-11.44	**D**	**10.50 (10.80)**			**S50/ 292**				
						Stiff to very stiff fissured grey slightly gravelly CLAY. Gravel is subrounded to rounded of mudstone.	**11.10**		**4.02**
12.00	**D**								
12.50-12.95	**UT100**	**12.00 (12.30)**					**12.50**		**2.62**
						Stiff to very stiff grey slightly sandy slightly gravelly CLAY with a medium cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
13.00	**D**								
13.10	**D**						**13.10**		**2.02**
13.10-13.16		**13.10 (12.80)**			**C50/35**	**Strong grey MUDSTONE.**	**13.16**		**1.96**
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Borehole	BH204
				Project No	PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	272836.1 E 377184.9 N	Ground Level	15.11 m OD

Sampling | Properties | Strata — Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		15.11
					Grass over TOPSOIL: Brown slightly gravelly fine to coarse sand with some rootlets.	0.20		14.91
					Brown very gravelly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse of various lithologies. At 0.70m, obstruction - boulder.	0.70		14.41
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.70	0.40	Inspection Pit	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			16/05/19	08:00
0.70		DRY	16/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 0.70m depth and no services were found.
The Borehole was terminated at a depth of 0.70m on encountering an obstruction - boulder, and the rig was moved to the location of BH204A.
Backfill details from base of hole: arisings up to ground level.

Logged by LP

Figure 1 of 1
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH204A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272838.3** E **377185.6** N Ground Level **15.02** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		15.02
0.00- 0.50	B					Grass over TOPSOIL: Dark brown slightly gravelly fine to coarse sand. Gravel is angular to			
0.25	ES								
0.25			PID=0.0			subangular fine to coarse of various lithologies.	0.30		14.72
0.50- 1.20	B					Some rootlets.			
0.50	ES								
0.50			PID=0.0			Yellowish brown gravelly slightly clayey fine to coarse SAND with a low cobble content. Gravel is	0.90		14.12
1.00	ES					angular to rounded fine to coarse of various			
1.00			PID=0.0			lithologies.			
1.20- 1.65		(DRY)			C44				
						Stiff to very stiff yellowish brown slightly gravelly sandy CLAY with a low cobble and boulder content. Gravel is angular to rounded fine to coarse of various lithologies.			
2.00- 2.45	B			11					
2.00- 2.24		1.70 (DRY)			C50/ 108				
2.80	D								
3.00- 3.45	#	3.00			S32				
3.00- 3.45	B	(DRY)							
3.80	D								
4.00- 4.45	B								
4.00- 4.45	D	4.00 (DRY)			S27				
4.80	D								
5.00- 5.45	#	4.70			S25				
5.00- 5.45	B	(DRY)							
6.00	D								
6.50- 6.77	#	6.20 (6.10)			S50/ 117				
6.50- 6.95	B								
						Stiff to very stiff laminated grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.	7.00		8.02
7.50	D								
8.00- 8.45	UT89	7.70 (7.00)	146	19					
8.50	D								
9.00	D								
9.50- 9.95	B								
9.50- 9.95	D	9.00 (9.20)			S32				

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
8.00	0.20	Cable Percussion	SL/JL
11.56	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			16/05/19	08:00
5.45	4.70	DRY	16/05/19	18:00
5.45	4.70	3.30	17/05/19	08:00
11.56	11.50	11.20	17/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
5.50	4.70	3.30	840		Overnight inflow.
8.50	7.70	7.90	20		Fast inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
PID meter readings were undertaken during boring at depths of 0.25m, 0.50m and 1.00m and the results in ppm are presented above.
A 50mm standpipe was installed to 10.00m with a geowrapped slotted section from 8.00m to 10.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 10.00m, gravel filter up to 8.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH204A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272838.3** E **377185.6** N Ground Level **15.02** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50	D								
11.00-11.45	B								
11.00-11.45	UTF 100	10.50 (10.80)							
11.50	D								
11.50-11.56		11.50 (11.20)			C50/32	Strong black SLATE.	11.50		3.52
							11.56		3.46
						End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **Chiselling: 1.20-1.60m for 60 minutes and 2.10-2.60m for 80 minutes and 5.80-6.00m for 45 minutes and 6.70-7.10m for 95 minutes and 11.20-11.50m for 90 minutes.**

Logged by **MM**

Figure **2 of 2** 13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH205** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272890.8** E **377207.2** N Ground Level **16.49** m OD

Scale 1:50

Sampling: Depth	Sampling: Sample Type	Sampling: Depth Cased & (to Water)	Properties: Strength kPa	Properties: w %	Strata: Description	Depth	Legend	Level m OD
						G.L.		16.49
					Grass over TOPSOIL: Dark brown slightly gravelly slightly clayey fine to coarse sand with some rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and diorite.	0.20		16.29
					MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse sand with a high cobble content. Gravel is angular medium to coarse of rhyolite. At 0.80m, obstruction - boulder.	0.80		15.69
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.80	0.40	Inspection Pit	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			20/05/19	08:00
0.80		DRY	20/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 0.80m depth and no services were found.
The Borehole was terminated at a depth of 0.80m on encountering an obstruction - boulder, and the rig was moved to the location of BH205A.
Backfill details from base of hole: arisings up to ground level.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH205A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272892.7** E **377207.5** N Ground Level **16.52** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		16.52
					Grass over TOPSOIL: Dark brown slightly gravelly slightly clayey fine to coarse sand with some rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and diorite. Some rootlets.	0.20		16.32
					MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse sand with a high cobble content. Gravel is angular medium to coarse of rhyolite. At 0.80m, obstruction - boulder.	0.80		15.72
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.80	0.40	Inspection Pit	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			20/05/19	08:00
0.80		DRY	20/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 0.80m depth and no services were found.
The Borehole was terminated at a depth of 0.80m on encountering an obstruction - boulder, and the rig was moved to the location of BH205B.
Backfill details from base of hole: arisings up to ground level.

Logged by **MM**

Figure **1 of 1** 13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH205B** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272903.8** E **377210.5** N Ground Level **16.63** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		16.63
0.00- 0.60	B					Grass over TOPSOIL: Dark brown slightly gravelly slightly clayey fine to coarse sand with some rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and diorite.	0.20		16.43
0.25	ES								
0.50	ES								
0.60- 1.20	B					MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse sand with a medium cobble content. Gravel is angular medium to coarse of rhyolite.			
1.00	ES						1.00		15.63
1.20- 1.65	B								
1.20- 1.65		(DRY)			C24	MADE GROUND: Firm to stiff greyish brown slightly sandy slightly gravelly clay with a low cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
1.80	D								
2.00- 2.45	B								
2.00- 2.45		1.70 (DRY)			C42				
						At 2.70m, obstruction - concrete.			
2.70	B						2.70		13.93
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
2.70	0.20	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			20/05/19	08:00
2.45	1.70	DRY	20/05/19	18:00
2.45	1.70	DRY	21/05/19	08:00
2.70	1.70	DRY	21/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 2.70m on encountering an obstruction - concrete, and the rig was moved to the location of BH205C.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 2.70m for 80 minutes.

Logged by **MM**

Figure **1 of 1**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH205C** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272896.4** E **377209.3** N Ground Level **16.46** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		16.46
0.00- 0.80	B					Grass over TOPSOIL: Dark brown slightly clayey fine to coarse sand with some rootlets.			
0.25	ES						0.40		16.06
0.50	ES					MADE GROUND: Grey gravelly slightly clayey fine to coarse sand with a low subrounded to rounded cobble and boulder content. Gravel is angular to rounded fine to coarse of various lithologies.			
0.80- 1.20	B						0.80		15.66
1.00	ES					MADE GROUND: Stiff to very stiff brownish grey slightly gravelly sandy clay with a low angular to subrounded cobble and boulder content. Gravel is angular to subrounded of various lithologies and concrete. Between 1.20-1.65m, locally slightly sandy gravelly.			
1.20- 1.65	B								
1.20- 1.65	D	(DRY)			S30				
1.80	D								
2.00- 2.45	#	1.70			S35	Below 2.00m, very stiff.			
2.00- 2.45	B	(DRY)		10					
2.00	ES								
							2.60		13.86
2.80	D					Very stiff yellow mottled brown slightly sandy slightly gravelly CLAY with a low subrounded boulder content of igneous lithologies. Gravel is subangular to subrounded fine to coarse of various lithologies.			
3.00- 3.45	#	3.00			S32				
3.00- 3.45	B	(DRY)							
3.00	ES								
3.80	D			14					
4.00- 4.45	B								
4.00- 4.45		4.00 (DRY)			C39				
4.80	D								
5.00- 5.45	B					Between 5.00-5.45m, stiff.			
5.00- 5.45		4.70 (DRY)			C26				
6.00	D			9.7		At 6.00m, locally grading to silt.			
6.50- 6.95	UT100	6.00 (DRY)							
7.00	D								
7.50	D								
8.00- 8.45	B								
8.00- 8.45		7.70 (7.90)			S16		8.10		8.36
						Medium dense brown sandy slightly clayey subrounded to rounded fine to coarse GRAVEL of various lithologies.	8.30		8.16
						Very stiff grey slightly gravelly sandy CLAY with a low subrounded cobble content.			
9.00	D								
9.50- 9.95	UT100	9.00 (DRY)							
10.00	D								

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
5.00	0.20	Cable Percussion	SL/JL
13.82	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			21/05/19	08:00
6.00	6.00	DRY	21/05/19	18:00
6.00	6.00	DRY	22/05/19	08:00
13.50	13.50	DRY	22/05/19	18:00
13.50	13.50	6.30	23/05/19	08:00
13.82	13.50	8.20	23/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
8.10	7.70	7.80	20		Slow inflow.
12.00	10.50	10.20	20		Fast inflow.

Remarks

AGS

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 13.82m on encountering an obstruction - probable cobble/boulder.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 2.30-2.50m for 55 minutes and 4.60-4.80m for 80 minutes and 7.10-7.30m for 40 minutes and 8.70-8.90m for 50 minutes and 12.00-12.40m for 75 minutes and 13.40-13.50m for 45 minutes and 13.50-13.70m for 60 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH205C** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272896.4** E **377209.3** N Ground Level **16.46** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50	**D**								
11.00-11.41	**B**								
11.00-11.41	**D**	**10.50 (DRY)**			**S50/ 257**				
12.00	**D**								
						Very dense grey very sandy slightly clayey angular to rounded fine to coarse GRAVEL of various lithologies. Low subrounded cobble content.	**12.00**		**4.46**
12.50-12.90	**B**								
12.50-12.90	**D**	**12.00 (10.20)**			**S50/ 252**				
						Stiff dark grey slightly sandy slightly gravelly CLAY with a low subrounded cobble and boulder content. Gravel is angular to subrounded fine to coarse of various lithologies. At 13.82m, obstruction - probable cobble/boulder.	**13.30**		**3.16**
13.70-13.82		**13.50 (8.20)**			**C50/53**		**13.82**		**2.64**
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH207** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273115.4** E **377393.3** N Ground Level **13.96** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		13.96
0.00- 0.50	B					Grass over TOPSOIL: Brown slightly gravelly clayey fine to coarse sand with a low subrounded cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Many rootlets.	0.20		13.76
0.25	ES								
0.50- 1.20	B						0.50		13.46
0.50	ES								
						Brown slightly gravelly clayey fine to coarse SAND with a low subrounded cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
1.00	ES								
1.20- 1.61	#	(DRY)			S50/ 264				
1.20- 1.61	B					Stiff brownish orange slightly sandy slightly gravelly CLAY with a low subrounded cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies. Occasional roots and wood fragments.			
1.80	D								
2.00- 2.45	B			15					
2.00- 2.45	D	1.80			S22				
2.00	ES	(DRY)							
							2.70		11.26
2.80	D					Stiff to very stiff grey slightly sandy gravelly CLAY with a low subangular to subrounded cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
3.00- 3.45	UT100	3.00 (DRY)		11					
3.50	D								
3.80	D								
4.00- 4.45	#	4.00			S23				
4.00- 4.45	B	(DRY)							
4.80	D								
5.00- 5.45	UT100	4.70 (DRY)							
5.50	D								
6.00	D								
6.50- 6.95	B								
6.50- 6.95	D	6.00 (DRY)			S43				
7.50	D					Below 7.70m, laminated, mottled brown.			
8.00- 8.45	UT100	7.70 (DRY)							
8.50	D								
9.00	D								
9.50- 9.95	#	9.00			S46				
9.50- 9.95	B	(DRY)							

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
8.00	0.20	Cable Percussion	SL/JL
11.91	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			24/05/19	08:00
10.00	10.00	DRY	24/05/19	18:00
10.00	10.00	4.00	28/05/19	08:00
11.91	11.80	3.40	28/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
11.30	10.50	6.50	20		Fast inflow.
11.80	11.80				Artesian.

Remarks AGS

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 11.91m within cobbles/possible diorite bedrock.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 1.40-1.60m for 50 minutes and 7.20-7.50m for 60 minutes and 10.00-10.40m for 60 minutes and 11.70-11.80m for 75 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH207** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273115.4** E **377393.3** N Ground Level **13.96** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50	D								
11.00-11.45	UT100	10.50 (10.90)				Grey gravelly slightly clayey fine to coarse SAND with a low subrounded cobble content. Gravel is angular to subrounded of various lithologies.	11.00		2.96
11.50	D					Grey slightly silty fine to coarse SAND.	11.30		2.66
11.80	B						11.80		2.16
11.80-11.91		11.80 (3.40)			C50/58	Black COBBLES of diorite (Possible bedrock).	11.91		2.05
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH208** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273222.2** E **377458.2** N Ground Level **15.87** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		15.87
						MADE GROUND: Black asphalt.	0.15		15.72
0.20	B					MADE GROUND: Grey slightly sandy angular to subangular fine to coarse gravel of limestone. (Sub base)	0.40		15.47
0.20	D								
0.20	ES								
0.50	B								
0.50	D								
0.50	ES								
1.00	B					Very stiff brown sandy gravelly CLAY with a high subrounded cobble content and a medium subrounded boulder content. Gravel is angular to subangular of various lithologies.			
1.00	D								
1.00	ES								
1.20- 1.65	B								
1.20- 1.65	D	1.20 (DRY)			S46				
2.00- 2.45	B			11		Between 2.00-2.45m, stiff.			
2.00- 2.45	D	2.00 (1.80)			S29				
3.00- 3.45	B								
3.00- 3.45	D	3.00 (DRY)			S35				
3.45- 3.90	D								
						End of Borehole	3.90		11.97

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
3.90	0.20	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			05/06/19	08:00
1.40	1.20	DRY	05/06/19	18:00
1.40	1.20	DRY	06/06/19	08:00
1.70	1.70	DRY	06/06/19	18:00
1.70	1.70	DRY	07/06/19	08:00
2.00	2.00	DRY	07/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 1.20m and 3.90m.
The Borehole was terminated at a depth of 3.90m due to boulder obstructions forcing casing off line.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 1.20-1.25m for 45 minutes and 1.25-1.30m for 60 minutes and 1.30-1.30m for 60 minutes and 1.40-1.65m for 120 minutes and 1.65-1.70m for 60 minutes and 1.70-1.75m for 60

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 2** 13/11/2019

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH208** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273222.2** E **377458.2** N Ground Level **15.87** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
2.00	**2.00**	**DRY**	**10/06/19**	**08:00**
3.90	**3.90**	**DRY**	**10/06/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **minutes and 1.75-1.85m for 60 minutes and 1.85-1.90m for 60 minutes and 1.90-2.00m for 60 minutes.**

Logged by **JN**

Figure **2 of 2**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH209** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273286.8** E **377527.8** N Ground Level **13.33** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		13.33
0.20	B					Grass over TOPSOIL: Brown gravelly slightly clayey fine to coarse sand with a low subrounded cobble content of various lithologies. Gravel is subangular to subrounded fine to coarse of various lithologies. Occasional rootlets.			
0.20	D								
0.20	ES						0.50		12.83
0.50	B					MADE GROUND: Brown very gravelly slightly clayey fine to coarse sand with a medium subangular cobble content and low boulder content of various lithologies. Gravel is angular to subrounded fine to coarse of various lithologies.			
0.50	D						0.75		12.58
0.50	ES								
1.00	B								
1.00	D								
1.00	ES								
1.20- 1.65	B			18					
1.20- 1.65	D	(DRY)			S4				
1.65- 2.00	D					MADE GROUND: Soft orange mottled bluish grey slightly sandy gravelly clay with a low subangular to subrounded cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
2.00- 2.45	UTF	2.00							
	12	(DRY)							
2.45- 3.00	D						2.50		10.83
						Soft bluish grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of various lithologies.			
3.00- 3.45	B		227	9.4					
				15					
3.00- 3.45	D	3.00			S6				
		(DRY)							
4.00- 4.45	UT27	4.00							
		(DRY)							
4.45- 4.60	D								
							4.90		8.43
4.90	D					Very stiff grey slightly sandy gravelly CLAY with a medium cobble and low boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.			
5.00- 5.28	#	5.00			S50/				
		(4.00)			132				
5.80- 6.00	B								
						End of Borehole	6.00		7.33

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
5.00	0.30	Cable Percussion	MM/TH
6.00	0.20	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			24/05/19	08:00
4.90	4.90	DRY	24/05/19	18:00
4.90	4.90	2.00	29/05/19	08:00
5.80	5.80	4.00	29/05/19	18:00
5.80	5.80		04/06/19	08:00
6.00	5.80		04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
5.80					Artesian inflow overnight.
6.00	6.00				Artesian inflow to 2.00m above GL.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 6.00m due to artesian water conditions in the borehole with 2m head of water.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 3.90-6.00m for 45 minutes and 5.20-5.80m for 150 minutes and 5.40-5.90m for 75 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JN**

Figure **1 of 1**

13/11/2019

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH210** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273605.7** E **377753.5** N Ground Level **6.63** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		6.63
0.00- 0.50	B					Grass over TOPSOIL: Firm brown slightly gravelly sandy clay with some rootlets. Gravel is angular to subrounded fine to medium of sandstone, siltstone and slate.	0.30		6.33
0.25	ES								
0.50- 1.20	B			29		MADE GROUND: Firm brown slightly gravelly sandy clay with a low cobble content. Gravel is angular to subrounded fine to medium of sandstone, siltstone and slate. Some rootlets.			
0.50	ES								
1.00	ES								
1.20- 1.65	B		312	10		Below 0.50m, soft.			
				32		Below 1.20m, very soft.			
1.20- 1.65	D	(DRY)			S1		1.50		5.13
1.80	D					MADE GROUND: Very soft to soft brown mottled grey slightly sandy gravelly clay with a low cobble content and pockets of peat. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone and mudstone.			
2.00- 2.45	UT10	1.70 (1.80)	HV=11	41					
2.50	D			41					
2.80	D								
3.00- 3.45	B								
3.00- 3.45	D	3.00 (2.60)			S6				
							3.60		3.03
3.80	D					Brown slightly sandy gravelly SILT with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
4.00- 4.45	#	4.00			S12				
4.00- 4.45	B	(3.80)							
							4.30		2.33
						Firm brown slightly sandy gravelly CLAY with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
4.80	D			21			4.80		1.83
5.00- 5.45	UT43	4.70 (DRY)	HV=67	20		Firm laminated brown slightly sandy CLAY.			
5.50	D					Below 5.70m, grey mottled brown.			
6.00	D								
6.50- 6.95	#	6.20			S9		6.50		0.13
6.50- 6.95	B	(DRY)				Loose bluish grey gravelly slightly silty fine to coarse SAND with pockets of clay. Gravel is subangular to subrounded fine to coarse of various lithologies.	6.70		-0.07
7.50	D					Loose grey sandy slightly silty subangular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.			
8.00- 8.45	B						8.00		-1.37
8.00- 8.45	D	7.80 (3.70)			S13	Medium dense grey gravelly to very gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.			
9.00	D								
9.50- 9.95	B								
9.50- 9.95	D	9.00 (4.30)			S11				
							9.80		-3.17

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
6.00	0.20	Cable Percussion	SL/JL
13.55	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			03/06/19	08:00
3.00	3.00	1.80	03/06/19	18:00
3.00	3.00	2.60	04/06/19	08:00
12.00	12.00	7.00	04/06/19	18:00
12.00	12.00	2.50	05/06/19	08:00
13.55	13.10	4.10	05/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.40		1.10	20	2.00	Slow inflow.
6.50	6.00	3.30	20		Fast inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 13.55m on encountering an obstruction - probable cobble/boulder.
A 50mm standpipe was installed to 8.00m with a geowrapped slotted section from 5.00m to 8.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 8.00m, gravel filter up to 5.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH210** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273605.7** E **377753.5** N Ground Level **6.63** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
						Firm grey slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
10.50	**D**						**10.60**		**-3.97**
11.00-11.40	**#**	**10.70 (6.30)**			**S50/ 253**	**Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.**			
11.00-11.45	**B**								
12.00	**D**								
12.50-12.95	**B**								
12.50-12.62		**12.00 (2.90)**			**C50/65**				
13.00	**D**								
13.10-13.19		**13.10 (4.10)**			**C50/46**				
						At 13.55m, obstruction - probable cobble/boulder.			
						End of Borehole	**13.55**		**-6.92**

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **Chiselling: 10.50-10.70m for 40 minutes and 11.30-12.00m for 85 minutes and 12.00-13.10m for 240 minutes.**

Logged by **LP**

Figure **2 of 2**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH212** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273863.7 E 378002.9 N** Ground Level **12.44** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		12.44
0.00- 0.30	B					MADE GROUND: Black asphalt.	0.10		12.34
0.20	ES								
0.30- 1.00	B					MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse gravel of limestone. (Sub base).	0.30		12.14
0.50	ES								
1.00	ES					Stiff brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. Some decayed rootlets.			
1.20- 1.65	B			19			1.20		11.24
1.20- 1.65	D	(DRY)			S12	Firm to stiff brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of various lithologies.			
2.00- 2.45	UT33	1.50 (DRY)	147	14					
2.50	D			14					
3.00- 3.45	B								
3.00- 3.45	D	1.50 (DRY)			S23				
4.00- 4.45	B			8.6		Between 4.00-4.45m, gravelly.			
4.00- 4.45	UTF 50	1.50							
5.00- 5.45	B						5.00		7.44
5.00- 5.16	D	1.50 (DRY)			S50/7	Very dense brown gravelly slightly silty fine to coarse SAND with a high cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. In places grading to very sandy silty gravel.			
6.00- 6.45	B					Between 6.00-6.45m, grading to very sandy silty gravel.			
6.00- 6.16		6.00 (DRY)			C50/83				
6.80	B								
7.80- 8.25	B					Between 7.80-8.25m, grading to very sandy silty gravel.			
7.80- 8.04	D	7.50 (DRY)			S50/93				
9.00- 9.45	B								
9.00- 9.23	D	9.00 (8.90)			S50/75				
9.40	B						9.60		2.84

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %		Continued by Rotary techniques General	Detail
10.00-10.50		D				Very dense grey slightly	

Boring

Depth	Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/DF
5.00	0.30	Cable Percussion	CC/DF
9.60	0.25	Cable Percussion	CC/DF
20.22	0.13	Rotary Open Hole	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			22/07/19	19:00
5.00	5.00	DRY	23/07/19	06:00
5.00	5.00	DRY	23/07/19	19:00
7.80	7.50	DRY	24/07/19	06:00
7.80	7.50	DRY	24/07/19	19:00
9.23	9.00	DRY	25/07/19	06:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Inflows possibly masked by drilling flush.

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 6.80m and 9.40m.
A 50mm standpipe was installed to 10.00m with a geowrapped slotted section from 6.00m to 10.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 10.00m, gravel filter up to 6.00m, bentonite seal up to 0.50m, concrete up to ground level.
Chiselling: 6.80-7.80m for 150 minutes and 8.60-8.70m for 60 minutes and 8.80-9.00m for 120

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 3**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH212**
Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273863.7** E **378002.9** N Ground Level **12.44** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						clayey angular to subrounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content and low boulder content.				
10.50-10.69	10.50 (ADDED)				C50/95					
11.00-11.50		D								
12.00-12.50		D								
12.00-12.32	12.00 (ADDED)				C50/ 165					
13.00-13.50		D								
13.50-13.76	13.50 (ADDED)				C50/ 110			13.50		-1.06
						Very dense grey slightly silty angular to subrounded fine to coarse GRAVEL of various lithologies. Medium cobble content.				
14.50-15.00		D								
15.00-15.28	15.00 (ADDED)				C50/ 140					
16.00-16.50		D								
16.50-16.81	16.50 (ADDED)				C50/ 160					
17.00-17.50		D								
18.00-18.50		D								
18.00-18.20	18.00 (ADDED)				C50/90					
19.50-20.00		D								
20.00-20.22	20.00 (ADDED)				C50/ 100					

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
9.23	9.00	DRY	25/07/19	19:00
9.23	9.00	DRY	26/07/19	06:00
9.23	9.00	DRY	01/08/19	19:00
20.22	20.00	8.85	02/08/19	06:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **minutes and 9.40m for 120 minutes.**
AGS **Flush: 9.20-20.00m, Air/Mist, 100% return.**

Logged by **LP**

Figure **2 of 3**
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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH212** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273863.7** E **378002.9** N Ground Level **12.44** m OD

Drilling | Properties/Sampling | Strata Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
								20.22		**-7.78**
						End of Borehole				

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **3 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH213** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273874.3** E **377942.2** N Ground Level **12.07** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		12.07
0.00- 0.70	B					Grass over TOPSOIL: Dark brown slightly gravelly slightly silty fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.			
0.20	ES								
0.50	ES								
0.70- 1.20	B						0.70		11.37
1.00	ES					Soft to firm reddish brown slightly gravelly very sandy SILT. Gravel is subrounded to rounded fine to coarse of various lithologies.			
1.20- 1.65	B								
1.20- 1.65	D	(DRY)			S10				
							1.50		10.57
						Firm brown slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to coarse of various lithologies.			
2.00- 2.45	UT29	1.50 (DRY)							
2.50	D			17		From 2.50m, stiff.			
3.00- 3.45	B								
3.00- 3.45	D	3.00 (DRY)			S18				
4.00- 4.45	UT31	4.00 (DRY)							
4.50	D			18					
5.00- 5.45	B								
5.00- 5.45	D	5.00 (DRY)			S23				
6.00- 6.45	UT44	6.00 (DRY)							
6.50	D								
6.60	B						6.60		5.47
6.60	D					Dense grey very gravelly medium to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
7.50- 7.95	B								
7.50- 7.95		7.50 (7.40)			C37				
							10.00		2.07

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/AL
10.00	0.20	Cable Percussion	CC/AL
11.00	0.15	Rotary Symmetrix	PB/LP
11.80	0.09	Rotary Core	PB/LP
12.50	0.15	Rotary Symmetrix	PB/LP
13.20	0.09	Rotary Core	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			21/05/19	08:00
9.00	9.00		21/05/19	18:00
9.00	9.00		22/05/19	08:00
10.00	10.00		22/05/19	18:00
10.00	10.00		30/05/19	08:00
11.04	11.00	ADDED	30/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
17.50	17.50				No rise.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
** Driller's description.
Water was added to assist boring between 6.60-9.00m.
A 50mm standpipe was installed to 20.00m with a geowrapped slotted section from 15.00m to 20.00m with upright lockable protective cover. Backfill details from base of hole: gravel filter up to 15.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 10.00-10.00m for 120 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH213** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273874.3** E **377942.2** N Ground Level **12.07** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %		Continued by Rotary techniques General	Detail			
						** GRAVEL, COBBLES and BOULDERS.	At 10.00m, probable boulder.	10.00		2.07
11.00-11.60 (60mins)	11.00 (10.60)	17 -	- -	-		** Slightly clayey GRAVEL, COBBLES and BOULDERS.	Between 11.00-11.80m, 0.20m recovered as light brown and grey cobbles of limestone.	11.00		1.07
11.00-11.04	11.00 (ADDED)				C50/25		Chippings (D) sample between 11.80-12.50m comprises brown gravelly slightly silty fine to coarse sand. Gravel is subangular to rounded fine to coarse of sandstone, mudstone and limestone. Between 12.50-13.20m, 0.17m recovered as light brown and grey cobbles of limestone. Below 13.20m, chippings (D) samples comprise dark grey and brown sandy slightly silty subangular to rounded fine to coarse gravel including sandstone, siltstone, mudstone, limestone, basalt and rhyolite.			
11.60-11.80 (45mins)	11.00 (ADDED)	50 -	- -	-						
11.60-11.64	11.00 (ADDED)				C50/25					
11.80-11.83	11.00 (ADDED)				C50/15					
12.50-13.20 (135mins)	12.50 (10.60)	24 -	- -	-						
12.50-12.63	12.50 (ADDED)				C50/45					
13.20-13.25	12.50 (ADDED)				C50/25					
14.00-14.16	14.00 (ADDED)				C50/95					
15.50-15.65	15.50 (ADDED)				C50/90					
17.00-17.17	17.00 (ADDED)				C50/80					
18.50-18.65	18.50 (ADDED)				C50/85					
20.00-20.16	20.00 (ADDED)				C50/95					

Boring

Depth	Dia	Technique	Crew
20.16	0.15	Rotary Symmetrix	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
11.04	11.00	10.60	31/05/19	08:00
12.63	12.50	ADDED	31/05/19	18:00
12.63	12.50	10.60	03/06/19	08:00
20.16	20.00	ADDED	03/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Flush: 11.00-11.60m, Mud, 100% returns; 11.60-11.80m, Mud, 90% returns; 12.50-13.20m, Mud, 90% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **2 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH213** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273874.3** E **377942.2** N Ground Level **12.07** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						End of Borehole		**20.16**		**-8.09**

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **3 of 3**

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geotechnics

BOREHOLE RECORD - Sonic Core Drilling

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS | Engineer: RAMBOLL UK LIMITED | Borehole: BH214 | Project No: PN193981

Client: RAMBOLL UK LIMITED | Local Grid Coordinates: 273911.7 E, 378038.3 N | Ground Level: 9.83 m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
								G.L.		9.83
0.10- 0.20		B				MADE GROUND: Black asphalt.		0.10		9.73
0.10- 0.20		D								
0.10- 0.20		ES						0.30		9.53
0.30- 0.60		B				MADE GROUND: Grey sandy angular fine to coarse gravel of limestone (Sub base).				
0.30- 0.60		D								
0.30- 0.60		ES								
0.70- 1.20		B								
0.70- 1.20		D								
0.70- 1.20		ES								
1.20- 1.50 (150mm)	1.20 (ADDED)					Firm becoming stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. Occasional rootlets to 1.20m depth.				
1.30		HV	Av=120							
1.40- 1.50		D								
1.50- 3.00 (150mm)	1.50 (ADDED)									
1.50- 1.95	1.50 (ADDED)				C16					
1.90- 2.00		D								
2.30		HV	Av=120							
2.90- 3.00		D								
3.00- 4.50 (150mm)	3.00 (ADDED)									
3.00- 3.45	3.00 (ADDED)				C9					
3.30		HV	Av=120							
3.90- 4.00		D								
4.30		HV	Av=106				Below 4.50m, silty with traces of gravel.			
4.50- 6.00 (150mm)	4.50 (ADDED)									
4.50- 4.95	4.50 (ADDED)				C22			5.00		4.83
4.70		HV	Av=85			Medium dense grey very sandy slightly clayey subangular to subrounded fine to coarse GRAVEL predominantly of rhyolite.				
4.90- 5.00		D								
5.00- 5.30		D						5.30		4.53
5.80- 5.90		D								
5.80		HV	Av=#			Very stiff grey slightly sandy gravelly CLAY with a low subangular to subrounded cobble content of rhyolite. Gravel is subangular to subrounded fine to coarse predominantly of rhyolite.	Between 6.00-6.50m, water-softened, some fines washed out by flush.			
6.00- 7.50 (150mm)	6.00 (ADDED)									
6.00- 6.24	6.00 (ADDED)				C50/85					
6.80- 6.90		D								
7.50- 8.60 (150mm)	7.50 (4.40)						Between 7.50-7.70m, very soft, water-softened by flush.			
7.50- 7.85	7.50 (ADDED)				C50/ 200					
7.90- 8.00		D								
8.60- 9.00 (150mm)	8.60 (ADDED)									
8.80- 8.90		D								
9.00-10.50 (150mm)	9.00 (ADDED)									
9.00- 9.18	9.00 (ADDED)				C50/65					
10.00-10.10		D								

Drilling

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	DR/CJ
7.50	0.15	Sonic Core Drilling	DR/CJ
40.50	0.15	Sonic Core Drilling	DR/GM

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			13/09/19	19:30
7.50	6.30	3.60	14/09/19	05:00
7.50	6.00	4.40	16/09/19	18:00
19.65	19.50	6.00	17/09/19	04:00
19.65	19.50	0.90	17/09/19	18:15
31.50	31.50	6.10	18/09/19	04:15

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Minor inflows possibly masked by drilling flush.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES = 2 x 258ml amber glass jars and 1 x 60ml VOC vial.
# = Hand vane test - untestable - Too gravelly.
Backfill details from base of hole: bentonite seal up to 0.50m, sub base up to 0.10m, tarmacadam up to ground level.
Flush: 1.20-40.50m, Water, 100% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JSK

Figure 1 of 5

13/11/2019

geotechnics

BOREHOLE RECORD – Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH214** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273911.7** E **378038.3** N Ground Level **9.83** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
10.50-12.00 (150mm)	10.50 (ADDED)									
10.50-10.65	10.50 (ADDED)				C50/60					
10.90-11.00		D								
11.90-12.00		D					Between 11.90-12.00m, grading to sandy gravelly clayey silt.	12.00		-2.17
12.00-13.50 (150mm)	12.00 (ADDED)					Very dense grey sandy clayey subangular to subrounded fine to coarse GRAVEL of rhyolite. Medium subangular to subrounded cobble content of rhyolite.				
12.00-12.22	12.00 (ADDED)				C50/105			12.60		-2.77
12.30-12.40		D								
12.70-12.80		D								
13.40-13.50		D				Very stiff grey slightly sandy gravelly to very gravelly CLAY with a medium subangular to subrounded cobble content of rhyolite. Gravel is subangular to subrounded fine to coarse of various lithologies including rhyolite.	At 13.50m, hard and dry.			
13.50-15.00 (150mm)	13.50 (ADDED)									
13.50-13.58	13.50 (ADDED)				C50/35					
14.00-14.10		D								
14.90-15.00		D								
15.00-16.50 (150mm)	15.00 (ADDED)									
15.00-15.05	15.00 (ADDED)				C50/10					
15.90-16.00		D					Between 15.90-16.00m, grading to sandy gravelly clayey silt.			
16.50-18.00 (150mm)	16.50 (ADDED)					Very dense light grey and grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies including rhyolite and quartz. Medium to high subangular to subrounded cobble content of rhyolite.		16.50		-6.67
16.50-16.63	16.50 (ADDED)				C60/70		Between 16.50-17.30m, fine washed out by flush, grading to gravelly cobbles.			
17.20-17.30		D					Between 17.30-17.70m, very sandy.			
17.50-17.60		D					Between 17.70-18.00m, fine washed out by flush, grading to gravelly cobbles.			
18.00-19.50 (150mm)	18.00 (ADDED)						Below 18.00m, light grey and grey.			
18.00-18.19	18.00 (ADDED)				C50/105					
18.40-18.50		D								
19.40-19.50		D					Below 19.50m, clayey.			
19.50-21.00 (150mm)	19.50 (0.90)									
19.50-19.65	19.50 (ADDED)				C50/115					

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
31.50	31.50	7.50	18/09/19	18:00
40.50	39.00	8.20	18/09/19	13:45

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JSK**

Figure **2 of 5**

13/11/2019

geotechnics

BOREHOLE RECORD – Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH214** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273911.7** E **378038.3** N Ground Level **9.83** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						Very stiff grey slightly sandy very gravelly CLAY with a medium subangular to subrounded cobble content predominantly of rhyolite. Gravel is subangular to subrounded fine to coarse of various lithologies including rhyolite.		20.10		-10.27
20.50-20.60		D						21.00		-11.17
21.00-22.50 (150mm)	21.00 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies including rhyolite and quartz. Medium to high subangular to subrounded cobble content of rhyolite.	Between 22.20-22.30m, band of very gravelly clay.	22.60		-12.77
21.00-21.08	21.00 (ADDED)				C50/30					
21.40-21.50		D								
22.20-22.30		D								
22.40-22.50		D								
22.50-23.50 (150mm)	22.50 (ADDED)					Very stiff grey slightly sandy gravelly to very gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies including rhyolite.				
22.50-22.77	22.50 (ADDED)				C50/135					
22.70-22.80		D								
23.50-24.00 (150mm)	23.50 (ADDED)									
23.80		HV	Av=#							
23.90-24.00		D								
24.00-25.50 (150mm)	24.00 (ADDED)									
24.00-24.24	24.00 (ADDED)				C50/140					
24.80		HV	Av=#				Between 24.90-25.00m, grading to slightly sandy slightly gravelly clayey silt.			
24.90-25.00		D								
25.50-27.00 (150mm)	25.50 (ADDED)									
25.50-25.68	25.50 (ADDED)				C50/95	Very dense grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies including rhyolite and quartz.		25.80		-15.97
25.90-26.00		D						26.20		-16.37
26.90-27.00		D				Very stiff grey slightly sandy very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies including rhyolite.	27.00		-17.17
27.00-28.50 (150mm)	27.00 (ADDED)									
27.00-27.13	27.00 (ADDED)				C50/90					
27.90-28.00		D				Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies including rhyolite and quartz.	Low subangular to subrounded cobble content of rhyolite.			
28.50-30.00 (150mm)	28.50 (ADDED)									
28.50-28.83	28.50 (ADDED)				C50/175			28.90		-19.07
28.90-29.00		D				Very dense grey coarse SAND and subangular to subrounded fine to medium GRAVEL of various lithologies including rhyolite.		29.30		-19.47
29.70		HV	Av=106							
29.90-30.00		D				Stiff greyish brown silty CLAY.		30.00		-20.17

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JSK**

Figure **3 of 5**

13/11/2019

geotechnics

BOREHOLE RECORD - Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH214** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273911.7** E **378038.3** N Ground Level **9.83** m OD

Drilling | Properties/Sampling | Strata — Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
30.00-31.50 (150mm)	30.00 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies. Low subangular to subrounded cobble content of rhyolite.		30.00		-20.17
30.00-30.22	30.00 (ADDED)				C50/120					
30.40-30.50		D								
						Very stiff grey slightly sandy gravelly to very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies including rhyolite.	31.20		-21.37
31.40-31.50		D						31.50		-21.67
31.50-33.00 (150mm)	31.50 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies.	Low subangular to subrounded cobble content of rhyolite.			
31.50-31.77	31.50 (ADDED)				C52/155					
31.40	HV		Av=#							
31.90-32.00		D								
						Very stiff grey slightly sandy very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies.	32.70		-22.87
32.80	HV		Av=#							
32.90-33.00		D						33.00		-23.17
33.00-34.50 (150mm)	33.00 (ADDED)					Very dense dark grey very sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies.	Between 33.30-33.40m, grading to gravelly coarse sand. Below 33.50m, grey, clayey with a medium cobble content.			
33.00-33.18	33.00 (ADDED)				C50/90					
33.20-33.30		D								
33.40-33.50		D								
33.90-34.00		D								
						Very stiff dark grey slightly sandy very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies.	34.20		-24.37
34.30-34.40		D						34.50		-24.67
34.50-36.00 (150mm)	34.50 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies.	Low subangular to subrounded cobble content of rhyolite.			
34.50-34.58	34.50 (ADDED)				C50/60					
35.40-35.50		D								
						Very stiff grey slightly sandy gravelly to very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies.	35.75		-25.92
35.90-36.00		D						36.00		-26.17
36.00-37.50 (150mm)	36.00 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies.	Low subangular to subrounded cobble content of rhyolite.			
36.00-36.18	36.00 (ADDED)				C50/105					
36.40-36.50		D								
36.40-36.50		D								
						Very stiff grey slightly sandy gravelly to very gravelly CLAY.	Gravel is subangular to subrounded fine to coarse of various lithologies.	37.10		-27.27
37.20	HV		Av=#							
37.40-37.50		D						37.50		-27.67
37.50-39.00 (150mm)	37.50 (ADDED)					Very dense dark grey sandy slightly clayey subangular to subrounded fine to coarse GRAVEL of various lithologies.	Low subangular to subrounded cobble content of rhyolite.			
37.50-37.53	37.50 (ADDED)				C50/15					
37.90-38.00		D								
						Very stiff grey slightly sandy gravelly to very gravelly CLAY.	Gravel is fine to coarse of various lithologies.	38.80		-28.97
38.90-39.00		D						39.00		-29.17
39.00-40.50 (150mm)	39.00 (ADDED)					Very dense dark grey slightly clayey fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of				
39.00-39.15	39.00 (ADDED)				C50/75					
39.30-39.40		D						39.70		-29.87
39.80	HV		Av=120							

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JSK**

Figure **4 of 5**

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geotechnics

BOREHOLE RECORD - Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH214** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273911.7** E **378038.3** N Ground Level **9.83** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						various lithologies.				
40.20-40.30 40.30	HV	D	Av=#			Very stiff grey slightly sandy very gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.	Between 40.20-40.30m, grading to slightly sandy very gravelly clayey silt.	40.50		-30.67
						End of Borehole				

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JSK**

Figure **5 of 5**

13/11/2019

geotechnics

BOREHOLE RECORD - Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH215** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273938.2** E **378026.1** N Ground Level **9.67** m OD

Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
								G.L.		9.67
0.00- 0.20		B				Grass over TOPSOIL: Firm brown sandy clay with many rootlets.		0.30		9.37
0.00- 0.20		D								
0.00- 0.20		ES								
0.20- 0.50		B				MADE GROUND: Black gravelly fine to coarse sand of ash. Low cobble content.		0.80		8.87
0.20- 0.50		D								
0.20- 0.50		ES								
0.50- 1.00		B								
0.50- 1.00		D								
0.50- 1.00		ES								
1.20- 1.50 (112mm)	1.20					Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.	Between 0.80-1.20m, soft, water-softened by flush.			
1.30		HV	Av=52				Between 1.50-2.10m, soft, water-softened by flush.			
1.40- 1.50		D								
1.50- 3.00 (112mm)	1.50						Between 2.10-2.25m, band of brown clayey fine to medium sand.			
1.50- 1.95	1.50 (ADDED)				C15		Below 2.45m, silty, with traces of gravel.			
2.10- 2.25		D								
2.45- 2.55		D								
2.80		HV	Av=66							
3.00- 4.50 (112mm)	3.00									
3.00- 3.45	3.00 (ADDED)				C12					
3.45- 3.55		D								
3.90		HV	Av=103				Between 3.90-4.40m, stiff.			
4.40- 4.50		D					At 4.25m, thick lamination of brown fine to medium sand. Below 4.50m, soft to firm, water-softened by flush.			
4.50- 6.00 (112mm)	4.50									
4.50- 4.95	4.50 (ADDED)				C12					
4.40		HV	Av=105							
4.60		HV	Av=40							
4.90- 5.00		D				Medium dense light grey and grey very sandy slightly clayey subangular to subrounded fine to coarse GRAVEL predominantly of rhyolite. Low subangular cobble content of rhyolite.		5.20		4.47
5.20- 5.30		D								
6.00- 7.50 (112mm)	6.00									
6.00- 6.45	6.00 (ADDED)				C18			6.30		3.37
6.20- 6.30		D				Medium dense dark grey gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to medium occasionally coarse of various lithologies.				
6.30- 6.40		D						7.00		2.67
7.40- 7.50		D								
7.50- 9.00 (112mm)	7.50					Stiff dark grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.	Between 7.50-8.20m, poor recovery, water-softened by flush (SPT affected by softening).			
7.50- 7.95	7.50 (ADDED)				C7					
8.50- 8.60		D						8.50		1.17
						Dark grey slightly clayey fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL of various lithologies.		9.00		0.67
9.00-10.50 (112mm)	9.00									
9.00- 9.29	9.00 (ADDED)				C50/ 135	Stiff to very stiff grey slightly sandy gravelly CLAY with a low subangular to subrounded cobble content of rhyolite. Gravel is	Between 9.00-9.50m, soft, water-softened by flush.			
9.60- 9.70	3	D								

Drilling

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	DR/CJ
19.50	0.11	Sonic Core Drilling	DR/CJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			09/09/19	08:30
7.50	7.50	4.20	10/09/19	05:00
7.50	7.50	4.20	10/09/19	18:15
16.50	16.50	6.30	11/09/19	03:45
16.50	16.50	6.30	11/09/19	18:15
19.50	19.50	ADDED	12/09/19	03:45

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Minor inflows possibly masked by drilling flush.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES = 2 x 258ml amber glass jars and 1 x 60ml VOC vial.
Borehole BH215 terminated at 19.50m depth as barrel snapped off.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Flush: 1.20-19.50m, Water, 100% return.

Logged by **JSK**

Figure **1 of 2**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Sonic Core Drilling

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH215** Project No **PN193981**

Client **RAMBOLL UK LIMITED** Local Grid Coordinates **273938.2** E **378026.1** N Ground Level **9.67** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N	Description General	Description Detail	Depth	Legend	Level m OD
						subangular to subrounded fine to coarse predominantly of rhyolite.				
10.50-11.40 (112mm)	10.50									
11.00-11.10		D								
						Grey sandy clayey subangular to subrounded fine to coarse GRAVEL of rhyolite. Low subangular to subrounded cobble content of rhyolite.		10.95		-1.28
11.40-12.00 (112mm)	11.40									
						Stiff to very stiff grey slightly sandy gravelly to very gravelly CLAY with a low subangular to subrounded cobble content of rhyolite. Gravel is subangular to subrounded fine to coarse predominantly of rhyolite.		11.80		-2.13
12.00-13.50 (112mm)	12.00									
12.00-12.18	12.00 (ADDED)				C50/80					
12.10-12.20		D								
13.00-13.10		D					Between 13.00-13.10m, grading to slightly sandy gravelly clayey silt.			
13.50-14.40 (112mm)	13.50									
13.50-13.79	13.50 (ADDED)				C50/ 140					
14.00-14.10		D								
14.40-15.00 (112mm)	14.40									
14.90-15.00		D								
15.00-15.80 (112mm)	15.00									
15.00-15.10	15.00 (ADDED)				C50/30					
15.80-16.50 (112mm)	15.80									
16.00-16.10		D								
16.50-18.00 (150mm)	16.50							16.50		-6.83
16.50-16.62	16.50 (ADDED)				C50/75	Very dense grey sandy clayey subangular to subrounded fine to coarse GRAVEL of various lithologies including rhyolite. Medium to high subangular to subrounded cobble content of rhyolite.	Between 16.50-17.00m, fines washed out by flush.			
17.20-17.30		D								
17.90-18.00		D						18.00		-8.33
18.00-19.50 (150mm)	18.00					NO RECOVERY.				
18.00-18.11	18.00 (ADDED)				C50/25					
								19.50		-9.83
						End of Borehole				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JSK**

Figure **2 of 2**

13/11/2019

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH216** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273928.4** E **377978.7** N Ground Level **8.76** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		8.76
0.20	B					Grass over TOPSOIL: Brown slightly gravelly fine to coarse sand with some rootlets. Gravel is angular to subrounded fine to coarse of various lithologies.	0.15		8.61
0.20	D								
0.20	ES								
0.20			PID=0.0						
0.50	B					Brown slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of various lithologies.			
0.50	D								
0.50	ES						1.00		7.76
0.50			PID=0.0						
1.00	B					Medium dense brown very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.			
1.00	D								
1.00	ES								
1.00			PID=0.0			Below 1.20m, locally grading to sandy silty gravel with some cobbles.			
1.20- 1.65	B								
1.20- 1.65		1.20			C14				
1.65- 2.00	D	(DRY)							
2.00- 2.45	B								
2.00- 2.45		2.00 (1.80)			C18				
2.45- 3.00	D								
3.00- 3.45	B								
3.00- 3.45		3.00 (2.70)			C10				
							3.70		5.06
						Soft to firm brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse of sandstone and siltstone.	3.90		4.86
4.00- 4.45	B								
4.00- 4.45		4.00 (3.70)			C48				
4.45- 5.00	D					Dense greyish brown sandy silty subangular to rounded fine to coarse GRAVEL of various lithologies.			
5.00- 5.02		5.00 (4.90)			C30/10	At 5.02m, obstruction - probable boulder.	5.02		3.74
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
5.02	0.30	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			13/05/19	08:00
4.00	4.00	2.70	13/05/19	18:00
4.00	4.00	3.70	14/05/19	08:00
5.02	5.00	4.90	14/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring.
PID meter readings were undertaken during boring at depths of 0.20m, 0.50m and 1.00m and the results in ppm are presented above.
The Borehole was terminated at a depth of 5.02m on encountering an obstruction - probable boulder, and the rig was moved to the location of BH216A.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.

Logged by **LP**

Figure **1 of 2**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH216** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273928.4** E **377978.7** N Ground Level **8.76** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **Chiselling: 4.90-5.00m for 45 minutes.**

Logged by **LP**

Figure **2 of 2**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH216A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273927.7 E 377978.1 N** Ground Level **9.86** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		9.86
						Grass over TOPSOIL: Brown slightly gravelly fine to coarse sand with some rootlets.	0.15		9.71
0.20	B								
0.20	D								
0.20	ES					Brown slightly gravelly slightly silty fine to coarse SAND. Gravel is subangular medium of various lithologies.			
0.20			PID=0.0						
0.50	B								
0.50	D								
0.50	ES					At 1.00m, gravelly silty with pockets of clay.			
0.50			PID=0.0						
1.00	B								
1.00	D								
1.00	ES								
1.00			PID=0.0						
1.20- 1.65	B								
1.20- 1.65	D	(DRY)			S16		1.80		8.06
1.65- 2.00	D					Soft brown slightly gravelly sandy CLAY with occasional bands of silt. Gravel is subangular to rounded fine to coarse of various lithologies.			
2.00- 2.45	B								
2.00- 2.45	D	2.00 (1.50)			S4				
2.45- 3.00	D			22					
3.00- 3.60	B			23		Between 3.00-3.60m, slightly gravelly sandy.			
3.00- 3.45	D								
3.00- 3.45	UTF 21	3.00 (2.50)							
4.00- 4.45	B								
4.00- 4.37	D	4.00 (4.45)			S44/ 220				
							4.40		5.46
4.45- 5.00	D			19		Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone.			
5.00- 5.45	UT43	5.00 (4.50)							
5.45- 5.60	D			21					
5.80	D						5.80		4.06
6.20	B					Very dense greyish brown slightly sandy slightly clayey angular to rounded fine to coarse GRAVEL of various lithologies. High cobble content.			
6.20- 6.57		6.20 (5.90)			C50/ 215				
6.70	D						6.70		3.16
						Dense grey very sandy angular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.			
7.70- 8.15	B								
7.70- 8.15		7.70 (6.20)			C32				
8.20	B						8.20		1.66
8.20	D					Stiff brown slightly sandy very gravelly CLAY with a high cobble content. Gravel is angular to subangular fine to coarse of dolerite.			
8.20- 8.52		8.20 (7.50)			C50/ 170				
8.60- 8.93		8.60 (8.00)			C50/ 175		8.75		1.11

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General	Detail
9.00- 9.40	9.00 (ADDED)	#			S50/ 245	Very dense brownish grey sandy slightly clayey GRAVEL with a low subangular to subrounded cobble and boulder content of various	
9.00-10.00		D					
10.00-11.00		D					

Boring

Depth	Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
8.75	0.30	Cable Percussion	MM/TH
25.50	0.15	Rotary Symmetrix	PB/LP
27.00	0.12	Rotary Core	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			15/05/19	08:00
4.45	4.00	4.45	15/05/19	18:00
4.45	4.00	4.00	16/05/19	08:00
8.52	8.20	7.50	16/05/19	18:00
8.52	8.20	8.00	17/05/19	08:00
8.75	8.60	8.00	17/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
2.00	2.00	1.50	20		Slow inflow.

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
PID meter readings were undertaken during boring at depths of 0.20m, 0.50m and 1.00m and the results in ppm are presented above.
A 50mm standpipe was installed to 15.00m with a geowrapped slotted section from 10.00m to 15.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 15.00m, gravel filter up to 10.00m, bentonite seal up to 0.20m, concrete up to ground level.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH216A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273927.7** E **377978.1** N Ground Level **9.86** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
						lithologies. Gravel is subangular to subrounded fine to coarse of various lithologies.				
10.50-10.74	10.50 (ADDED)	#			S50/ 120					
11.00-12.00		D								
12.00-12.18	12.00 (ADDED)	#			S50/85					
12.00-13.00		D								
13.00-14.00		D								
13.50-13.58	13.50 (ADDED)	#			S50/45					
14.00-15.00		D								
15.00-16.00		D								
15.00-15.15	15.00 (ADDED)				C50/90					
16.00-17.00		D								
16.50-16.74	16.50 (ADDED)				C50/ 105					
17.00-18.00		D								
18.00-19.50		D								
18.00-18.19	18.00 (ADDED)				C50/95					
19.50-21.00		D								
19.50-19.65	19.50 (ADDED)				C50/65					

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
8.75	8.60	8.00	24/05/19	08:00
19.65	19.50	ADDED	24/05/19	18:00
19.65	19.50	0.00	28/05/19	08:00
27.00	27.00	ADDED	28/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks AGS **Chiselling: 5.90-6.20m for 60 minutes and 6.20-6.70m for 60 minutes and 8.20-8.60m for 60 minutes and 8.60-8.75m for 60 minutes.**

Logged by **LP**

Figure **2 of 3**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH216A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273927.7** E **377978.1** N Ground Level **9.86** m OD

Drilling | Properties/Sampling | Strata | Scale 1:50

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
21.00-22.50 21.00-21.10	21.00 (ADDED)	D			C50/60					
22.50-24.00 22.50-22.65	22.50 (ADDED)	D			C50/90					
24.00-25.50 24.00-24.22	24.00 (ADDED)	D			C50/90					
25.50-27.00 25.50-27.00 25.50-25.79	25.50 25.50 (ADDED)	0 0 D	0 0	0	C50/ 135 (NR)	Very dense orangish brown gravelly slightly clayey SAND. Gravel is angular to subrounded fine to coarse of various lithologies.		25.50		-15.64
						End of Borehole		27.00		-17.14

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **3 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH217** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273965.0** E **378073.9** N Ground Level **8.02** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Level m OD
							G.L.	8.02
0.00- 0.40	B					Grass over TOPSOIL: Brown silty fine to coarse sand with some rootlets.		
0.20	ES						0.40	7.62
0.40- 0.90	B					Brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of various lithologies.		
0.50	ES						0.90	7.12
0.90- 1.20	B					Firm brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.		
1.00	ES							
1.20- 1.65	B			19				
1.20- 1.65	D	(DRY)			S10			
1.65- 2.20	D							
						Between 2.20-2.65m, slightly sandy.		
2.20- 2.65	#	2.20			S17			
2.20- 2.65	B	(DRY)						
2.65- 3.20	B							
						Between 3.20-3.65m, stiff.		
3.20- 3.65	UT50	3.20 (DRY)	197	16				
3.65- 3.80	D							
3.90- 4.32	B					Dense to very dense greyish brown slightly clayey angular to subrounded fine to coarse GRAVEL of various lithologies.	3.90	4.12
3.90	D							
3.90- 4.33		3.90 (DRY)			C50/ 275			
4.32- 5.00	D							
5.00- 5.45	B					Between 5.00-5.45m, very sandy, clayey.		
5.00- 5.45		5.00 (DRY)			C42			
5.45- 6.50	D							
6.50- 6.95	B					Dense grey sandy angular to subrounded fine to coarse GRAVEL of various lithologies. High cobble content.	6.30	1.72
6.50- 6.95		6.50 (6.00)			C34			
7.40	D					Stiff greyish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. Between 7.85-8.00m, gravelly.	7.40	0.62
7.40- 7.85	UT60	7.40 (7.00)	88	15				
7.85- 8.00	D			12				
8.00- 8.90	D							
8.90- 9.16	B							
8.90- 9.16		8.90 (6.80)			C50/ 110			
9.16-10.00	D							
10.00-10.40	D						10.00	-1.98

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PB/LP
7.50	0.25	Cable Percussion	PB/LP
11.50	0.20	Cable Percussion	PB/LP
20.35	0.15	Rotary Symmetrix	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			22/07/19	19:00
4.30	4.30	DRY	23/07/19	06:00
4.30	4.30	DRY	23/07/19	19:00
8.00	7.50	7.00	24/07/19	06:00
8.00	7.50	5.50	24/07/19	19:00
10.00	10.00	6.80	25/07/19	06:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
6.30	6.00	5.90	20	7.40	Slow inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 8.00m with a geowrapped slotted section from 3.00m to 8.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 8.00m, gravel filter up to 3.00m, bentonite seal up to 0.30m, concrete up to ground level.
Chiselling: 4.10-4.32m for 45 minutes and 4.32-5.00m for 105 minutes and 8.00-8.90m for 165 minutes and 8.90-10.00m for 180 minutes and 10.00-10.40m for 150 minutes and 10.40-11.50m

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH217** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273965.0** E **378073.9** N Ground Level **8.02** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.40-10.65	B					**Very dense grey slightly clayey subangular to rounded fine to coarse GRAVEL of various lithologies. Low to medium cobble content. Between 10.40-10.65m, very sandy.**	10.00		-1.98
10.40-10.65	D	10.40 (6.50)			S50/ 100				
10.65-11.50	D								
11.50-12.00	D						11.50		-3.48

Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %		Continued by Rotary techniques General	Detail
12.00-12.34	12.00 (ADDED)				C50/ 185	**Very dense grey slightly sandy subangular to rounded fine to coarse GRAVEL of various lithologies. Medium cobble content.**	
13.00-13.50		D					
13.50-13.93	13.50 (ADDED)				C50/ 280		
14.50-15.00		D					
15.00-15.22	15.00 (ADDED)				C50/ 120		
15.50-16.00		D					
16.50-17.00		D					
16.50-16.87	16.50 (ADDED)				C50/ 220		
17.50-18.00		D					
18.00-18.43	18.00 (ADDED)				C50/ 280		
18.50-19.00		D					
19.50-20.00		D					
20.00-20.35	20.00 (ADDED)				C50/ 195		

Boring

Depth	Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
10.00	10.00	5.60	25/07/19	19:00
11.50	11.50	6.50	26/07/19	06:00
11.50	11.50		26/07/19	19:00
11.50	11.50		27/07/19	06:00
11.50	11.50		30/07/19	19:00
20.35	20.00	ADDED	31/07/19	06:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

for 195 minutes.
Flush: 11.50-20.00m, Air/Mist, 100% return.

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **2 of 3**

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH217** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273965.0** E **378073.9** N Ground Level **8.02** m OD

Scale 1:50

Drilling: Core Run/Depth (Core Dia/Time)	Drilling: Depth Cased & (to Water)	Properties/Sampling: Type TCR/SCR%	Properties/Sampling: Length Max/Min	Properties/Sampling: RQD %	Properties/Sampling: SPT N	Strata: Description General	Strata: Description Detail	Depth	Legend	Level m OD
						End of Borehole		20.35		-12.33

Drilling: Depth	Hole Dia	Technique	Crew	Progress: Depth of Hole	Depth Cased	Depth to Water	Date	Time	Groundwater: Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **3 of 3**

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH218** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274030.7** E **378029.3** N Ground Level **6.14** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Level m OD
							G.L.	6.14
0.00- 1.00	B					Grass over TOPSOIL: Brown slightly gravelly silty fine to coarse sand with some rootlets.		
0.20	ES							
0.20			PID=0.0				0.30	5.84
0.50	ES					Brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse of various lithologies.		
0.50			PID=0.0					
1.00- 1.20	B						1.00	5.14
1.00	ES					Firm brown mottled grey slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of various lithologies.		
1.00			PID=0.0					
1.20- 1.65	B							
1.20- 1.65	D	(DRY)			S14			
							1.80	4.34
2.00- 2.45	B					Medium dense grey and brown sandy angular to subrounded fine to coarse GRAVEL of various lithologies.		
2.00- 2.45		2.00 (1.80)			C22			
3.00- 3.45	B							
3.00- 3.45		3.00 (2.50)			C23			
4.00- 4.45	B							
4.00- 4.45		4.00 (3.00)			C24			
5.00- 5.45	B						5.00	1.14
5.00- 5.45	D	5.00 (3.70)			S1	Very loose brown silty fine to medium SAND with occasional pockets of soft silty clay.		
6.00- 6.45	B					Between 6.00-6.45m, SPT gear sank under own weight.		
6.00- 6.45	D	6.00 (5.00)			S0/450			
7.50- 7.95	B					Between 7.50-7.95m, SPT gear sank under own weight.		
7.50- 7.95	D	7.50 (7.00)			S0/450			
9.00- 9.45	B							
9.00- 9.45	D	9.00 (7.00)			S1			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
13.00	0.20	Cable Percussion	CC/KD
18.16	0.15	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			17/05/19	08:00
13.00	13.00	7.00	17/05/19	18:00
11.50	13.00	8.00	20/05/19	08:00
18.16	18.00	7.00	20/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
7.00	7.00			14.50	Inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 2.00m and 5.00m.
PID meter readings were undertaken during boring at depths of 0.20m, 0.50m and 1.00m and the results in ppm are presented above.
The Borehole was terminated at a depth of 18.15m on encountering an obstruction - probable boulder.
A 50mm standpipe was installed to 10.00m with a geowrapped slotted section from 6.00m to

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 2**

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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH218** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274030.7** E **378029.3** N Ground Level **6.14** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50-10.95	B								
10.50-10.95	D	10.50 (7.00)			S1				
12.00-12.45	B					At 12.00m, loose.			
12.00-12.45	D	12.00 (7.00)			S6				
							13.00		-6.86
						Soft grey mottled brown CLAY with bands of silty sand.			
13.50-13.95	B								
13.50-13.95	D	13.50 (7.00)		29	S6				
14.50	B						14.50		-8.36
14.50	D					Stiff to very stiff grey gravelly CLAY with a low cobble content. Gravel is angular fine to coarse of various lithologies.			
15.00-15.45	B			16					
15.00-15.45		15.00 (7.00)			C29				
16.50-16.95	B			16					
16.50-16.95		16.50 (7.00)			C35				
18.00-18.45	B					At 18.10m, obstruction - probable boulder.			
18.00-18.16		18.00 (7.00)			C50/7		18.16		-12.02
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks AGS **10.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 10.00m, gravel filter up to 6.00m, bentonite seal up to 0.20m, concrete up to ground level.**

Logged by **LP**

Figure **2 of 2**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH219** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274098.8** E **378078.7** N Ground Level **5.29** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		5.29
0.10	ES					Grass over TOPSOIL: Brown slightly gravelly silty			
0.10			PID=0.0			fine to coarse sand with some rootlets.	0.20		5.09
0.20- 1.00	B								
0.50	ES					Greyish brown slightly sandy angular fine to coarse			
0.50			PID=0.0			GRAVEL of various lithologies. Medium cobble content.			
							1.00		4.29
1.10	ES					Soft brown mottled grey slightly sandy gravelly			
1.10			PID=0.0			CLAY. Gravel is angular to subangular fine to			
1.20- 1.65	B			33		coarse of various lithologies.			
1.20- 1.65		(DRY)			C9				
							1.80		3.49
1.80	B					Spongy pseudofibrous dark brown/black PEAT with			
2.00	ES					occasional pockets of soft grey slightly gravelly			
2.00- 2.45	UT4	2.00 (DRY)				clay.			
2.00			PID=0.0						
2.50	D								
3.00- 3.45	B			60					
3.00- 3.45	D	3.00 (DRY)			S2				
							3.70		1.59
3.70	B					Very soft bluish grey slightly gravelly CLAY with			
3.70	D					occasional lenses of silty fine to coarse sand and			
4.00- 4.45	UT4	4.00 (DRY)		50		pockets of fibrous peat. Gravel is angular to subangular fine to coarse of various lithologies.			
4.50	D			54					
5.00- 5.45	B								
5.00- 5.45	D	5.00 (DRY)			S1				
							5.90		-0.61
6.00- 6.45	#	6.00			S1/450	Very soft greyish blue CLAY with closely spaced			
6.00- 6.45	B	(DRY)				bands of sandy silt.			
7.50- 7.95	#	7.50			S1/450		7.50		-2.21
7.50- 7.95	B	(DRY)				Very soft brown very sandy CLAY with closely spaced bands of silty sand.			
9.00- 9.45	B								
9.00- 9.45	D	9.00 (8.90)			S1				
10.00-10.45	B								

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	CC/KD
20.00	0.20	Cable Percussion	CC/KD

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			15/05/19	08:00
10.95	10.50	9.00	15/05/19	18:00
10.45	10.50	7.00	16/05/19	08:00
20.00	20.00	7.00	16/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
10.50	10.50	7.00	840		Overnight inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Water was added to assist boring between 9.00m and 10.50m.
PID meter readings were undertaken during boring at depths of 0.10m, 0.50m and 1.10m and the results in ppm are presented above.
A 50mm standpipe was installed to 9.00m with a geowrapped slotted section from 5.00m to 9.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 9.00m, gravel filter up to 5.00m, bentonite seal up to 0.20m, concrete up to

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

Figure **1 of 2**

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BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH219** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274098.8** E **378078.7** N Ground Level **5.29** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.00-10.45	D								
10.50-10.95		10.50 (9.00)			S5	Loose becoming medium dense greyish brown very silty fine SAND with some bands of soft sandy silty clay.	10.50	▽	-5.21
12.00-12.45	B			19		Below 12.00m, medium dense.			
12.00-12.45	D	12.00 (7.00)			S16				
13.50-13.95	B								
13.50-13.95	D	13.50 (7.00)			S19				
15.00-15.45	B								
15.00-15.45	D	15.00 (7.40)			S22				
16.50-16.95		16.50 (7.00)			S23	Below 16.50m, fine to coarse.			
18.00-18.45	B								
18.00-18.45	D	18.00 (7.00)			S23				
19.50-19.95	B								
19.50-19.95	D	19.50 (7.00)			S24				
20.00	D					End of Borehole	20.00		-14.71

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **ground level.**

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Figure **2 of 2**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH220** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272772.7** E **377025.7** N Ground Level **29.95** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		29.95
0.00- 0.70	B					Grass over TOPSOIL: Firm brown gravelly clay with many rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.10		29.85
0.25	ES								
0.50	ES								
0.70- 1.20	B					Brown gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.70		29.25
1.00	ES								
1.20- 1.65	B					Stiff brown slightly sandy slightly gravelly CLAY with a medium cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
1.20- 1.65		(DRY)			C30				
						At 1.80m, gravelly.			
1.80	D			8.5					
2.00- 2.45	B			12					
2.00- 2.45		1.70 (DRY)			C27				
2.80	D								
3.00- 3.45	B			8.0		At 3.00m, very stiff, gravelly.			
3.00- 3.45		3.00 (DRY)			C39				
3.80	D								
4.00- 4.45	B								
4.00- 4.26		3.00 (DRY)			C50/ 107				
						At 4.60m, obstruction - probable boulder.			
						End of Borehole	4.60		25.35

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
4.60	0.20	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			29/05/19	08:00
4.60	4.50	DRY	29/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 4.60m on encountering an obstruction - probable boulder, and the rig was moved to the location of BH220A.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 1.80-2.00m for 35 minutes and 3.30-3.50m for 40 minutes and 4.30-4.60m for 75 minutes.

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Figure **1 of 1**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

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BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH220A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272770.4** E **377024.3** N Ground Level **30.02** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		30.02
0.00- 0.70	B					Grass over TOPSOIL: Soft brown gravelly clay with many rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.10		29.92
0.25	ES								
0.50	ES								
0.70- 1.20	B					Firm brown slightly sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse of various lithologies.	0.70		29.32
1.00	ES								
1.20- 1.65	B					Very stiff yellowish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
1.20- 1.65		(DRY)			C34				
1.80	D			11					
2.00- 2.45	B			14		Between 2.00-2.45m, stiff to very stiff.			
2.00- 2.45		1.80 (DRY)			C30				
2.80	D								
3.00- 3.45	B								
3.00- 3.10		3.00 (DRY)			C50/38				
3.80	D								
4.00- 4.45	B			16					
4.00- 4.40		4.00 (DRY)			C50/ 253				
4.80	D								
5.00- 5.45	B								
5.00- 5.35		4.70 (DRY)			C37				
							5.50		24.52
6.00	D					Stiff greyish brown mottled orange slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is subangular to rounded fine to coarse of various lithologies.			
6.50- 6.95	UT100	6.00 (DRY)	HV=48						
7.00	D								
7.50	D								
							7.80		22.22
8.00- 8.45	B					Very stiff yellowish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
8.00- 8.45	D	7.50 (DRY)			S38				
9.00	D								
9.50- 9.95	B						9.50		20.52
9.50- 9.95	D	9.00 (DRY)			S32	Dense brownish grey gravelly slightly clayey fine to coarse SAND with a low cobble and boulder content of various lithologies. Gravel is angular to subrounded fine to coarse of various lithologies.			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	SL/JL
3.00	0.20	Cable Percussion	SL/JL
13.07	0.15	Cable Percussion	SL/JL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			30/05/19	08:00
9.50	9.00	DRY	30/05/19	18:00
9.50	9.00	DRY	31/05/19	08:00
13.07	13.00	10.10	31/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
11.10	10.70				Fast inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 13.07m on encountering an obstruction - possible bedrock.
A 50mm standpipe was installed to 12.70m with a geowrapped slotted section from 10.00m to 12.70m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 10.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 1.80-2.00m for 35 minutes and 3.10-3.30m for 60 minutes and 5.00-5.10m for 40

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **LP**

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BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH220A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272770.4** E **377024.3** N Ground Level **30.02** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50	D								
						Stiff to very stiff brown sandy gravelly CLAY with a low cobble content of various lithologies. Gravel is angular to subrounded fine to coarse of various lithologies.	10.50		19.52
11.00-11.45	B								
11.00-11.45	D	10.70 (DRY)			S30				
11.80	D								
						Very dense dark grey gravelly slightly clayey fine to coarse SAND with a medium cobble content of various lithologies. Gravel is angular to subrounded fine to coarse of various lithologies.	12.00		18.02
12.50-12.95	B								
12.50-12.90		12.30 (10.00)			C50/ 247				
13.00	D								
13.00-13.07		13.00 (10.10)			C50/33	**At 13.07m, obstruction - possible bedrock.**			
						End of Borehole	13.07		16.95

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **minutes and 8.60-8.80m for 30 minutes and 10.10-10.30m for 70 minutes and 12.70-13.00m for 150 minutes.**

Logged by **LP**

Figure **2 of 2**

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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BH221** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272703.8** E **377062.1** N Ground Level **18.68** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		18.68
0.10- 0.30	B					Rough vegetation over TOPSOIL: Brown slightly gravelly silty fine to coarse sand with some rootlets. Gravel is angular to subangular fine to coarse of various lithologies.	0.30		18.38
0.10- 0.30	D								
0.10- 0.30	ES								
0.30- 0.60	B								
0.30- 0.60	D								
0.30- 0.60	ES								
0.60- 1.20	B					Firm to stiff friable yellowish brown mottled greyish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
0.60- 1.20	D								
0.60- 1.20	ES								
1.20- 1.65	B			15		Between 1.20-1.65m, locally grading to slightly sandy gravelly clayey silt.			
1.20- 1.65	D	(DRY)			S18				
1.65- 2.20	D								
2.20- 2.65	B								
2.20- 2.65	D	2.20 (DRY)			S20				
2.65- 3.20	D			11					
3.20- 3.65	UT40	3.20 (DRY)							
							3.65		15.03
3.65- 3.70	D					Firm brown mottled grey slightly gravelly CLAY with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
4.00- 4.45	B						4.00	▽	14.68
4.00- 4.45	D	4.00			S18				
4.05	D	(2.40)				Medium dense brown very gravelly slightly clayey fine to coarse SAND with a low to medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
4.45- 4.70	D								
4.70- 5.00	D								
5.00- 5.45	B								
5.00- 5.45		5.00 (4.50)			S17				
							5.30		13.38
5.45- 6.50	D					Firm to stiff greyish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
							6.00		12.68
						Firm to stiff grey slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of various lithologies.			
6.50- 6.95	B								
6.50- 6.95	D	6.50 (5.90)			S34				
6.95- 8.00	D			24		Between 6.95-8.00m, grading to gravelly clayey silt.			
8.00- 8.45	UT68	8.00 (7.10)							
8.45- 9.00	D								
9.00- 9.60	D								
9.60-10.02	B								
9.60-10.02	D	9.60 (4.50)			S50/ 285				
						End of Borehole	10.02		8.66

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PB/LP
4.70	0.20	Cable Percussion	PB/LP
10.02	0.15	Cable Percussion	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			27/06/19	21:00
4.70	4.70	3.60	28/06/19	05:00
4.70	4.70	4.10	01/07/19	21:00
9.00	9.00	7.10	02/07/19	05:00
9.00	9.00	2.80	02/07/19	21:00
10.02	10.00	4.50	03/07/19	05:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
4.00	4.00	2.40	20		Slow inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 6.00m with a geowrapped slotted section from 1.00m to 6.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 6.00m, gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.
Chiselling: 5.90-6.30m for 75 minutes and 6.90-7.20m for 45 minutes and 9.30-9.60m for 45 minutes and 9.65-10.02m for 45 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 2**

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BOREHOLE RECORD – Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**
Engineer **RAMBOLL UK LIMITED**
Borehole **BH221**
Project No **PN193981**

Client **RAMBOLL UK LIMITED**
National Grid Coordinates **272703.8** E **377062.1** N
Ground Level **18.68** m OD

Scale 1:50

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							10.02		**8.66**

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure **2 of 2**
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Borehole	BH228
				Project No	PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	272957.7 E 377288.8 N	Ground Level	11.60 m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		11.60
0.20	B					Grass over TOPSOIL: Dark brown slightly gravelly fine to coarse sand with some rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.25		11.35
0.20	D								
0.20	ES								
0.50	B					Soft to firm brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. Below 1.20m, stiff to very stiff.			
0.50	D								
0.50	ES								
1.00	B								
1.00	D								
1.00	ES								
1.20- 1.65	B								
1.20- 1.65	D	1.20 (DRY)		12	S20				
1.65- 2.00	D								
2.00- 2.45	B			15		Below 2.00m, gravelly.			
2.00- 2.45	D	2.00 (DRY)			S32				
2.45- 3.00	D								
3.00- 3.45	B								
3.00- 3.45	D	3.00 (DRY)			S22				
3.45- 4.00	D								
4.00- 4.45	B								
4.00- 4.45	D	4.00 (DRY)			S13				
4.45- 5.00	D								
5.00- 5.45	UT68	5.00 (DRY)							
5.45- 5.60	D								
						Below 6.00m, slightly gravelly.			
6.50- 6.95	B								
6.50- 6.95	D	6.50 (DRY)			S27				
6.95- 8.00	D								
8.00- 8.45	UT79	8.00 (DRY)							
						Between 8.35-9.00m, reddish brown.			
8.45- 8.60	D								
8.60- 9.50	D								
9.50- 9.95	B						9.50		2.10
9.50- 9.95	D	9.50 (7.40)			S29	Stiff grey slightly gravelly CLAY. Gravel is subrounded to rounded fine of various lithologies.			
						End of Borehole	10.00		1.60

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	MM/TH
10.00	0.25	Cable Percussion	MM/TH

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			21/05/19	08:00
4.00	3.00	DRY	21/05/19	18:00
4.00	3.00	DRY	22/05/19	08:00
10.00	9.50	7.40	22/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
8.60	8.50	7.40	20	9.00	Slow inflow.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 9.00m with a geowrapped slotted section from 7.00m to 9.00m with upright lockable protective cover. Backfill details from base of hole: bentonite seal up to 9.00m, gravel filter up to 7.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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Figure 1 of 1

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geotechnics

BOREHOLE RECORD - Cable Percussion

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **BHWS101** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268765.9** E **375668.6** N Ground Level **12.92** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		12.92
						MADE GROUND: Black asphalt.	0.34		12.58
						MADE GROUND: Purplish grey slightly sandy angular fine to medium gravel of mudstone.			
1.00- 1.20	D								
1.00- 1.20	ES								
1.20- 1.65	B					Between 1.20-1.65m, locally grading to very gravelly very clayey fine to coarse sand.			
1.20- 1.65		1.20 (DRY)			C15	Below 1.20m, medium dense.			
1.65- 2.20	D								
2.00	D								
2.00	ES								
2.20- 2.65	B								
2.20- 2.65		2.20 (DRY)			C15				
3.00- 3.43	B						3.00		9.92
3.00- 3.43	D	3.00 (DRY)			S50/ 280	Firm to stiff greyish brown gravelly CLAY. Gravel is angular fine to coarse of mudstone and limestone.			
3.00	ES								
3.05	D			11			3.50		9.42
3.43- 4.00	D					Firm to stiff brown very gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
3.50	ES								
4.00- 4.39		4.00 (DRY)			C50/ 240				
						At 4.40m, obstruction - probable cobble/boulder.	4.40		8.52
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	PB/LP
4.40	0.15	Cable Percussion	PB/LP

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			24/06/19	21:00
4.40	4.40	DRY	25/06/19	05:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks (AGS)

Inspection pit hand excavated to 1.20m depth and no services were found. Inspection pit had been pre-excavated and backfilled. Pit is the same as location WS101.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 4.40m on encountering an obstruction - probable cobble/boulder.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.
Chiselling: 3.50-3.70m for 30 minutes and 4.20-4.40m for 60 minutes.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Figure **1 of 1** 13/11/2019

geotechnics

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' (10 20 30 40 50)
BH101	1.20	4.64	C	-	1	2	2	3	2	2	9	*
BH101	2.00	3.84	C	-	1	3	3	3	3	4	13	*
BH101	4.00	1.84	C	-	3	5	7	7	6	5	25	*
BH101	5.00	0.84	C	-	6	7	10	10	13	15	48	*
BH101	6.00	-0.16	C	-	8	10	29	21/13			50/88	>
BH101	7.30	-1.46	C	-	25/5		50/7				50/7	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH102	1.10	3.24	C	-	7	5	6	5	3	4	18	*
BH102	3.00	1.34	S	-	4	3	4	2	1	2	9	*
BH102	4.00	0.34	C	-	2	2	5	4	2	3	14	*
BH102	5.00	-0.66	C	-	1	1	2	2	3	4	11	*
BH102	6.00	-1.66	S	-	1	1	2	1	2	2	7	*
BH102	7.50	-3.16	S	-	2	3	2	3	5	6	16	*
BH102	9.00	-4.66	S	-	1	1	2	1	2	2	7	*
BH102	10.50	-6.16	S	-	1	1	2	1	2	1	6	*
BH102	12.00	-7.66	C	-	1	2	4	3	5	7	19	*
BH102	13.50	-9.16	C	-	5	6	23	21	6/50		50/200	>
BH102	20.20	-15.86	C	-	3	3	6	6	12	13	37	*
BH102	22.50	-18.16	C	-	3	3	5	7	13	15	40	*
BH102	25.50	-21.16	C	-	3	3	5	7	9	12	33	*
BH102	28.50	-24.16	C	-	2	3	3	4	5	7	19	*
BH102	33.00	-28.66	C	-	5	6	8	11	17	21	57	>
BH102	36.00	-31.66	C	-	3	4	7	10	14	18	49	*
BH102	38.80	-34.46	C	-	5	5	50/60				50/60	>

Driller	Tom Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH104	1.20	2.77	C	-	3	3	2	3	2	3	10	*
BH104	2.00	1.97	C	-	3	4	4	3	2	4	13	*
BH104	3.00	0.97	C	-	6	8	10	13	16	17	56	>
BH104	4.00	-0.03	C	-	25/8		50/22				50/22	>
BH104	5.00	-1.03	C	-	5	10	10	10	10	13	43	*
BH104	6.00	-2.03	C	-	6	8	15	15	20/24		50/174	>
BH104	7.50	-3.53	S	-	7	7	5	5	6	5	21	*
BH104	9.00	-5.03	S	-	6	8	8	9	9	8	34	*
BH104	10.50	-6.53	C	-	25/6		50/8				50/8	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH104	13.50	-9.53	C	-	3	4	4	5	7	11	27	*
BH104	16.50	-12.53	C	-	25/10		50/55				50/55	>
BH104	19.50	-15.53	C	-	9	18	21	27	49	50/60	147/285	>
BH104	21.10	-17.13	S	-	11	16	26	32	42/70		100/220	>
BH104	24.40	-20.43	S	-	11	11	14	27	29	30/45	100/270	>
BH104	27.40	-23.43	S	-	11	20	23	29	41	7/11	100/236	>
BH104	30.40	-26.43	S	-	11	23	28	50			78/150	>
BH104	32.60	-28.63	S	-	9	28	50/70				50/70	>
BH104	35.30	-31.33	C	-	28		50/60				50/60	>
BH104	38.00	-34.03	C	-	12	35	50/65				50/65	>
BH104	41.00	-37.03	C	-	36		50/70				50/70	>

Driller	Tom Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH105	1.20	8.55	C	-	3	4	4	5	4	7	20	
BH105	2.00	7.75	C	-	4	6	6	5	7	9	27	
BH105	3.00	6.75	C	-	6	5	5	9	8	5	27	
BH105	4.00	5.75	C	-	10	15	50/65				50/65	
BH105	5.00	4.75	C	-	7	10	13	15	14	24	66	
BH105	6.00	3.75	C	-	4	9	15	21	18	20	74	
BH105	7.50	2.25	C	-	5	3	3	7	6	5	21	
BH105	9.00	0.75	C	-	6	2	2	6	7	6	21	
BH105	10.50	-0.75	S	-	2	1	1	3	4	8	16	
BH105	12.00	-2.25	S	-	1	2	1	2	1	4	8	
BH105	16.50	-6.75	C	-	5	7	9	12	14	18	53	
BH105	19.50	-9.75	C	-	7	15	16	19	21	34	90	
BH105	22.50	-12.75	C	-	11/60						11*/60	
BH105	25.50	-15.75	C	-	7	18/55					25*/130	
BH105	28.50	-18.75	C	-	22/50						22*/50	
BH105	31.50	-21.75	C	-	32/65						32*/65	
BH105	34.50	-24.75	C	-	25/70						25*/70	
BH105	37.50	-27.75	C	-	32/60						32*/60	

Driller	Tom Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH106	2.00	4.41	C	-	1	2	1	3	4	3	11	*
BH106	3.00	3.41	C	-	3	5	5	6	7	9	27	*
BH106	4.00	2.41	C	-	5	6	9	9	8	7	33	*
BH106	5.00	1.41	C	-	3	7	7	9	6	6	28	*
BH106	6.50	-0.09	C	-	3	3	3	4	4	9	20	*
BH106	8.00	-1.59	S	-	2	4	7	2	2	2	13	*
BH106	9.50	-3.09	S	-	2	5	5	7	8	10	30	*
BH106	11.00	-4.59	S	-	9	10	10	14	26/10		50/160	>
BH106	12.50	-6.09	S	-	25/5		50/5				50/5	>

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH106	16.50	-10.09	C	-	2	3	6	6	7	12	31	*
BH106	19.50	-13.09	C	-	21	29	50				50/75	>
BH106	21.00	-14.59	C	-	8	17	23	25	2/4		50/154	>
BH106	25.50	-19.09	C	-	6	6	10	14	16	10/47	50/272	>
BH106	27.75	-21.34	C	-	5	7	11	15	18	6/27	50/252	>
BH106	30.00	-23.59	C	-	8	8	10	15	24/62		49/212	>
BH106	33.00	-26.59	C	-	25/0		50/60				50/60	>
BH106	36.00	-29.59	C	-	25		24	26			50/150	>

Driller	Paul Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH107A	1.20	17.77	C	-	2	4	5	5	6	7	23	
BH107A	2.00	16.97	C	-	6	8	10	10	10	8	38	
BH107A	3.00	15.97	C	-	4	10	11	6	8	9	34	
BH107A	4.00	14.97	S	-	3	5	5	6	5	5	21	
BH107A	5.00	13.97	C	-	8	10	12	12	14	12/16	50/241	
BH107A	6.00	12.97	C	-	6	8	11	13	13	13/60	50/285	
BH107A	7.50	11.47	C	-	5	8	8	10	11	10	39	
BH107A	9.00	9.97	C	-	4	8	13	10	7	13	43	
BH107A	10.50	8.47	C	-	8	12	22	18	10/7		50/157	
BH107A	12.00	6.97	S	-	11	14	29	21/7			50/82	
BH107A	12.50	6.47	S	-	25/6		50/2				50/2	

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH108	1.20	10.95	C	-	2	4	4	6	5	5	20	*
BH108	2.20	9.95	C	-	6	8	8	9	10	14	41	*
BH108	3.20	8.95	C	-	4	9	13	14	12	11/65	50/290	>

Driller	Paul Bridges
Hammer No.	AR1760
Energy Ratio, Er (%)	64.00
Calibration Date	20/03/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH109	1.20	6.05	C	-	10	15/10	50/17				50/17	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH109	2.30	4.95	S	-	1	1	2	1	2	3	8	*
BH109	3.80	3.45	S	-	3	5	7	6	5	4	22	*
BH109	5.00	2.25	S	-	1	4	5	5	7	7	24	*
BH109	6.50	0.75	S	-	1	-	1	1	2	3	7	*
BH109	7.50	-0.25	S	-	1	2	3	3	3	4	13	*
BH109	9.00	-1.75	C	-	4	12	10	14	26/65		50/215	>
BH109	11.10	-3.85	C	-	6	8	19	28	3/5		50/155	>
BH109	12.60	-5.35	C	-	9	16/50	41	9/60			50/135	>
BH109	13.60	-6.35	C	-	4	8	13	10	12	15/55	50/280	>
BH109	15.00	-7.75	C	-	8	10	13	12	8	7	40	*
BH109	17.00	-9.75	S	-	4	8	10	19	21/20		50/170	>
BH109	18.00	-10.75	C	-	25/0		50/0				50/0	>
BH109	18.90	-11.65	C	-	25/30		50/30				50/30	>
BH109	20.40	-13.15	C	-	25/0		50/0				50/0	>
BH109	21.90	-14.65	C	-	25/20		50/10				50/10	>
BH109	24.90	-17.65	C	-	25/20		50/10				50/10	>
BH109	28.00	-20.75	C	-	25/10		50/15				50/15	>

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH109A	1.20	5.88	C	-	6	8	10	10	30/5		50/155	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH109B	1.20	5.88	C	-	6	6	5	7	6	9	27	*
BH109B	2.00	5.08	C	-	25/2		50/3				50/3	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH110	1.20	19.33	C	-	6	8	10	13	12	15/7	50/232	>
BH110	2.00	18.53	C	-	19	6/2	29	21/22			50/97	>
BH110	3.00	17.53	C	-	16	9/5	24	26/15			50/90	>
BH110	4.00	16.53	C	-	25/6		50/2				50/2	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH111	1.20	11.11	S	-	2	2	3	4	5	5	17	*
BH111	2.00	10.31	S	-	4	10	15	5	3	2	25	*

Driller	Gary Martin
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH114	1.20	4.84	C	-	3	5	5	6	5	6	22	*
BH114	2.00	4.04	C	-	2	2	4	4	5	5	18	*
BH114	3.00	3.04	S	-	1	1	-	1	1	2	4	*
BH114	4.00	2.04	C	-	6	7	7	6	5	8	26	*
BH114	5.00	1.04	C	-	8	8	10	9	10	10	39	*
BH114	6.00	0.04	C	-	25/10		50/11				50/11	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH114A	1.20	4.87	C	-	2	1	1	3	2	2	8	*
BH114A	3.00	3.07	S	-	-	1	1	4	4	4	13	*
BH114A	4.00	2.07	C	-	3	4	2	1	2	2	7	*
BH114A	5.00	1.07	C	-	2	4	4	5	4	6	19	*
BH114A	6.00	0.07	C	-	23	31	50				50/75	>

Driller	Tom Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' (10 20 30 40 50)
BH114B	6.30	-0.18	C	-	12	6	5	6	6	9	26	
BH114B	7.50	-1.38	C	-	3	9	21	29/40			50/115	
BH114B	9.00	-2.88	C	-	3	5	5	7	6	9	27	
BH114B	10.50	-4.38	C	-	25		50/60				50/60	
BH114B	11.60	-5.48	C	-	25/0		50/0				50/0	
BH114B	13.10	-6.98	C	-	25		50/50				50/50	
BH114B	15.00	-8.88	C	-	4	3	4	6	5	6	21	
BH114B	18.00	-11.88	C	-	10	14	6	25	12	7	50	
BH114B	20.50	-14.38	C	-	17	8/25	50				50/75	
BH114B	24.00	-17.88	C	-	3	22	13	7	8	14	42	
BH114B	27.00	-20.88	C	-	4	5	8	10	11	21	50	
BH114B	30.00	-23.88	C	-	8	10	7	10	50/25		67/175	

Driller	Paul Havard
Hammer No.	AR519
Energy Ratio, Er (%)	59.00
Calibration Date	07/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' (10 20 30 40 50)
BH201	1.20	14.91	S	-	3	5	7	5	7	6	25	*
BH201	2.00	14.11	S	-	2	4	7	9	11	14	41	*
BH201	3.00	13.11	S	-	8	17/15	50/20				50/20	>
BH201	4.00	12.11	C	-	4	8	10	11	12	13	46	*
BH201	5.00	11.11	S	-	7	14	9	7	6	7	29	*

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH202	1.20	17.99	S	-	4	4	5	7	15	15	42	*
BH202	2.00	17.19	S	-	6	7	4	3	3	7	17	*
BH202	3.00	16.19	S	-	2	7	12	7	8	8	35	*
BH202	4.00	15.19	S	-	8	7	14	20	16/70		50/220	>
BH202	6.50	12.69	S	-	3	5	7	7	7	9	30	*
BH202	9.50	9.69	S	-	7	9	9	11	14	9	43	*
BH202	11.00	8.19	S	-	11	14/30	50/20				50/20	>
BH202	12.50	6.69	S	-	7	7	10	8	8	7	33	*
BH202	14.00	5.19	C	-	5	5	9	8	9	10	36	*

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH203	1.20	13.92	S	-	3	6	5	5	6	8	24	
BH203	2.00	13.12	S	-	3	5	9	14	6	8	37	
BH203	3.00	12.12	S	-	1	2	2	2	3	3	10	
BH203	5.00	10.12	S	-	3	5	14	15	9	9	47	
BH203	8.00	7.12	S	-	3	5	4	5	7	9	25	
BH203	11.00	4.12	S	-	5	7	9	11	14	16/67	50/292	
BH203	13.10	2.02	C	-	25/27		50/35				50/35	

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH204A	1.20	13.82	C	-	5	5	6	4	21	13	44	*
BH204A	2.00	13.02	C	-	9	16/55	34	16/33			50/108	>
BH204A	3.00	12.02	S	-	5	5	7	9	7	9	32	*
BH204A	4.00	11.02	S	-	4	4	5	6	7	9	27	*
BH204A	5.00	10.02	S	-	9	14	5	5	7	8	25	*
BH204A	6.50	8.52	S	-	4	5	9	41/42			50/117	>
BH204A	9.50	5.52	S	-	4	5	7	8	8	9	32	*
BH204A	11.50	3.52	C	-	25/26		50/32				50/32	>

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH205B	1.20	15.43	C	-	4	5	7	5	5	7	24	*
BH205B	2.00	14.63	C	-	5	5	11	17	6	8	42	*

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH205C	1.20	15.26	S	-	2	3	5	7	9	9	30	
BH205C	2.00	14.46	S	-	3	5	9	12	7	7	35	
BH205C	3.00	13.46	S	-	5	7	8	7	8	9	32	
BH205C	4.00	12.46	C	-	5	7	8	9	12	10	39	
BH205C	5.00	11.46	C	-	5	5	5	6	7	8	26	
BH205C	8.00	8.46	S	-	5	5	3	2	5	6	16	
BH205C	11.00	5.46	S	-	5	7	9	14	17	10/32	50/257	
BH205C	12.50	3.96	S	-	5	8	9	13	19	9/27	50/252	
BH205C	13.70	2.76	C	-	25/62		50/53				50/53	

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH207	1.20	12.76	S	-	2	3	9	15	16	10/39	50/264	>
BH207	2.00	11.96	S	-	3	4	6	5	5	6	22	*
BH207	4.00	9.96	S	-	1	3	4	5	6	8	23	*
BH207	6.50	7.46	S	-	3	5	8	9	12	14	43	*
BH207	9.50	4.46	S	-	5	9	8	10	13	15	46	*
BH207	11.80	2.16	C	-	25/53		50/58				50/58	>

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH208	1.20	14.67	S	-	3	7	7	10	12	17	46	*
BH208	2.00	13.87	S	-	8	8	6	7	8	8	29	*
BH208	3.00	12.87	S	-	5	8	8	9	8	10	35	*

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH209	1.20	12.13	S	-	1	1	1	1	1	1	4	*
BH209	3.00	10.33	S	-	1	-	1	1	-	4	6	*
BH209	5.00	8.33	S	-	7	9	12	38/57			50/132	>

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH210	1.20	5.43	S	-	1	1	-	1	-	-	1	*
BH210	3.00	3.63	S	-	-	1	2	2	1	1	6	*
BH210	4.00	2.63	S	-	2	3	3	2	3	4	12	*
BH210	6.50	0.13	S	-	1	1	2	2	2	3	9	*
BH210	8.00	-1.37	S	-	1	1	2	3	4	4	13	*
BH210	9.50	-2.87	S	-	1	1	2	3	3	3	11	*
BH210	11.00	-4.37	S	-	5	7	9	15	17	9/28	50/253	>
BH210	12.50	-5.87	C	-	25/53		50/65				50/65	>
BH210	13.10	-6.47	C	-	25/41		50/46				50/46	>

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH212	1.20	11.24	S	-	2	3	3	3	3	3	12	*
BH212	3.00	9.44	S	-	3	4	5	6	6	6	23	*
BH212	5.00	7.44	S	-	7	18	50/7				50/7	>
BH212	6.00	6.44	C	-	17	8/4	36	14/8			50/83	>
BH212	7.80	4.64	S	-	6	12	24	26/18			50/93	>
BH212	9.00	3.44	S	-	8	13	50				50/75	>
BH212	10.50	1.94	C	-	18	7/20	31	19/20			50/95	>
BH212	12.00	0.44	C	-	9	13	17	24	9/15		50/165	>
BH212	13.50	-1.06	C	-	8	15	22	28/35			50/110	>
BH212	15.00	-2.56	C	-	10	15/65	19	31/65			50/140	>
BH212	16.50	-4.06	C	-	11	14	19	26	5/10		50/160	>
BH212	18.00	-5.56	C	-	14	11/30	32	18/15			50/90	>
BH212	20.00	-7.56	C	-	12	13/45	29	21/25			50/100	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH213	1.20	10.87	S	-	2	2	2	3	2	3	10	*
BH213	3.00	9.07	S	-	3	4	4	5	4	5	18	*
BH213	5.00	7.07	S	-	3	5	5	6	6	6	23	*
BH213	7.50	4.57	C	-	6	8	10	10	9	8	37	*

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH213	11.00	1.07	C	-	25/15		50/25				50/25	>
BH213	11.60	0.47	C	-	25/15		50/25				50/25	>
BH213	11.80	0.27	C	-	25/10		50/15				50/15	>
BH213	12.50	-0.43	C	-	19	6/10	50/45				50/45	>
BH213	13.20	-1.13	C	-	25/20		50/25				50/25	>
BH213	14.00	-1.93	C	-	25/65		36	14/20			50/95	>
BH213	15.50	-3.43	C	-	25/60		40	10/15			50/90	>
BH213	17.00	-4.93	C	-	20	5/10	42	8/5			50/80	>
BH213	18.50	-6.43	C	-	25/65		39	11/10			50/85	>
BH213	20.00	-7.93	C	-	25/60		37	13/20			50/95	>

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH214	1.50	8.33	C	-	2	2	3	5	4	4	16	*
BH214	3.00	6.83	C	-	4	3	2	2	3	2	9	*
BH214	4.50	5.33	C	-	2	3	4	4	5	9	22	*
BH214	6.00	3.83	C	-	8	11	45	5/10			50/85	>
BH214	7.50	2.33	C	-	6	7	12	13	25/50		50/200	>
BH214	9.00	0.83	C	-	12	13/40	50/65				50/65	>
BH214	10.50	-0.67	C	-	8	17/10	50/60				50/60	>
BH214	12.00	-2.17	C	-	13	12/40	24	26/30			50/105	>
BH214	13.50	-3.67	C	-	25/40		50/35				50/35	>
BH214	15.00	-5.17	C	-	25/35		50/10				50/10	>
BH214	16.50	-6.67	C	-	25/60		60/70				60/70	>
BH214	18.00	-8.17	C	-	18	7/10	28	22/30			50/105	>
BH214	19.50	-9.67	C	-	25/30		30	20/40			50/115	>
BH214	21.00	-11.17	C	-	25/50		50/30				50/30	>
BH214	22.50	-12.67	C	-	11	14/55	22	28/60			50/135	>
BH214	24.00	-14.17	C	-	15	10/25	28	22/65			50/140	>
BH214	25.50	-15.67	C	-	21	4/5	35	15/20			50/95	>
BH214	27.00	-17.17	C	-	25/40		33	17/15			50/90	>
BH214	28.50	-18.67	C	-	11	14	19	21	10/25		50/175	>
BH214	30.00	-20.17	C	-	19	9/20	29	21/45			50/120	>
BH214	31.50	-21.67	C	-	9	16/40	22	26	4/5		52/155	>
BH214	33.00	-23.17	C	-	15	10/10	41	9/15			50/90	>
BH214	34.50	-24.67	C	-	25/15		50/60				50/60	>
BH214	36.00	-26.17	C	-	25		30	20/30			50/105	>
BH214	37.50	-27.67	C	-	25/10		50/15				50/15	>
BH214	39.00	-29.17	C	-	25/70		50				50/75	>

Driller	Dilwyn Roberts
Hammer No.	GS07
Energy Ratio, Er (%)	70.00
Calibration Date	03/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH215	1.50	8.17	C	-	2	2	3	4	4	4	15	*
BH215	3.00	6.67	C	-	1	2	2	2	4	4	12	*
BH215	4.50	5.17	C	-	2	2	3	2	4	3	12	*
BH215	6.00	3.67	C	-	9	7	4	5	5	4	18	*
BH215	7.50	2.17	C	-	2	1	-	-	2	5	7	*
BH215	9.00	0.67	C	-	3	4	10	40/60			50/135	>
BH215	12.00	-2.33	C	-	13	12/25	40	10/5			50/80	>
BH215	13.50	-3.83	C	-	12	13/70	26	24/65			50/140	>
BH215	15.00	-5.33	C	-	25/70		50/30				50/30	>
BH215	16.50	-6.83	C	-	25/40		50				50/75	>
BH215	18.00	-8.33	C	-	18	7/5	50/25				50/25	>

Driller	Dilwyn Roberts
Hammer No.	GS07
Energy Ratio, Er (%)	70.00
Calibration Date	03/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH216	1.20	7.56	C	-	2	3	3	4	4	3	14	*
BH216	2.00	6.76	C	-	2	4	5	5	4	4	18	*
BH216	3.00	5.76	C	-	1	2	2	1	3	4	10	*
BH216	4.00	4.76	C	-	5	7	9	11	14	14	48	*
BH216	5.00	3.76	C	-	25/5		30/10				30/10	>

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH216A	1.20	8.66	S	-	1	3	3	3	4	6	16	*
BH216A	2.00	7.86	S	-	1	1	1	1	1	1	4	*
BH216A	4.00	5.86	S	-	1	1	1	3	40/70		44/220	>
BH216A	6.20	3.66	C	-	5	11	15	18	17/65		50/215	>
BH216A	7.70	2.16	C	-	3	7	7	8	9	8	32	*
BH216A	8.20	1.66	C	-	11	13	14	22	14/20		50/170	>
BH216A	8.60	1.26	C	-	5	12	16	24	10/25		50/175	>

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH216A	9.00	0.86	S	-	4	7	10	13	17	10/20	50/245	>
BH216A	10.50	-0.64	S	-	12	13/45	18	32/45			50/120	>
BH216A	12.00	-2.14	S	-	18	7/20	42	8/10			50/85	>
BH216A	13.50	-3.64	S	-	25/35		50/45				50/45	>
BH216A	15.00	-5.14	C	-	25/60		38	12/15			50/90	>
BH216A	16.50	-6.64	C	-	11	14/55	21	29/30			50/105	>
BH216A	18.00	-8.14	C	-	13	12/20	35	15/20			50/95	>
BH216A	19.50	-9.64	C	-	18	7/10	50/65				50/65	>
BH216A	21.00	-11.14	C	-	25/40		50/60				50/60	>
BH216A	22.50	-12.64	C	-	25/55		36	14/15			50/90	>
BH216A	24.00	-14.14	C	-	12	13/50	25	25/15			50/90	>
BH216A	25.50	-15.64	C	-	7	18	20	30/60			50/135	>

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH217	1.20	6.82	S	-	1	2	2	2	3	3	10	*
BH217	2.20	5.82	S	-	1	-	2	3	4	8	17	*
BH217	3.90	4.12	C	-	4	6	8	10	12	20/50	50/275	>
BH217	5.00	3.02	C	-	4	8	9	9	10	14	42	*
BH217	6.50	1.52	C	-	4	6	7	8	9	10	34	*
BH217	8.90	-0.88	C	-	8	10	26	24/35			50/110	>
BH217	10.40	-2.38	S	-	7	13	26	24/25			50/100	>
BH217	12.00	-3.98	C	-	8	16	18	12	20/35		50/185	>
BH217	13.50	-5.48	C	-	6	8	12	13	14	11/55	50/280	>
BH217	15.00	-6.98	C	-	18	7/20	24	26/45			50/120	>
BH217	16.50	-8.48	C	-	7	12	10	14	26/70		50/220	>
BH217	18.00	-9.98	C	-	6	8	9	12	15	14/55	50/280	>
BH217	20.00	-11.98	C	-	9	14	13	17	20/45		50/195	>

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH218	1.20	4.94	S	-	3	3	4	3	4	3	14	*
BH218	2.00	4.14	C	-	3	4	5	5	6	6	22	*
BH218	3.00	3.14	C	-	4	6	6	5	6	6	23	*
BH218	4.00	2.14	C	-	4	6	6	6	6	6	24	*
BH218	5.00	1.14	S	-	1	-	-	1	-	-	1	*
BH218	6.00	0.14	S	-	-	-	-	-	-	-	0/450	*
BH218	7.50	-1.36	S	-	-	-	-	-	-	-	0/450	*
BH218	9.00	-2.86	S	-	-	-	-	1	-	-	1	*
BH218	10.50	-4.36	S	-	1	-	-	-	1	-	1	*
BH218	12.00	-5.86	S	-	1	1	2	1	1	2	6	*
BH218	13.50	-7.36	S	-	2	1	1	2	1	2	6	*
BH218	15.00	-8.86	C	-	3	6	7	7	8	7	29	*
BH218	16.50	-10.36	C	-	10	10	8	8	7	12	35	*
BH218	18.00	-11.86	C	-	10	15	50/7				50/7	>

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N'
BH219	1.20	4.09	C	-	1	2	2	2	2	3	9	*
BH219	3.00	2.29	S	-	1	1	-	1	1	-	2	*
BH219	5.00	0.29	S	-	1	-	-	1	-	-	1	*
BH219	6.00	-0.71	S	-	1	-	-	-	-	-	1/450	*
BH219	7.50	-2.21	S	-	1	-	-	-	-	-	1/450	*
BH219	9.00	-3.71	S	-	1	-	-	1	-	-	1	*
BH219	10.50	-5.21	S	-	2	1	1	2	1	1	5	*
BH219	12.00	-6.71	S	-	2	4	4	4	4	4	16	*
BH219	13.50	-8.21	S	-	3	4	4	5	5	5	19	*
BH219	15.00	-9.71	S	-	3	3	4	5	6	7	22	*
BH219	16.50	-11.21	S	-	3	3	4	6	6	7	23	*
BH219	18.00	-12.71	S	-	3	3	5	6	6	6	23	*
BH219	19.50	-14.21	S	-	3	4	6	6	6	6	24	*

Uncorrected SPT 'N' scale: 10 20 30 40 50

Driller	Chris Cameron
Hammer No.	AR2417
Energy Ratio, Er (%)	74.00
Calibration Date	29/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH220	1.20	28.75	C	-	5	5	7	9	7	7	30	*
BH220	2.00	27.95	C	-	3	5	6	8	6	7	27	*
BH220	3.00	26.95	C	-	4	5	10	14	7	8	39	*
BH220	4.00	25.95	C	-	4	5	7	43/32			50/107	>

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH220A	1.20	28.82	C	-	4	5	7	7	9	11	34	*
BH220A	2.00	28.02	C	-	3	4	5	7	9	9	30	*
BH220A	3.00	27.02	C	-	25/61		50/38				50/38	>
BH220A	4.00	26.02	C	-	5	7	11	12	14	13/28	50/253	>
BH220A	5.00	25.02	C	-	25/53		9	8	9	11	37	*
BH220A	8.00	22.02	S	-	4	5	7	9	10	12	38	*
BH220A	9.50	20.52	S	-	11	7	5	7	9	11	32	*
BH220A	11.00	19.02	S	-	3	5	8	7	7	8	30	*
BH220A	12.50	17.52	C	-	5	7	11	15	17	7/22	50/247	>
BH220A	13.00	17.02	C	-	25/38		50/33				50/33	>

Driller	Steve Lowery
Hammer No.	AR2636
Energy Ratio, Er (%)	71.00
Calibration Date	15/02/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH221	1.20	17.48	S	-	2	4	6	4	4	4	18	*
BH221	2.20	16.48	S	-	3	10	10	5	3	2	20	*
BH221	4.00	14.68	S	-	2	4	5	5	4	4	18	*
BH221	5.00	13.68	S	-	4	6	5	4	4	4	17	*
BH221	6.50	12.18	S	-	2	5	5	7	10	12	34	*
BH221	9.60	9.08	S	-	13	12/55	16	12	12	10/60	50/285	>

Driller	Paul Bridges
Hammer No.	AR1325
Energy Ratio, Er (%)	57.00
Calibration Date	29/06/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH228	1.20	10.40	S	-	4	5	6	6	5	3	20	*
BH228	2.00	9.60	S	-	9	9	7	9	8	8	32	*
BH228	3.00	8.60	S	-	3	2	5	5	6	6	22	*
BH228	4.00	7.60	S	-	2	2	2	3	4	4	13	*
BH228	6.50	5.10	S	-	3	4	5	5	7	10	27	*
BH228	9.50	2.10	S	-	5	6	6	7	7	9	29	*

Driller	Matthew Mulholland
Hammer No.	AR2441
Energy Ratio, Er (%)	72.00
Calibration Date	02/08/2018

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' (10 20 30 40 50)
BHWS101	1.20	11.72	C	-	2	4	4	3	4	4	15	*
BHWS101	2.20	10.72	C	-	4	5	3	4	4	4	15	*
BHWS101	3.00	9.92	S	-	11	13	10	10	10	20/55	50/280	>
BHWS101	4.00	8.92	C	-	5	10	11	13	20	6/15	50/240	>

Driller	Paul Bridges
Hammer No.	AR1760
Energy Ratio, Er (%)	64.00
Calibration Date	20/03/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

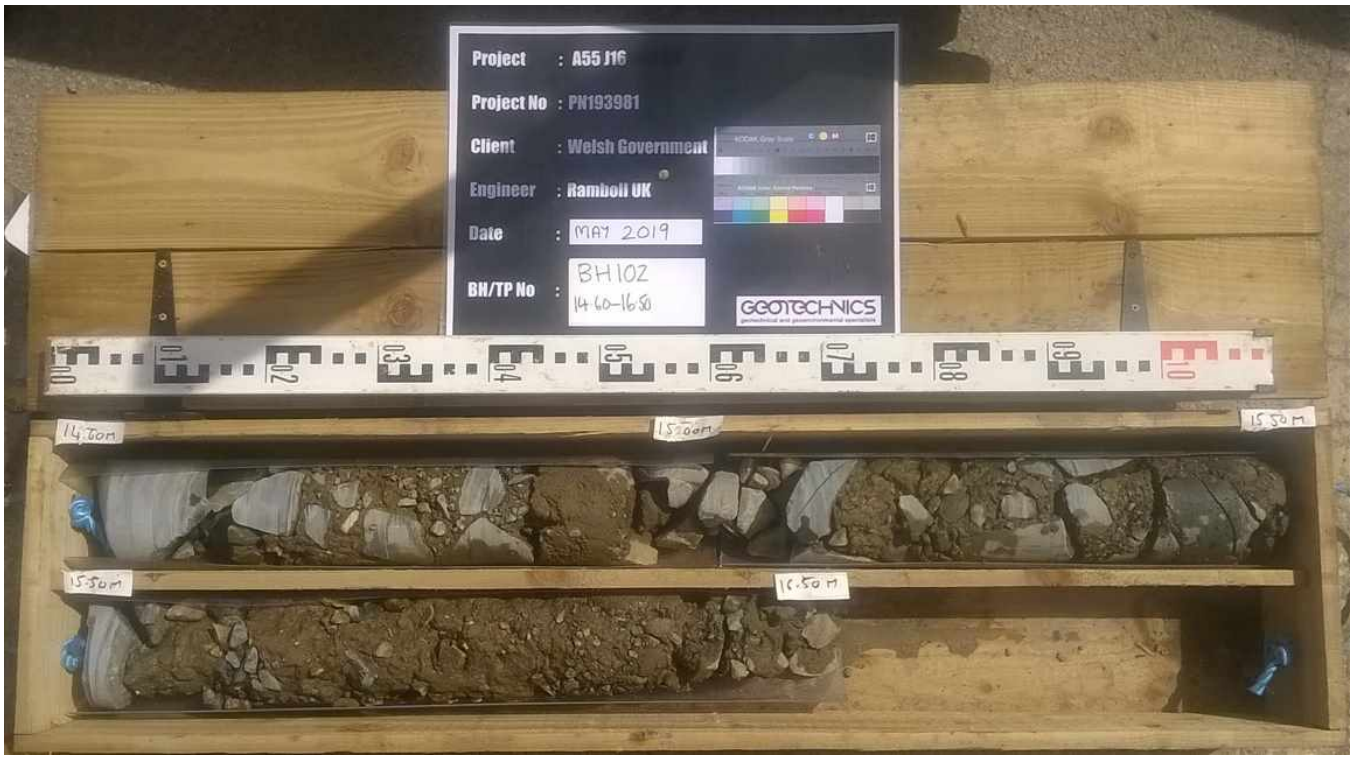
GEOTECHNICS

APPENDIX 3

Rock Core & Sonic Sample Photographs

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 1 14.60m - 16.50m

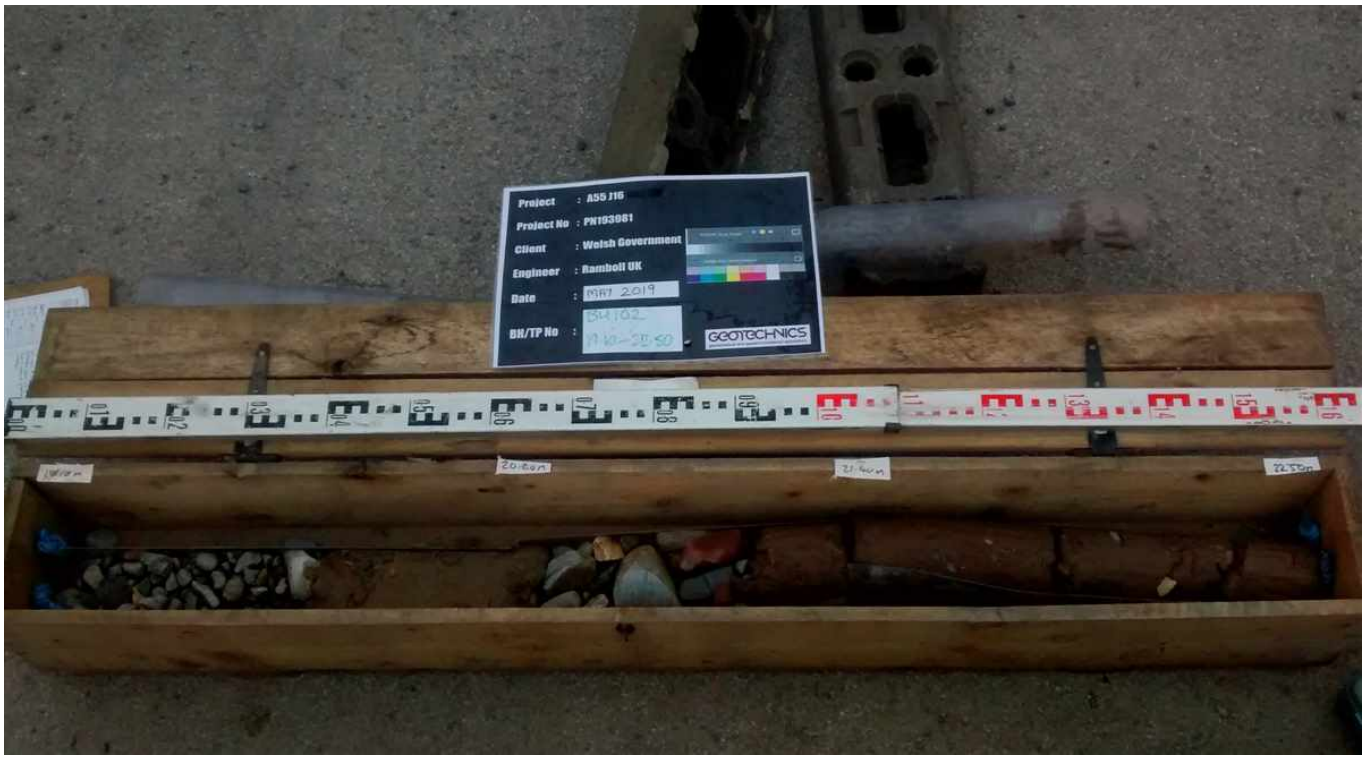


BH102 Box 2 16.50m - 19.10m

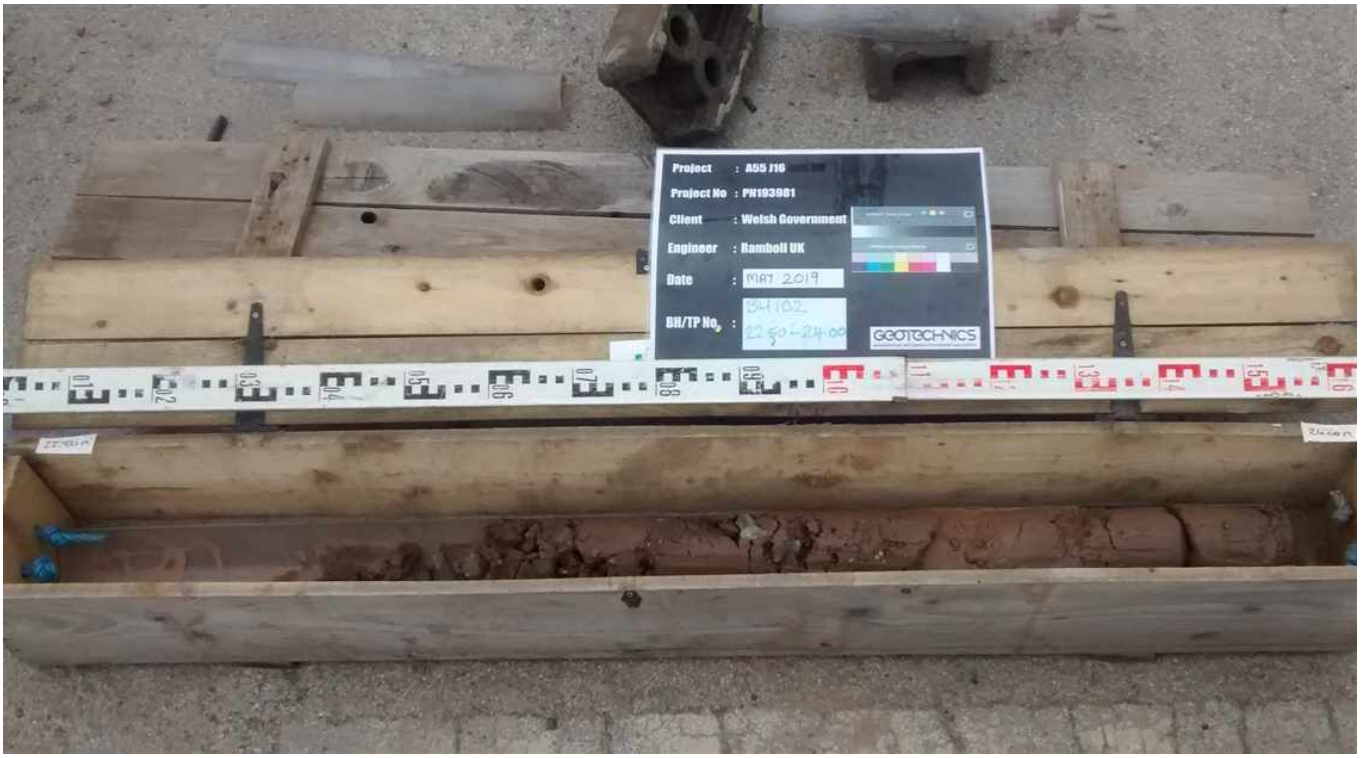
geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 3 19.10m - 22.50m



BH102 Box 4 22.50m - 24.00m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 5 24.00m - 25.50m



BH102 Box 6 25.50m - 27.00m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 7 27.00m - 28.50m



BH102 Box 8 28.50m - 31.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 9 31.50m - 33.00m



BH102 Box 10 33.00m - 34.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH102 Box 11 34.50m - 36.00m

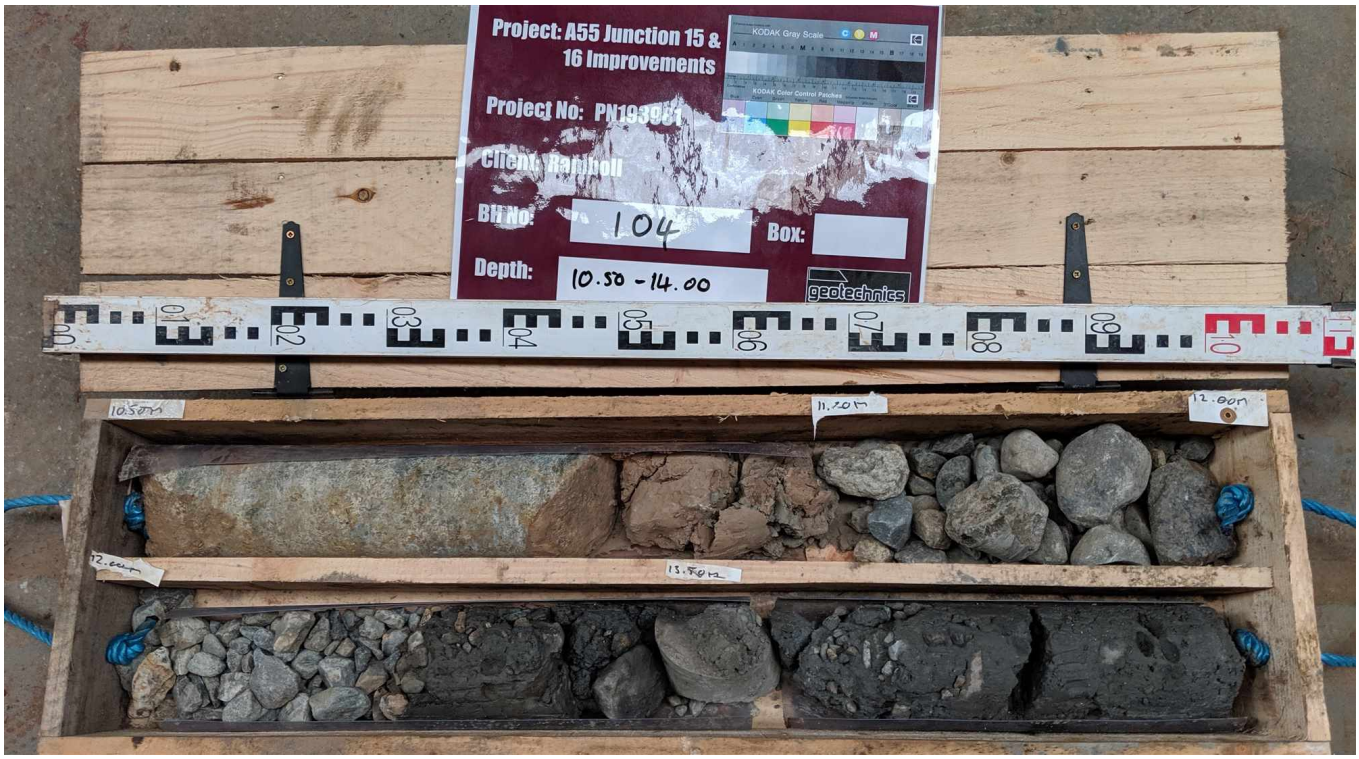


BH102 Box 12 36.00m - 38.80m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 1 10.50m - 14.00m



BH104 Box 2 14.00m - 16.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 3 16.50m - 18.00m



BH104 Box 4 18.00m - 19.50m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 5 19.50m - 20.00m



BH104 Box 6 30.40m - 32.10m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 7 32.10m - 33.60m



BH104 Box 8 33.60m - 35.30m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 9 35.30m - 36.80m



BH104 Box 10 36.80m - 39.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH104 Box 11 39.50m - 41.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



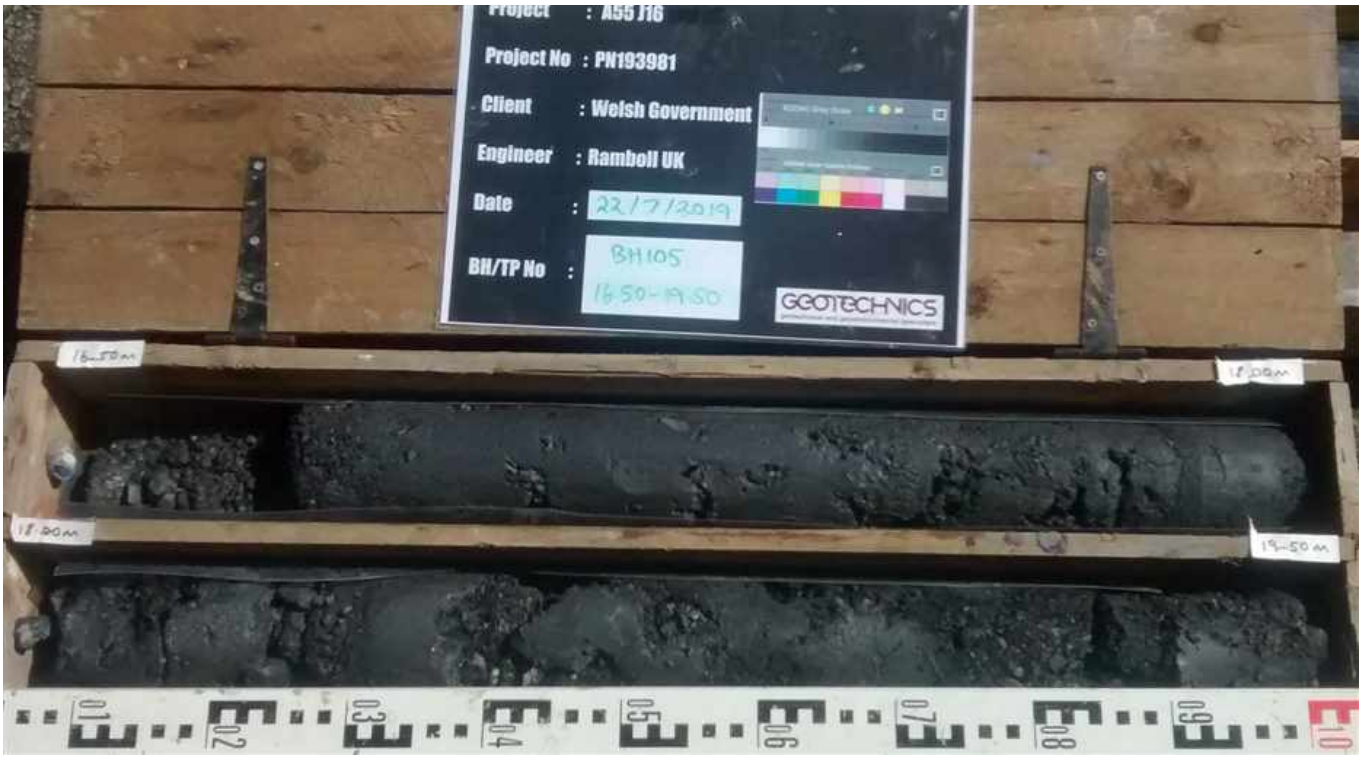
BH105 Box 1 12.90m - 14.40m



BH105 Box 2 14.40m - 16.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH105 Box 3 16.50m - 19.50m



BH105 Box 4 19.50m - 21.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH105 Box 5 21.00m - 30.90m



BH105 Box 6 31.50m - 39.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH105 Box 7 39.00m - 40.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH106 Box 1 14.20m - 16.70m



BH106 Box 2 16.70m - 19.50m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH106 Box 3 19.50m - 21.00m



BH106 Box 4 21.00m - 22.50m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH106 Box 5 22.90m - 24.75m



BH106 Box 6 24.75m - 27.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH106 Box 7 30.00m - 34.00m



BH106 Box 8 34.00m - 37.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH106 Box 9 37.50m - 40.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH109 Box 1 17.40m - 29.50m



BH109 Box 2 29.50m - 31.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH114B Box 1 11.60m - 15.00m



BH114B Box 2 15.00m - 16.50m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH114B Box 3 16.50m - 18.40m



BH114B Box 4 18.40m - 20.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH114B Box 5 20.50m - 22.90m



BH114B Box 6 22.90m - 25.50m

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH114B Box 7 25.50m - 28.00m



BH114B Box 8 28.00m - 30.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH213 Box 1 11.00m - 20.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 1 to 3 1.20m-4.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 4 to 6 4.50m-9.00m

Project Number : PN193981

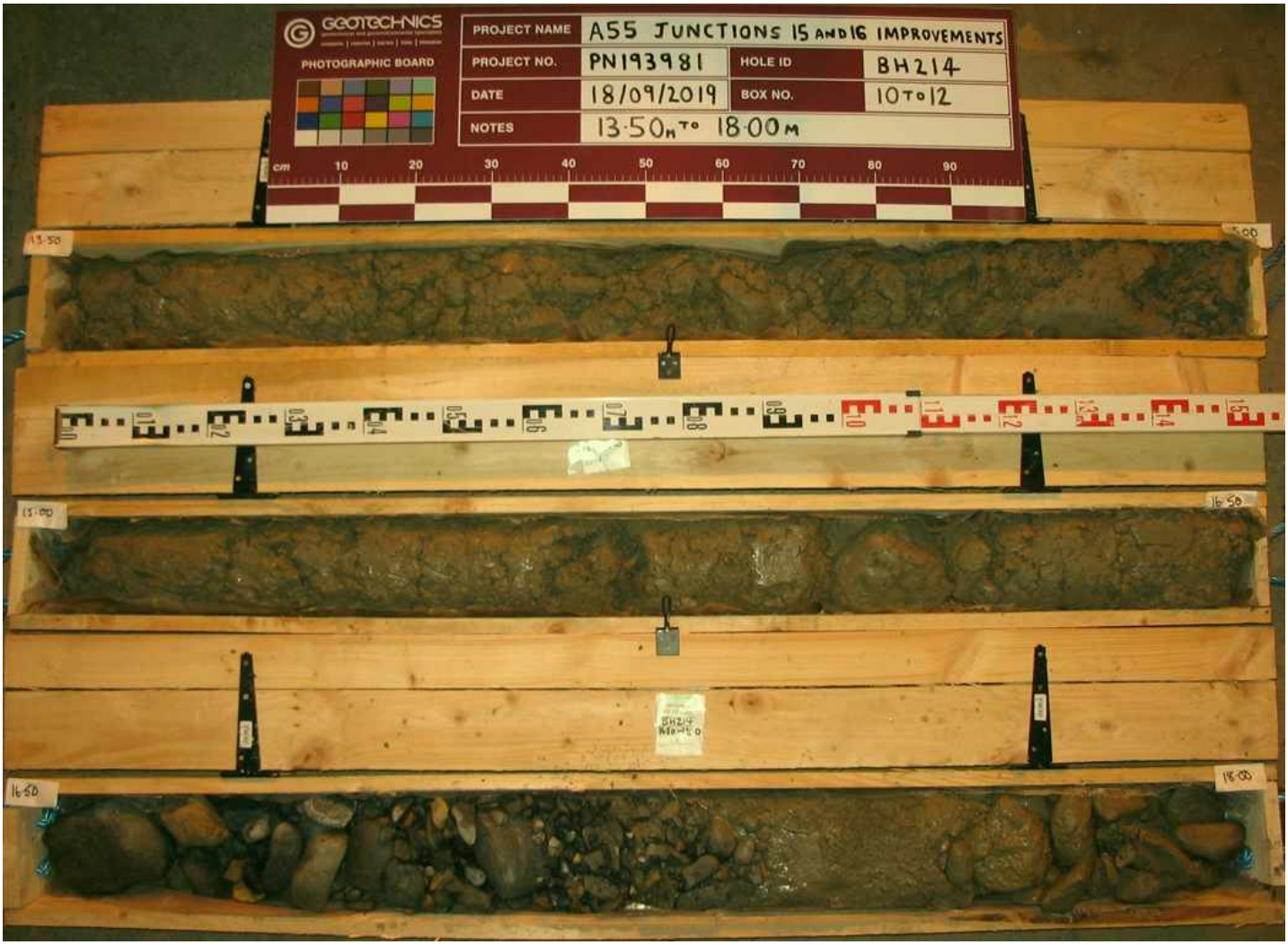
Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 7 to 9 9.00m-13.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 10 to 12 13.50m-18.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 13 to 15 18.00m-22.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 16 to 18 22.50m-27.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 19 to 21 27.00m-31.50m

Project Number : PN193981

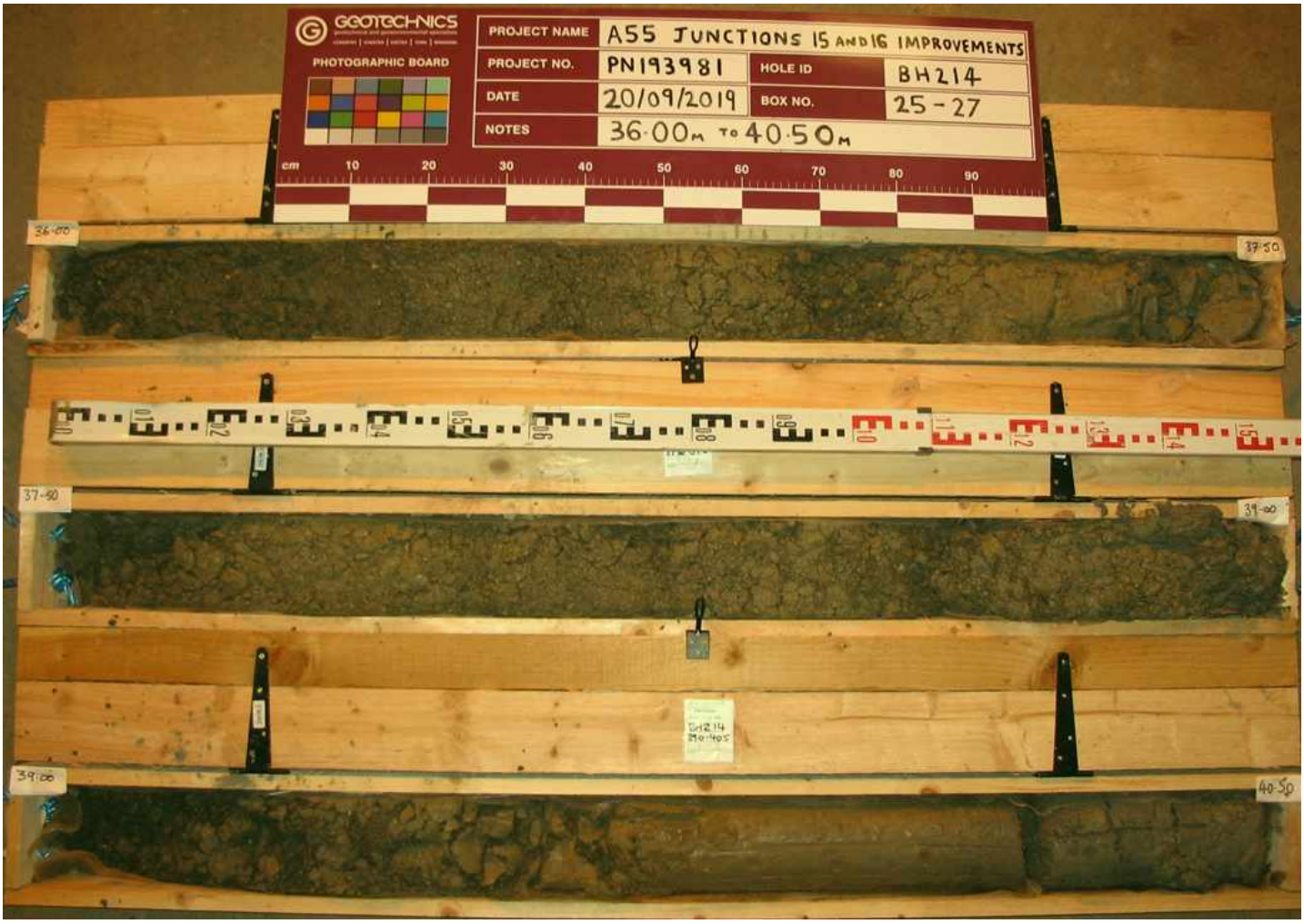
Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 22 to 24 31.50m-36.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH214 Boxes 25 to 27 36.00m-40.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH215 Boxes 1 to 3 1.20m-4.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH215 Boxes 4 to 6 4.50m-9.00m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH215 Boxes 7 to 9 9.00m-13.50m

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



BH215 Boxes 10 to 12 13.50m-18.00m

APPENDIX 4

Trial Pit Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation



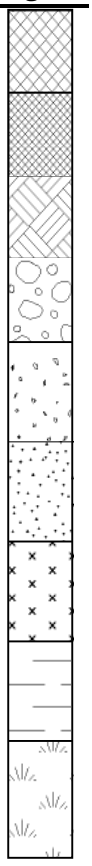
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

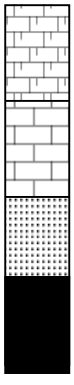
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



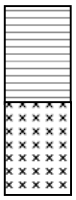
Chalk

Limestone

Sandstone

Coal

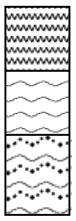
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

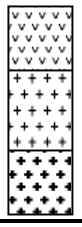


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials



Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

TRIAL PIT RECORD

Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Trial Pit **TP201** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273062.0** E **377349.4** N Ground Level **11.70** m OD

Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		11.70
0.00- 0.10	B			Grass over TOPSOIL: Brown slightly gravelly slightly clayey fine to coarse sand with many rootlets. Gravel is subangular to rounded fine to coarse of various lithologies.	0.25		11.45
0.10- 1.00	B						
0.20	ES						
0.25- 1.00	D						
0.50	ES						
				MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse sand with a low subrounded cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
1.00- 2.00	B						
1.00- 2.00	D						
1.00	ES						
				Below 0.80m, some pockets of yellow mottled grey sandy clay.			
				Between 1.00-2.00m, grading to very sandy very clayey gravel.			
2.00- 3.00	B						
2.00- 3.00	D			Below 1.50m, medium boulder content.			
2.00	ES						
3.00	ES						
3.10- 3.40	B				3.10		8.60
3.10- 3.40	D			Firm grey mottled blue slightly sandy gravelly CLAY with a low subrounded cobble and boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.	3.40		8.30
				End of Excavation			

Excavation

Plant **JCB 3CX**
Date **21/05/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **21/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Plate Load Test carried out at 0.50m depth.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Trial Pit **TP202** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273441.8** E **377558.3** N Ground Level **14.44** m OD

Samples and Tests | Strata | Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		14.44
0.00- 0.25	B			Grass over TOPSOIL: Brown slightly gravelly fine to coarse sand with some rootlets. Gravel is subrounded to rounded fine to medium of various lithologies.	0.25		14.19
0.20	ES						
0.25- 1.00	B			Reddish brown slightly gravelly clayey fine to coarse SAND with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies.			
0.50	ES						
1.00- 1.50	B			At 1.00m, grading to very clayey sand and gravel.			
1.00	D						
1.00	ES						
1.50- 2.50	B			Soft reddish brown mottled grey slightly gravelly sandy CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.	1.50		12.94
1.50	D						
2.00	ES						
2.50- 3.50	B		mc=17%				
2.50	D			Below 2.70m, slightly sandy.			
				Below 3.10m, firm to stiff.			
3.50- 3.80	B						
3.50	D						
3.80	D			End of Excavation	3.80		10.64

Excavation

Plant **JCB 3CX.**
Date **22/05/2019**
Shoring **None.**
Stability **Stable during excavation.**
Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **22/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Plate Load Test carried out at 0.25m depth.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD *Trial Pit*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Trial Pit** **TP203** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273532.7** E **377664.2** N Ground Level **8.19** m OD

Samples and Tests | Strata | Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		8.19
0.00- 0.80	B			Grass over MADE GROUND: Soft brown slightly gravelly sandy clay with a low cobble content. Gravel is angular fine to coarse of brick and concrete fragments.			
0.20	ES						
0.50	D						
0.50	ES						
0.80- 1.50	B			MADE GROUND: Black mottled yellow slightly gravelly clayey fine to coarse sand with a low cobble and boulder content. Gravel is subangular to subrounded fine to coarse of various lithologies, concrete and brick fragments.	0.80		7.39
1.00	ES						
1.50- 2.40	B			POSSIBLE MADE GROUND: Soft to firm yellow slightly gravelly sandy clay with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.	1.50		6.69
1.50	D		mc=11%				
2.00	ES						
2.40- 3.00	B			Soft grey mottled black slightly sandy SILT. Strong organic odour.	2.40		5.79
2.40	D						
3.00- 3.80	B			At 3.00m, clayey.			
3.00	D						
3.30	W						
3.80- 4.00	B			Grey slightly sandy clayey subangular to subrounded fine to coarse GRAVEL of various lithologies. Low cobble content.	3.80		4.39
3.80	D				4.00		4.19
4.00	D						
				End of Excavation			

Excavation

Plant **JCB 3CX.**
Date **22/05/2019**
Shoring **None.**
Stability **Sides collapsing below 3.80m.**
Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **22/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
3.30		Rose to 3.00 in 20 mins, Slow inflow.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Plate Load Test carried out at 0.50m depth.
Trial Pit terminated at 4.00m depth due to instability of the pit sides.

Logged by **MM**
Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Trial Pit	TP204
				Project No	PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	273719.2 E, 377832.7 N	Ground Level	12.73 m OD

Scale 1:50

Samples and Tests: Depth	Type	Stratum No	Results
0.00- 0.10	B		
0.10- 0.50	B		
0.20	D		
0.20	ES		
0.50- 1.50	B		
0.50	D		
0.50	ES		
1.00	D		
1.00	ES		
1.50- 2.50	B		mc=20%
1.50	D		
2.00	D		
2.00	ES		
2.50- 3.30	B		
2.50	D		
3.30	D		

Strata: Description	Depth	Legend	Level m OD
	G.L.		12.73
Grass over TOPSOIL: Brown slightly gravelly slightly silty fine to coarse sand with a low cobble content. Many rootlets.	0.10		12.63
MADE GROUND: Brown gravelly slightly clayey fine to coarse with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies, concrete and brick fragments. Some rootlets.	0.50		12.23
Firm to stiff brown mottled orange slightly sandy gravelly CLAY with a medium cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
Below 1.80m, stiff to very stiff, low cobble content.			
Below 2.00m, brown mottled bluish grey.			
End of Excavation	3.30		9.43

Excavation

Plant	JCB 3CX	Width (B)	0.70
Date	23/05/2019	Length (C)	2.50
Shoring	None.	Date Backfilled	23/05/2019
Stability	Stable during excavation.		

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks

ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Plate Load Test carried out at 0.25m depth.
The Trial Pit was terminated at a depth of 3.30m - unable to excavate further due to the stiffness of the clay.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JN

Figure 1 of 1

13/11/2019

geotechnics

TRIAL PIT RECORD — Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED**

Trial Pit **TP205**
Project No **PN193981**

Client **RAMBOLL UK LIMITED**

National Grid Coordinates **273864.1** E **377892.1** N

Ground Level **11.61** m OD

Scale 1:50

Samples and Tests

Depth	Type	Stratum No	Results
0.00- 0.25	B		
0.20	ES		
0.25- 1.25	B		
0.25	D		
0.50	ES		
1.00	ES		
1.25- 2.50	B		
1.25	D		
2.00	ES		
2.50	D		

Strata

Description	Depth	Legend	Level m OD
	G.L.		11.61
Grass over TOPSOIL: Brown slightly gravelly slightly clayey fine to coarse sand with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies. Some rootlets.	0.25		11.36
Orangish brown slightly gravelly slightly silty fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies. From 1.25m, gravelly, very silty.			
End of Excavation	2.80		8.81

Excavation

Plant **JCB 3CX**
Date **23/05/2019**
Shoring **None.**
Stability **Sides spalling at 2.80m depth.**

Width (B) **0.70**
Length (C) **2.50**
Date Backfilled **23/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
2.50	2.50	Rose to 2.20 in 20 mins, Medium inflow.

Remarks
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Plate Load Test carried out at 0.25m depth.
Trial Pit terminated at 2.80m depth due to instability of the pit sides.

Logged by **JN**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Trial Pit / Project No	TP206 / PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	273941.3 E, 377869.6 N	Ground Level	10.05 m OD

Samples and Tests | Strata | Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		10.05
0.00- 0.25	B			Grass over TOPSOIL: Brown slightly gravelly slightly clayey fine to coarse sand with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies. Many rootlets.	0.25		9.80
0.20	ES						
0.25- 1.40	B			MADE GROUND: Firm brown slightly sandy gravelly clay with a low cobble content. Gravel is angular to subrounded fine to coarse of various lithologies.			
0.50	D						
0.50	ES						
1.00	D						
1.00	ES						
1.40- 1.80	B			MADE GROUND: Soft to firm brown mottled orange sandy gravelly clay. Gravel is angular to subrounded fine to coarse of various lithologies, brick fragments and clay pipe. Occasional lenses (up to 50mm thick) of yellow fine to coarse sand. At 1.40m, land drain.	1.40		8.65
1.80- 2.80	B		mc=14%		1.80		8.25
2.00	D						
2.00	ES						
2.80- 3.20	B			Stiff to very stiff brown mottled grey sandy gravelly CLAY with a low cobble and low boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.			
3.00	D						
3.00	ES						
				End of Excavation	3.20		6.85

Excavation

Plant: JCB 3CX
Date: 23/05/2019
Shoring: None.
Stability: Stable during excavation.
Width (B): 0.70
Length (C): 2.50
Date Backfilled: 23/05/2019

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks: ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Plate Load Test carried out at 0.25m depth.
The Trial Pit was terminated at a depth of 3.20m - unable to excavate further due to the stiffness of the clay.

Logged by: JN
Figure: 1 of 1
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Engineer	RAMBOLL UK LIMITED	Trial Pit	TP207
				Project No	PN193981
Client	RAMBOLL UK LIMITED	National Grid Coordinates	274108.0 E, 378132.0 N	Ground Level	7.80 m OD

Samples and Tests

Depth	Type	Stratum No	Results
0.00- 0.20	D		
0.00- 0.20	ES		
0.20- 0.50	B		
0.20- 0.50	D		
0.20- 0.50	ES		
0.50- 0.60	B		mc=5.2%
0.50- 0.60	D		
0.80	B		
1.00	ES		
1.80	B		
1.80	D		
2.15- 2.40	B		
2.15- 2.40	D		

Strata

Scale 1:50

Description	Depth	Legend	Level m OD
	G.L.		7.80
Grass over TOPSOIL: Soft brown slightly sandy slightly gravelly silt with some rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.20		7.60
MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Grading to slightly gravelly sandy clay in places.	0.80		7.00
MADE GROUND: Brown sandy silty angular to subangular fine to coarse gravel of various lithologies. High cobble content.	1.80		6.00
Brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.	2.15		5.65
Brown slightly sandy angular fine to coarse GRAVEL of various lithologies. Low cobble and boulder content.	2.40		5.40
End of Excavation			

Excavation

Plant	JCB 3CX.	Width (B)	0.70
Date	24/07/2019	Length (C)	2.50
Shoring	None.	Date Backfilled	24/07/2019
Stability	Sides collapsing below 2.15m.		

Groundwater

Depth Observed	Depth of Pit	Details
2.40		Rose to 2.30 in 20 mins, Slow inflow.

Remarks ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Trial Pit was terminated at a depth of 2.40m due to instability of the pit sides.

Logged by CW

Figure 1 of 1
10/12/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Trial Pit **TP208** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274176.0** E **378175.0** N Ground Level **7.40** m OD

Samples and Tests | Strata | Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		7.40
0.00- 0.20	D			Grass over TOPSOIL: Soft brown slightly sandy slightly gravelly silt with some rootlets. Gravel is subangular to subrounded fine to coarse of various lithologies.	0.20		7.20
0.00- 0.20	ES						
0.20- 0.50	B						
0.20- 0.50	D						
0.20- 0.50	ES				0.65		6.75
0.50- 0.60	B		mc=6.0%	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Grading to slightly sandy slightly gravelly clay in places.			
0.50- 0.60	D						
0.65	B						
0.65	D						
1.10	B		mc=5.0%				
1.50	B			At 0.60m, concrete boulder.	1.50		5.90
1.50	D			MADE GROUND: Grey sandy silty angular medium to coarse gravel of limestone. Low cobble content. Below 1.00m, medium cobble content.			
				Brown slightly gravelly clayey fine to coarse SAND with a high cobble content. Gravel is subrounded to rounded fine to coarse of various lithologies.			
2.80- 3.00	B				2.80		4.60
2.80- 3.00	D			Brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of various lithologies.	3.00		4.40
				End of Excavation			

Excavation

Plant **JCB 3CX.**
Date **24/07/2019**
Shoring **None.**
Stability **Stable during excavation.**
Width (B) **0.70**
Length (C) **2.50**
Date Backfilled **24/07/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**

Logged by **CW**

Figure **1 of 1**
10/12/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Trial Pit** **TP210** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272914.1** E **377252.5** N Ground Level **11.30** m OD

Samples and Tests | Strata | Scale 1:50

Depth	Type	Stratum No	Results
0.00- 0.10	B		
0.10- 1.00	B		
0.20	ES		
0.50	ES		
1.00- 2.00	B		
1.00	D		
1.00	ES		
2.00- 2.70	B		
2.00- 2.70	D		
2.00	ES		
2.05	D		

Description	Depth	Legend	Level m OD
	G.L.		11.30
Grass over TOPSOIL: Yellowish brown slightly gravelly slightly silty fine to coarse sand with many rootlets. Gravel is subangular to rounded fine to coarse of various lithologies.	0.10		11.20
MADE GROUND: Yellowish brown gravelly silty fine to coarse sand with a low subrounded cobble content of quartzite. Gravel is subangular to rounded fine to coarse of various lithologies. Some pockets of sandy gravelly clay. Below 0.30m, low boulder content.	1.00		10.30
POSSIBLE MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse sand with a medium cobble content and low subangular to rounded boulder content. Gravel is subangular to rounded fine to coarse of various lithologies. Some pockets of sandy gravelly clay. At 2.70m, obstruction.	2.70		8.60
End of Excavation			

Excavation

Plant **JCB 3CX**
Date **21/05/2019**
Shoring **None.**
Stability **Stable during excavation.**
Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **21/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Plate Load Test carried out at 0.25m depth.
Trial Pit terminated at 2.70m depth on encountering an obstruction - excavator was moved 2.00m to the west (TP210A).

Logged by **MM**
Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Trial Pit** **TP210A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272917.5** E **377255.4** N Ground Level **11.22** m OD

Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		11.22
0.00- 0.10	B			Grass over TOPSOIL: Brown gravelly slightly clayey fine to coarse sand with some rootlets. Gravel is angular to subrounded fine to coarse of various lithologies.	0.20		11.02
0.10- 1.00	B			MADE GROUND: Yellowish brown gravelly slightly silty fine to coarse sand with a medium cobble content and low subangular to subrounded boulder content. Gravel is angular to subrounded fine to coarse of various lithologies.			
0.20	ES						
0.50	ES						
1.00- 2.00	B			At 1.10m, angle grinder disc.			
1.00	ES						
2.00- 2.70	B						
2.00	D						
2.00	ES						
2.70	D			At 2.70m, obstruction.	2.70		8.52
				End of Excavation			

Excavation

Plant **JCB 3CX**
Date **21/05/2019**
Shoring **None.**
Stability **Stable during excavation.**
Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **21/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Trial Pit terminated at 2.70m depth on encountering an obstruction.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD *Trial Pit*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Trial Pit** **TP211** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273574.5** E **377734.6** N Ground Level **6.98** m OD

Scale 1:50

Samples and Tests				Strata			
Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		6.98
0.00- 1.00 0.20 0.50	B ES ES			MADE GROUND: Black gravelly fine to coarse sand of ash. Gravel is subangular to subrounded fine to coarse of various lithologies. Some rootlets.			
1.00- 2.00 1.00 1.00	B D ES		mc=37%	Below 1.00m, very gravelly, very clayey.			
2.00- 3.00 2.00 2.00	B D ES		mc=41%	Soft bluish grey slightly sandy CLAY.	2.00		4.98
3.00- 4.00 3.00 3.00	B D ES			Soft bluish grey slightly sandy SILT.	3.00		3.98
4.00	D						
				End of Excavation	4.20		2.78

Excavation

Plant **JCB 3CX.**
Date **22/05/2019**
Shoring **None.**
Stability **Sides collapsing below 1.50m.**
Width (B) **0.70**
Length (C) **3.00**
Date Backfilled **22/05/2019**

Groundwater

Depth Observed	Depth of Pit	Details
2.00		Seepage, no rise.
3.70		Seepage, no rise.

Remarks **ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.**
Plate Load Test carried out at 0.25m depth.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

TRIAL PIT RECORD — Trial Pit

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS | Engineer: RAMBOLL UK LIMITED | Trial Pit: TP212 | Project No: PN193981

Client: RAMBOLL UK LIMITED | National Grid Coordinates: 273547.0 E, 377697.7 N | Ground Level: 6.42 m OD

Scale 1:50

Depth	Type	Stratum No	Results	Description	Depth	Level m OD
					G.L.	6.42
0.00- 0.50	B			Grass over MADE GROUND: Black slightly gravelly fine to coarse sand with some rootlets. Gravel is angular fine to medium of brick fragments, clinker, glass and ceramic fragments.		
0.20	ES					
0.50- 1.20	B					
0.50	D					
0.50	ES					
1.00	D		mc=46%			
1.00	ES					
1.20- 2.00	B		mc=60%		1.20	5.22
				Soft bluish grey CLAY.		
2.00- 3.00	B				2.00	4.42
2.00	D		mc=54%	Firm bluish grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to medium of various lithologies.		
2.00	ES					
				At 2.70m, land drain encountered.		
3.00- 4.00	B				3.00	3.42
3.00	D			Soft bluish grey gravelly SILT. Gravel is angular to subangular fine to coarse of various lithologies.		
3.00	ES					
4.00	D				4.00	2.42
				End of Excavation		

Excavation

Plant: JCB 3CX.
Date: 22/05/2019
Shoring: None.
Stability: Sides collapsed at 4.00m.

Width (B): 0.70
Length (C): 3.00
Date Backfilled: 22/05/2019

Groundwater

Depth Observed	Depth of Pit	Details
1.20		Seepage, no rise.
2.70		Inflow from land drain.
3.30		Slow inflow, no rise.

Remarks: ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Plate Load Test carried out at 0.25m depth.
Trial Pit terminated at 4.00m depth due to the collapse of the pit sides.

Logged by: MM
Figure: 1 of 1
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

APPENDIX 5

Trial Pit Photographs

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP201 Pit



TP201 Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP201 Spoil

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP202 Pit



TP202 Pit Side

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP202 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP203 Pit



TP203 Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP203 Spoil

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP204 Pit



TP204 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP205 Pit



TP205 Spalling

geotechnics

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP205 Spoil

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP206 Pit



TP206 Spoil

PHOTOGRAPHS

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP207 Pit



TP207 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP208 Pit



TP208 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP210 Pit



TP210 Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP210 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP210A Pit



TP210A Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP211 Pit



TP211 Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP211 Spoil

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP212 Pit



TP212 Pit Side

Project Number : PN193981

Project : A55 JUNCTIONS 15 AND 16 IMPROVEMENTS



TP212 Spoil

APPENDIX 6

Dynamic Sample Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation



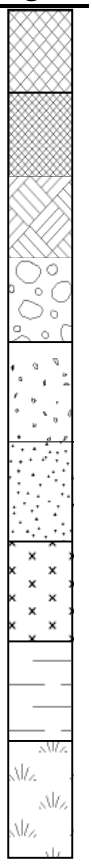
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

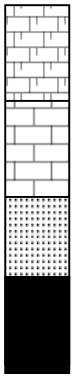
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



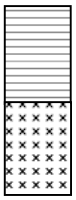
Chalk

Limestone

Sandstone

Coal

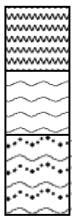
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

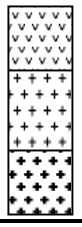


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials



Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

BOREHOLE RECORD – Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS101**
Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268765.9** E **375668.6** N Ground Level **12.92** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
						MADE GROUND: Black asphalt.	**G.L.**		**12.92**
						MADE GROUND: Purple slightly sandy angular fine to medium gravel of mudstone. (Sub base).	**0.34**		**12.58**
1.20- 1.65		**(DRY)**			**S15**				
						At 2.00m, obstruction.	**2.00**		**10.92**
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.34	**0.30**	**Pavement Core**	**AJ**
1.20	**0.30**	**Inspection Pit**	**AL/JJ**
2.00	**0.10**	**Dynamic Sampler**	**AL/JJ**

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			**06/06/19**	**08:00**
2.00		**DRY**	**06/06/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 2.00m on encountering an obstruction.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to 0.34m, tarmacadam up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1**
13/11/2019

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BOREHOLE RECORD – Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** **Borehole** **WS102**
Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268797.2** E **375693.6** N Ground Level **14.02** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		14.02
						MADE GROUND: Black asphalt.			
0.33- 1.20	B						0.32		13.70
0.50	ES					MADE GROUND: Purple slightly sandy angular fine to medium gravel of mudstone. (Sub base).			
1.00	ES					Below 1.00m, gravel is fine to coarse.			
1.20- 1.30	D						1.20		12.82
1.20- 1.65		(DRY)			S13	MADE GROUND: Medium dense bluish grey angular to subangular fine to coarse gravel of limestone and slate.			
1.30- 1.50	D								
1.50- 1.80	D								
2.20	ES						2.20		11.82
2.50- 2.70	D					MADE GROUND: Stiff brown mottled orangish grey slightly gravelly clay. Gravel is angular to subangular fine to coarse of sandstone, mudstone, limestone and slate.			
2.70- 3.00	D								
3.00- 3.20	D						3.00		11.02
3.00- 3.45		(DRY)			S28	Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and siltstone.			
3.20- 3.80	B								
3.80	ES								
4.00- 4.43		(DRY)			S50/ 284	Below 4.00m, very stiff.			
						End of Borehole	5.00		9.02

Boring

Depth	Hole Dia	Technique	Crew
0.33	0.30	Pavement Core	AJ
1.20	0.30	Inspection Pit	AL/JJ
5.00	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			06/06/19	08:00
5.00		DRY	06/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to 0.33m, tarmacadam up to ground level.

Logged by **MM**

Figure **1 of 1**
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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS201** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272647.6** E **377018.9** N Ground Level **22.04** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		22.04
						MADE GROUND: Asphalt.			
0.20- 1.10	B						0.20		21.84
0.20	ES					**MADE GROUND: Red clayey angular to subrounded fine to medium gravel of limestone and mudstone. (Sub base).**			
0.50	D								
0.50	ES								
1.00	ES								
1.20- 1.60	B						1.10		20.94
1.20- 1.65	D	(DRY)			S15	**POSSIBLE MADE GROUND: Firm to stiff yellow slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse of various lithologies.**			
1.60- 1.70	D								
2.00- 2.45	D	(DRY)			S22				
2.00	ES								
2.20- 2.60	B								
2.60- 2.80	D								
3.00- 3.45	#	(DRY)			S13				
3.00	ES								
3.20- 3.60	B								
3.60- 3.80	D								
						Below 3.80m, grey.			
4.00- 4.45	D	(DRY)			S17				
4.00	ES								
4.20- 4.60	B								
4.60- 4.80	D								
5.00- 5.45	D	(DRY)			S20				
						End of Borehole	5.45		16.59

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	GM/AL
5.45	0.10	Dynamic Sampler	GM/AL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			30/05/19	08:00
5.45		DRY	30/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

AGS

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 4.50m with a geowrapped slotted section from 1.50m to 4.50m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 4.50m, gravel filter up to 1.50m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS202** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272799.3** E **377219.9** N Ground Level **10.92** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		10.92
0.00- 0.70	B					MADE GROUND: Black asphalt.	0.10		10.82
0.20	ES								
0.20			PID=1.0			MADE GROUND: Light yellowish grey slightly sandy angular fine to medium gravel of limestone. (Sub base).			
0.50	ES								
0.50			PID=6.5						
0.70- 1.20	B					At 0.60m, ceramic pipe running perpendicular to carriageway.	0.70		10.22
0.70	D								
1.00	ES								
1.00			PID=0.4			MADE GROUND: Firm yellowish grey slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of limestone.			
1.20- 1.80	B						1.20		9.72
1.20	D								
1.20- 1.65		(DRY)			S9				
						MADE GROUND: Firm orangish brown slightly sandy gravelly clay with a low cobble content. Gravel is angular to subangular fine to coarse of sandstone, limestone, mudstone and quartzite.			
1.80	D								
2.00	ES								
2.00- 2.45		(DRY)			S28	Below 2.00m, stiff.	2.10		8.82
2.00			PID=2.6						
2.10- 2.50	D					MADE GROUND: Medium dense bluish grey gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of sandstone, mudstone and clinker.			
2.50- 3.00	D								
3.00- 3.30	D						3.00		7.92
3.00	ES					MADE GROUND: Very stiff orangish brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of sandstone, limestone, mudstone and quartzite.			
3.00- 3.45		(DRY)			S36				
3.00			PID=3.6						
3.50	ES						3.50		7.42
3.50- 3.50		(DRY)			S50/0	Below 3.00m, slight hydrocarbon odour.			
3.50			PID=115.2			At 3.50m, obstruction.			
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	AL/JJ
3.50	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/06/19	08:00
3.50		DRY	04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 3.50m on encountering an obstruction.
PID meter readings were undertaken on the ES samples and the results in ppm are presented above.
A 50mm standpipe was installed to 3.50m with a geowrapped slotted section from 1.00m to 3.50m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS203** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272882.6** E **377281.0** N Ground Level **9.58** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		9.58
0.10- 0.70	B					MADE GROUND: Black asphalt.	0.10		9.48
0.10	D								
0.20	ES					MADE GROUND: Grey slightly sandy angular fine to medium gravel of limestone. (Sub base).			
0.50	ES								
0.70- 1.20	B						0.70		8.88
0.70	D					MADE GROUND: Firm brownish grey slightly sandy gravelly clay. Gravel is angular fine to medium of limestone.			
1.00	ES								
1.20- 1.65	D	(DRY)			S21		1.20		8.38
1.20	ES					MADE GROUND: Stiff dark brown slightly sandy slightly gravelly silt. Gravel is angular to subangular fine to coarse of sandstone, siltstone, limestone, mudstone and concrete.			
1.25- 1.50	D						1.50		8.08
1.50- 1.75	D								
1.50	ES						1.75		7.83
1.75- 2.00	D								
2.00- 2.45	D	(DRY)			S3	MADE GROUND: Grey gravelly slightly silty fine to coarse sand. Gravel is angular to subangular fine to coarse of sandstone, limestone, mudstone and concrete.			
2.00	ES								
2.05- 2.20	D						2.20		7.38
2.20- 3.00	B								
2.20	D								
2.20	ES					MADE GROUND: Very soft light greyish brown slightly sandy slightly gravelly clay. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone, limestone and concrete.			
3.00- 4.00	B						3.00		6.58
3.00- 3.45	D	(DRY)			S38				
3.05	D					MADE GROUND: Firm brown slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of sandstone, mudstone and limestone.			
3.20	ES								
						Very stiff light brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, siltstone and			
4.00- 5.00	B								
4.00- 4.45	D	(DRY)			S24	mudstone.			
4.05	D					Below 4.00m, stiff.			
5.00- 5.45	D	(DRY)			S22				
							5.45		4.13
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	AL/JJ
5.45	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/06/19	08:00
5.45		DRY	04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
5.45					Seepage - no rise.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 5.00m with a geowrapped slotted section from 1.00m to 4.50m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JD**

Figure **1 of 1**

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geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS204** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272720.3** E **376996.4** N Ground Level **30.79** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		30.79
0.20	ES					Grass over TOPSOIL: Brown gravelly fine to coarse sand with a low cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Some rootlets.	0.50		30.29
0.50- 1.20	B					MADE GROUND: Yellow mottled orange and grey slightly gravelly slightly clayey fine to coarse sand. Gravel is subangular to subrounded fine to coarse of various lithologies. Below 1.20m, medium dense.			
0.50	D								
0.50	ES								
1.00	ES								
1.20- 1.60	B								
1.20- 1.65	D	(DRY)			S18				
1.60- 1.80	D					Below 1.60m, clayey.			
2.00- 2.60	B								
2.00- 2.45	D	(DRY)			S23				
2.00	ES								
2.60- 2.80	D								
3.00- 3.60	B					Below 3.00m, dense.			
3.00- 3.45	D	(DRY)			S31				
3.00	ES								
3.60- 3.80	D								
4.00- 4.80	B								
4.00	ES								
4.00- 4.45		(DRY)			C34				
4.80- 5.00	D								
5.00- 5.45	D	(DRY)			S34				
						End of Borehole	5.45		25.34

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	GM/AL
5.45	0.10	Dynamic Sampler	GM/AL

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			30/05/19	08:00
5.45		DRY	30/05/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
A 50mm standpipe was installed to 5.00m with a geowrapped slotted section from 1.00m to 5.00m with upright lockable protective cover. Backfill details from base of hole: gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Logged by **MM**

Figure **1 of 1** 13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS205** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272733.9** E **377174.5** N Ground Level **14.26** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							G.L.		14.26
0.10- 1.00	B					MADE GROUND: Black asphalt.	0.10		14.16
0.20	ES								
0.20			PID=0.2			MADE GROUND: Dark bluish grey sandy angular fine to medium gravel of limestone and mudstone. (Sub base).			
0.50	ES								
0.50			PID=0.1						
1.00- 1.60	B								
1.00	D								
1.00	ES						1.20		13.06
1.20- 1.65		(DRY)			S7	MADE GROUND: Loose grey sandy slightly clayey angular to subangular fine to coarse gravel of mudstone and slate. Medium cobble content.			
1.00			PID=0.1						
1.80	D								
2.00	ES					Below 2.00m, dense.			
2.00- 2.45		(DRY)			S33				
2.00			PID=0.0						
2.50- 2.86		(DRY)			S50/ 210	Below 2.50m, very dense.			
						At 2.86m, obstruction.			
						End of Borehole	2.86		11.40

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	AL/JJ
2.86	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			05/06/19	08:00
2.86		DRY	05/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
The Borehole was terminated at a depth of 2.95m on encountering an obstruction.
PID meter readings were undertaken on the ES samples and the results in ppm are presented above.
Backfill details from base of hole: bentonite seal up to 0.50m, arisings up to ground level.

Logged by **MM**

Figure **1 of 1** 13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS205A** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272734.0** E **377174.6** N Ground Level **14.01** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		14.01
0.00- 1.00	B					MADE GROUND: Black asphalt.	0.10		13.91
0.10	D								
0.20	ES					MADE GROUND: Yellowish grey slightly sandy angular fine to medium gravel of limestone. (Sub base).			
0.20			PID=0.1						
0.50	ES								
0.50			PID=0.1						
1.00	ES								
1.00			PID=0.0						
1.20	D						1.20		12.81
1.20- 1.65		(DRY)			S14	MADE GROUND: Medium dense grey sandy angular to subrounded fine to coarse gravel of limestone, mudstone and slate. Between 1.45-1.60m, pocket of gravelly clay.			
1.45- 1.60	D								
1.60- 1.90	B								
							1.90		12.11
1.90	D					MADE GROUND: Stiff brown slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of mudstone, limestone and brick fragments.			
2.00	ES						2.20		11.81
2.00- 2.45		(DRY)			S22				
2.00			PID=0.0						
2.10	D					MADE GROUND: Medium dense grey sandy angular to subangular fine to coarse gravel of limestone, mudstone and slate.			
2.25	D								
2.30	ES								
2.30			PID=0.1						
2.90	D								
3.00	ES								
3.00- 3.45		(DRY)			S23				
3.00			PID=0.0						
3.35	D								
3.50- 3.95		(DRY)			S19				
3.90	D								
4.00	ES								
4.00- 4.45		(DRY)			S26				
4.00			PID=0.4						
							4.45		9.56
						End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	AL/JJ
4.45	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			05/06/19	08:00
4.45		DRY	05/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
PID meter readings were undertaken on the ES samples and the results in ppm are presented above.
A 50mm standpipe was installed to 3.00m with a geowrapped slotted section from 1.00m to 3.00m with flush lockable protective cover. Backfill details from base of hole: collapsed material up to 3.00m, gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1** 13/11/2019

geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS206** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272655.2** E **377107.0** N Ground Level **16.34** m OD

Scale 1:50

Sampling			Properties		Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
					MADE GROUND: Light grey concrete.	**G.L.**		**16.34**
						0.08		**16.26**
					End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.08	**0.40**	**Inspection Pit**	**MM**	**G.L.**			**05/06/19**	**08:00**						**None**
				0.08		**DRY**	**05/06/19**	**18:00**						**encountered.**

Remarks **The Borehole was terminated at a depth of 0.08m within concrete.**
Backfill details from base of hole: arisings up to ground level.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Dynamic Sampler

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **WS207** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273015.0** E **377382.4** N Ground Level **10.44** m OD

Scale 1:50

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		10.44
0.10- 1.00	B					MADE GROUND: Black asphalt.	0.10		10.34
0.10	D								
0.20	ES					MADE GROUND: Light grey slightly sandy angular fine to medium gravel of mudstone. (Sub base).			
0.20			PID=11.8						
0.50	ES								
0.50			PID=11.3						
1.00	ES								
1.00			PID=15.3						
1.20- 1.65		(DRY)			S16		1.20		9.24
1.25	ES					MADE GROUND: Stiff brown slightly gravelly sandy clay. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone, limestone and brick fragments.	1.40		9.04
1.25			PID=0.2						
1.30	D								
1.45	ES								
1.45			PID=0.1				1.80		8.64
1.50	D					MADE GROUND: Grey slightly silty fine to coarse sand. Between 1.60-1.70m, slightly gravelly.			
1.60- 1.75	D								
1.85	ES								
1.85			PID=1.5						
2.00- 2.45		(DRY)			S20	MADE GROUND: Stiff brown mottled grey slightly sandy slightly gravelly clay with a low to medium cobble content. Gravel is angular to subrounded fine to coarse of limestone, sandstone and mudstone.	2.65		7.79
2.20	D								
2.40	D								
2.65	ES								
2.65			PID=0.9						
3.00	D								
3.00- 3.45		(DRY)			S14	MADE GROUND: Medium dense brownish grey slightly sandy clayey angular to subrounded fine to coarse gravel of sandstone, mudstone, limestone and tarmacadam.	3.20		7.24
3.25	ES								
3.25			PID=1.5						
3.80	D					MADE GROUND: Firm to stiff brown mottled orange slightly sandy gravelly clay with a low cobble content. Gravel is angular to subrounded fine to coarse of limestone, mudstone, sandstone and tarmacadam.			
4.00- 4.45		(DRY)			S11		4.10		6.34
4.25	ES								
4.25			PID=0.1						
4.40	D								
						Firm light brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and limestone.			
5.00- 5.45		(DRY)			S8	Below 5.00m, soft to firm.			
						End of Borehole	5.45		4.99

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	AL/JJ
5.45	0.10	Dynamic Sampler	AL/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			05/06/19	08:00
5.45		4.00	05/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
2.45					Seepage - no rise.
4.00					No rise.

Remarks

Inspection pit hand excavated to 1.20m depth and no services were found.
ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars.
PID meter readings were undertaken on the ES samples and the results in ppm are presented above.
A 50mm standpipe was installed to 5.00m with a geowrapped slotted section from 1.00m to 5.00m with flush lockable protective cover. Backfill details from base of hole: bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.20m, concrete up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **MM**

Figure **1 of 1**

13/11/2019

geotechnics

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
WS101	1.20	11.72	S	-	4	4	4	4	4	3	15	*

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
WS102	1.20	12.82	S	-	3	4	4	3	3	3	13	*
WS102	3.00	11.02	S	-	4	5	7	6	7	8	28	*
WS102	4.00	10.02	S	-	5	8	15	12	12	11/59	50/284	>

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
WS201	1.20	20.84	S	-	2	2	3	4	4	4	15	*
WS201	2.00	20.04	S	-	3	4	4	4	6	8	22	*
WS201	3.00	19.04	S	-	2	4	3	4	3	3	13	*
WS201	4.00	18.04	S	-	3	3	3	4	4	6	17	*
WS201	5.00	17.04	S	-	3	4	5	5	5	5	20	*

Driller	Gary Martin
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
WS202	1.20	9.72	S	0	3	4	3	1	2	3	9	*
WS202	2.00	8.92	S	-	6	9	9	8	6	5	28	*
WS202	3.00	7.92	S	-	15	28	10	8	7	11	36	*
WS202	3.50	7.42	S	-	25/0		50/0				50/0	>

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
WS203	1.20	8.38	S	-	2	2	1	2	7	11	21	*
WS203	2.00	7.58	S	-	1	-	1	1	-	1	3	*
WS203	3.00	6.58	S	-	7	5	7	10	12	9	38	*
WS203	4.00	5.58	S	-	4	4	6	6	5	7	24	*
WS203	5.00	4.58	S	-	7	6	5	4	5	8	22	*

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
WS204	1.20	29.59	S	-	2	3	5	3	5	5	18	*
WS204	2.00	28.79	S	-	4	5	5	6	6	6	23	*
WS204	3.00	27.79	S	-	5	5	6	10	8	7	31	*
WS204	4.00	26.79	C	-	5	6	8	9	8	9	34	*
WS204	5.00	25.79	S	-	7	6	8	8	9	9	34	*

Driller	Gary Martin
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
WS205	1.20	13.06	S	-	2	2	2	2	2	1	7	*
WS205	2.00	12.26	S	-	12	12	13	11	5	4	33	*
WS205	2.50	11.76	S	-	17	16	11	19	20/60		50/210	>

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - *SPT Results Summary*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
WS205A	1.20	12.81	S	-	3	2	3	4	3	4	14	*
WS205A	2.00	12.01	S	-	2	2	3	6	7	6	22	*
WS205A	3.00	11.01	S	-	2	2	2	4	6	11	23	*
WS205A	3.50	10.51	S	-	3	4	4	5	5	5	19	*
WS205A	4.00	10.01	S	-	4	3	5	6	6	9	26	*

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No** PN193981

Client RAMBOLL UK LIMITED

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
WS207	1.20	9.24	S	-	2	1	3	4	3	6	16	
WS207	2.00	8.44	S	-	5	7	6	6	6	2	20	
WS207	3.00	7.44	S	-	3	5	4	3	3	4	14	
WS207	4.00	6.44	S	-	1	-	1	1	4	5	11	
WS207	5.00	5.44	S	-	2	2	3	2	2	1	8	

Driller	Andrew Lewis
Hammer No.	110.96
Energy Ratio, Er (%)	73.00
Calibration Date	15/01/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

APPENDIX 7

Pavement Core Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation



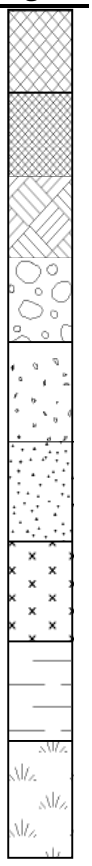
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

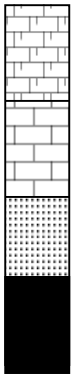
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



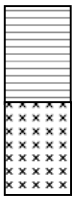
Chalk

Limestone

Sandstone

Coal

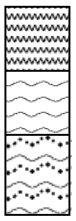
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

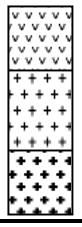


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials



Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC101** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268417.4** E **375458.8** N Ground Level **9.29** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		9.29
0.00- 0.33	C				MADE GROUND: Black asphalt. PAK Marker - no reaction.			
0.33- 0.44	CBRP					0.33		8.96
0.33- 0.42	CBRP				End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.33	0.15	Pavement Core	AJ/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			06/06/19	08:00
0.33		DRY	06/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks In situ Dynamic Cone Penetration (TRL) Test carried out at 0.33m depth.

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC102** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268437.2** E **375450.7** N Ground Level **9.59** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
					MADE GROUND: Black asphalt. PAK Marker - no reaction.	**G.L.**		**9.59**
0.33- 0.45	**CBRP**					**0.33**		**9.26**
0.33- 0.46	**CBRP**				**End of Borehole**			

Boring

Depth	Hole Dia	Technique	Crew
0.33	**0.15**	**Pavement Core**	**AJ/JJ**

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			**06/06/19**	**08:00**
0.33		**DRY**	**06/06/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks **In situ Dynamic Cone Penetration (TRL) Test carried out at 0.33m depth.**

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC103** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268587.0** E **375553.9** N Ground Level **11.20** m OD

Scale 1:50

Sampling			Properties		Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		11.20
					MADE GROUND: Black asphalt. PAK Marker - no reaction.			
0.32- 0.43	CBRP					0.32		10.88
0.32- 0.44	CBRP				End of Borehole			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.32	0.15	Pavement Core	AJ/JJ	G.L. 0.32		 DRY	06/06/19 06/06/19	08:00 18:00						None encountered.

Remarks In situ Dynamic Cone Penetration (TRL) Test carried out at 0.32m depth.

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC104** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **268595.8** E **375539.2** N Ground Level **11.20** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
					MADE GROUND: Black asphalt. PAK Marker - no reaction.	**G.L.**		**11.20**
0.33- 0.79	**CBRP**					**0.33**		**10.87**
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
1.20	**0.15**	**Pavement Core**	**AJ/JJ**

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			**06/06/19**	**08:00**
0.33		**DRY**	**06/06/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks **In situ Dynamic Cone Penetration (TRL) Test carried out at 0.33m depth.**

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC201** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **272786.0** E **377182.2** N Ground Level **12.83** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		12.83
0.00- 0.35	C				MADE GROUND: Black asphalt. PAK Marker - no reaction.			
0.34- 0.70	CBRP					0.34		12.49
					End of Borehole			

Boring Depth	Hole Dia	Technique	Crew	Progress Depth of Hole	Depth Cased	Depth to Water	Date	Time	Groundwater Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.34	0.15	Pavement Core	AJ/JJ	G.L.			03/06/19	08:00						None
				0.34		DRY	03/06/19	18:00						encountered.

Remarks In situ Dynamic Cone Penetration (TRL) Test carried out at 0.34m depth.

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC202** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273751.9** E **377892.0** N Ground Level **12.33** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		12.33
0.00- 0.32	C				MADE GROUND: Black asphalt. PAK Marker - no reaction.			
0.32- 0.67	CBRP				MADE GROUND: Grey slightly sandy angular fine to coarse gravel of limestone. (Sub base).	0.32		12.01
					End of Borehole	0.37		11.96

Boring Depth	Hole Dia	Technique	Crew	Progress Depth of Hole	Depth Cased	Depth to Water	Date	Time	Groundwater Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.32	0.15	Pavement Core	AJ/JJ	G.L.			03/06/19	08:00						None encountered.
0.37	0.15	Inspection Pit	AJ/JJ	0.37		DRY	03/06/19	18:00						

Remarks **In situ Dynamic Cone Penetration (TRL) Test carried out at 0.32m depth.**

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

geotechnics

BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC203** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **273790.0** E **377936.0** N Ground Level **12.12** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		12.12
0.00- 0.34	C				MADE GROUND: Black asphalt. PAK Marker - no reaction.			
0.34- 1.17	CBRP				MADE GROUND: Light grey slightly sandy angular fine to medium gravel of limestone. (Sub base).	0.34		11.78
						0.39		11.73
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.34	0.15	Pavement Core	AJ/JJ
0.39	0.15	Inspection Pit	AJ/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			04/06/19	08:00
0.39		DRY	04/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks In situ Dynamic Cone Penetration (TRL) Test carried out at 0.34m depth.

Logged by **MM**

Figure **1 of 1**

13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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BOREHOLE RECORD – Pavement Core

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS** Engineer **RAMBOLL UK LIMITED** Borehole **PC204** Project No **PN193981**

Client **RAMBOLL UK LIMITED** National Grid Coordinates **274201.5** E **378174.1** N Ground Level **7.65** m OD

Scale 1:50

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	Strata Description	Depth	Legend	Level m OD
						G.L.		7.65
0.00- 0.33	C				MADE GROUND: Black asphalt - HRA surface course (14mm). PAK Marker - no reaction.	0.04		7.61
0.33- 0.40	CBRP				MADE GROUND: Black asphalt - DBM base course (40mm). Some voids. PAK Marker - no reaction.	0.33		7.32
0.33- 0.46	CBRP				MADE GROUND: Grey slightly sandy angular fine to medium gravel of limestone. (Sub base).	0.38		7.27
					End of Borehole			

Boring

Depth	Hole Dia	Technique	Crew
0.33	0.15	Pavement Core	AJ/JJ
0.38	0.15	Inspection Pit	AJ/JJ

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			03/06/19	08:00
0.38		DRY	03/06/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered.

Remarks In situ Dynamic Cone Penetration (TRL) Test carried out at 0.33m depth.

Logged by **MM**

Figure **1 of 1**
13/11/2019

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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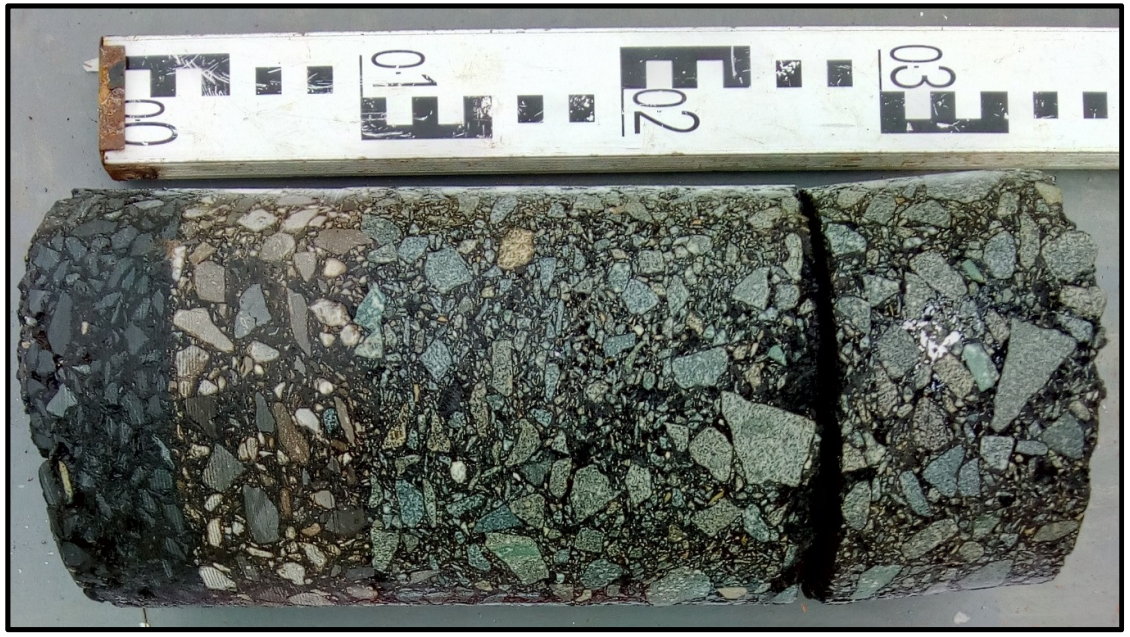
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC101
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	3	3	Surface anti-skid	3	-	None	Partly intact	Good	None indicated
3	40	37	DBM	10	Dolerite	None	Intact	Good	None indicated
40	100	60	DBM	14	Limestone	None	Intact	Good	None indicated
100	250	150	DBM	28	Dolerite	Occasional up to 5mm	Intact	Unbonded	None indicated
250	330	80	DBM	28	Dolerite	None	Intact	-	None indicated



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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC102
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	5	5	Surface anti-skid	3	-	None	Partly intact	Good	None indicated
5	40	35	DBM	10	Dolerite	None	Intact	Good	None indicated
40	100	60	DBM	10	Limestone	None	Intact	Good	None indicated
100	175	75	DBM	28	Dolerite	None	Intact	Good	None indicated
175	220	45	DBM	14	Dolerite	None	Intact	Good	None indicated
220	340	120	DBM	40	Dolerite	Occasional up to 5mm	Intact	-	None indicated



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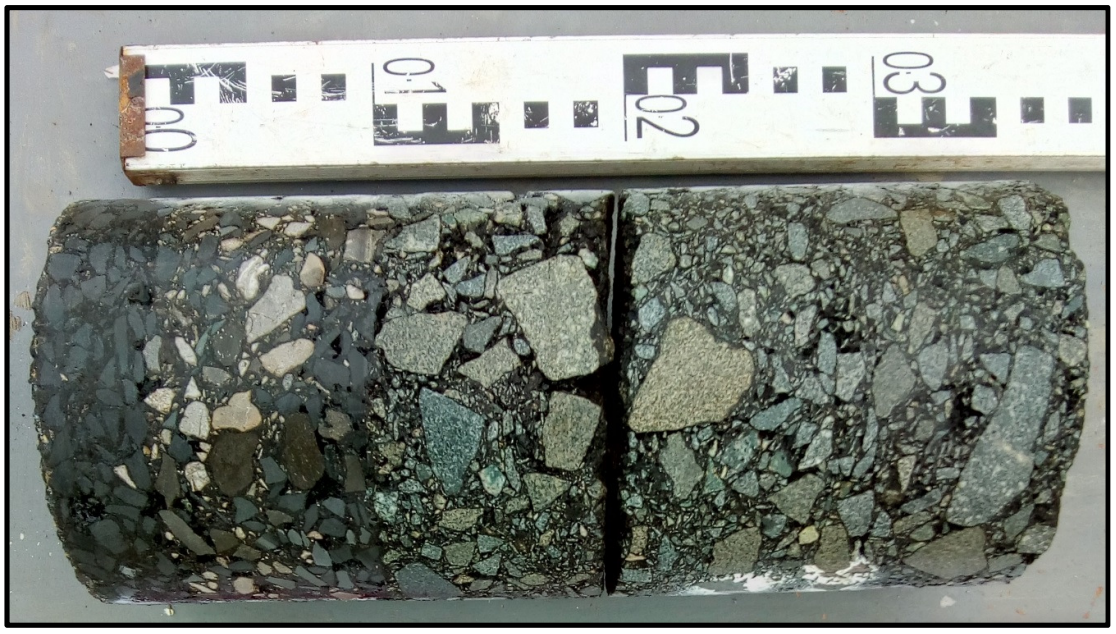
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC103
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	5	3	Surface anti-skid	3	-	None	Partly intact	Good	None indicated
3	35	32	DBM	10	Dolerite	Occasional void up to 7mm	Intact	Good	None indicated
35	100	65	DBM	20	Limestone	Occasional void up to 7mm	Intact	Unbonded	None indicated
100	180	80	DBM	40	Dolerite	None	Intact	Good	None indicated
180	330	150	DBM	14	Dolerite	None	Intact	-	None indicated



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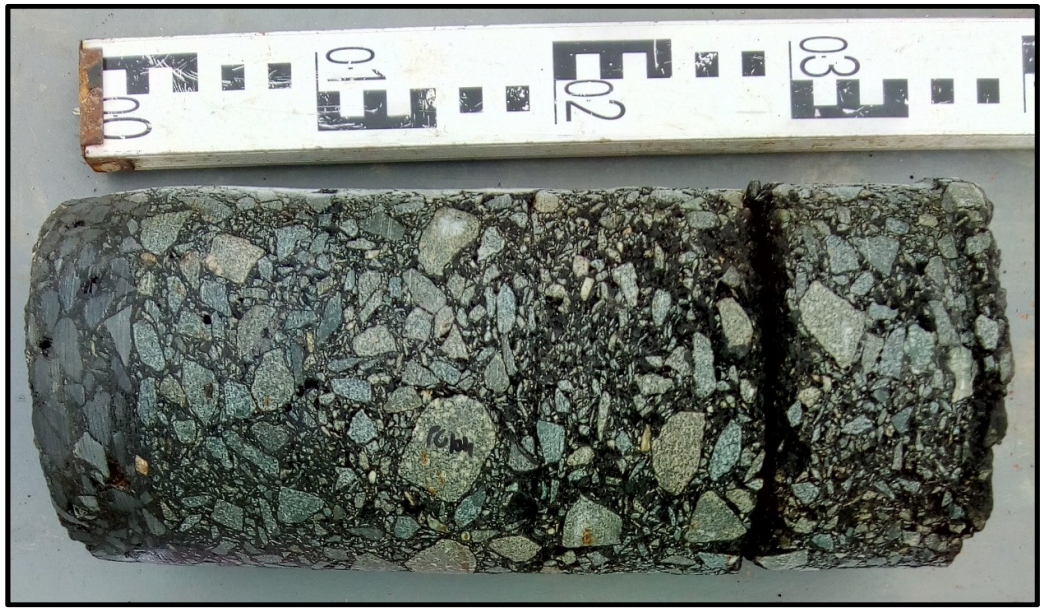
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC104
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	3	3	Surface anti-skid	3	-	None	Partly intact	Good	None indicated
3	40	37	DBM	14	Dolerite	Occasional void up to 7mm	Intact	Good	None indicated
40	100	60	DBM	20	Dolerite	Occasional void up to 2mm	Intact	Good	None indicated
100	180	80	DBM	40	Dolerite	Occasional void up to 5mm	Intact	Good	None indicated
180	250	70	DBM	28	Dolerite	Occasional void up to 5mm	Intact	Unbonded	None indicated
250	340	90	DBM	28	Dolerite	Occasional void up to 2mm	Intact	-	None indicated



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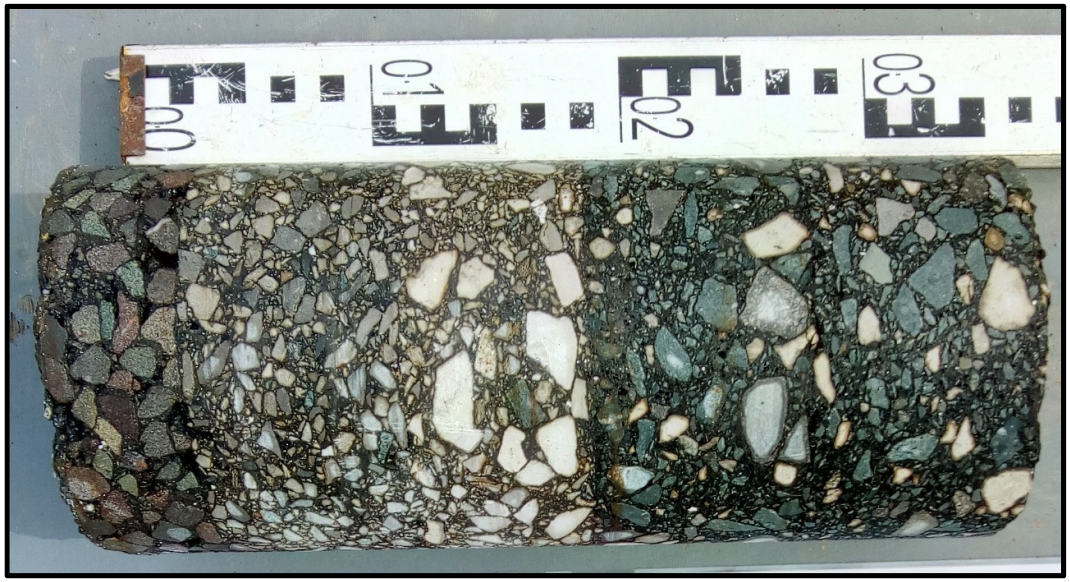
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC201
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	4	4	Surface anti-skid	3	-	None	Intact	Good	None indicated
4	50	46	DBM	14	Dolerite	Occasional void up to 5mm	Intact	Good	None indicated
50	120	70	DBM	10	Limestone	None	Intact	Good	None indicated
120	180	60	DBM	20	Limestone	None	Intact	Good	None indicated
180	250	70	DBM	28	Dolerite	None	Intact	Good	None indicated
250	330	80	DBM	28	Dolerite	None	Intact	-	None indicated



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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC202
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	35	35	HRA	10	Dolerite	None	Intact	Good	None indicated
35	175	140	DBM	28	Limestone	Some below 100mm up to 30mm	Intact	Good	None indicated
175	245	70	DBM	28	Limestone	None	Intact	Unbonded	None indicated
245	330	85	DBM	28	Limestone	None	Intact	-	None indicated



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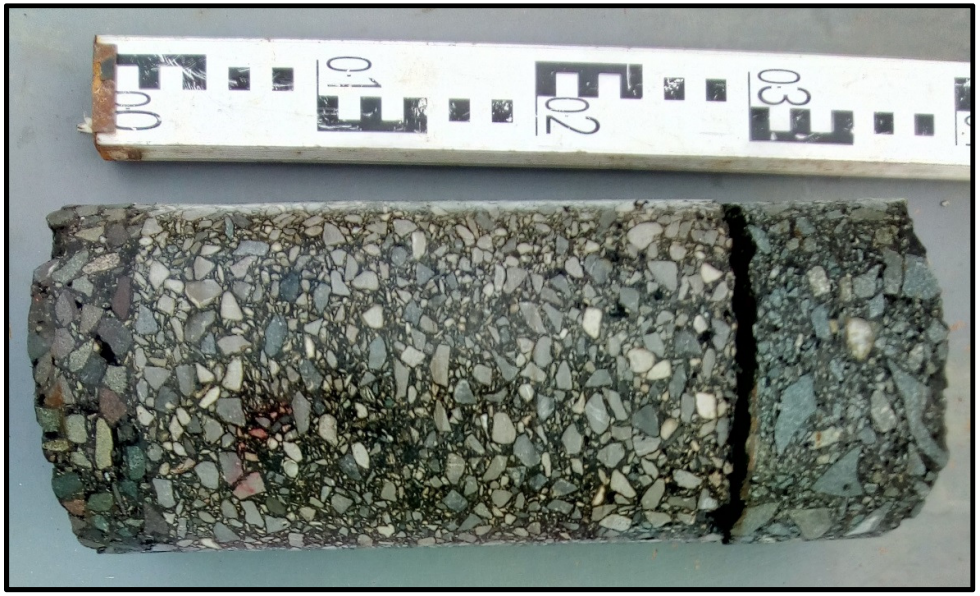
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC203
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	35	35	DBM	10	Dolerite	Some up to 5mm	Intact	Good	None indicated
35	135	100	DBM	10	Limestone	None	Intact	Good	None indicated
135	200	65	DBM	10	Limestone	None	Intact	Good	None indicated
200	260	60	DBM	10	Limestone	Some up to 5mm	Intact	Unbonded	None indicated
260	350	90	DBM	28	Dolerite	Some up to 2mm	Intact	-	None indicated



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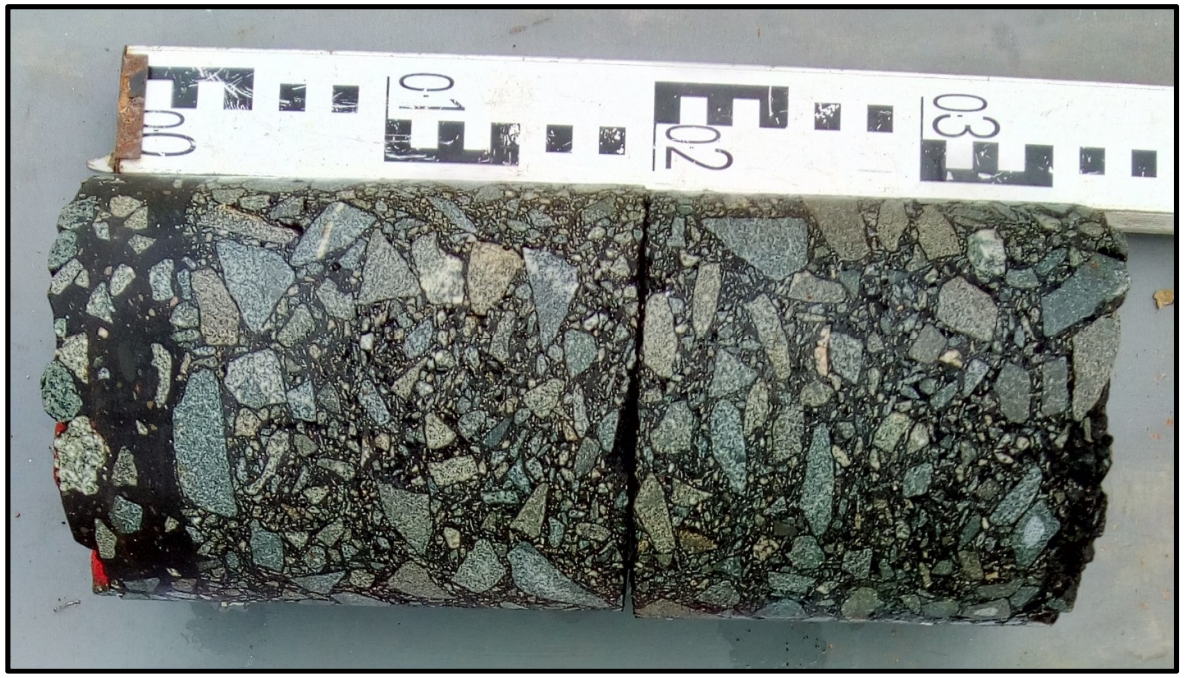
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 150mm
Core reference: PC204
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	40	40	DBM	14	Dolerite	None	Intact	Good	None indicated
40	180	140	DBM	28	Dolerite	Some up to 2mm	Intact	Unbonded	None indicated
180	350	180	DBM	28	Dolerite	Some up to 2mm	Intact	-	None indicated



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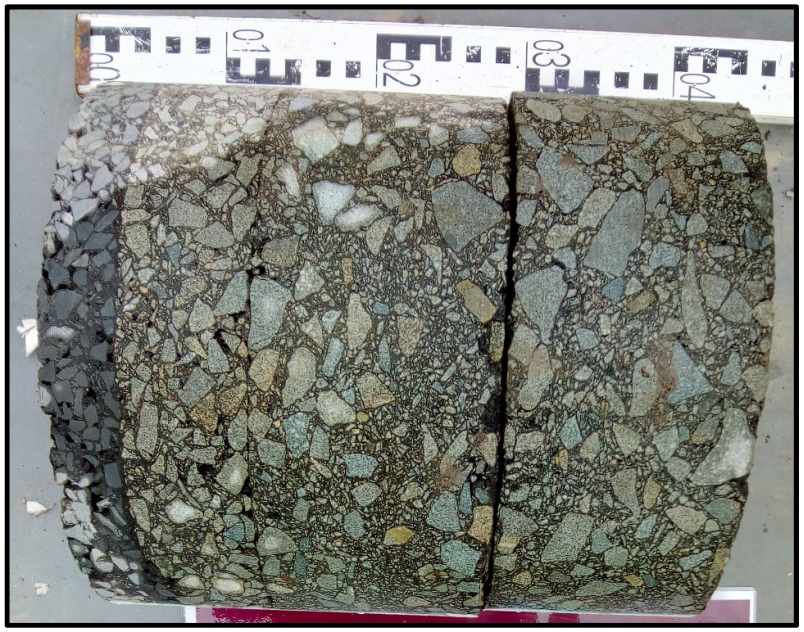
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Tel: 01977 525 037

Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 350mm
Core reference: WS101
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	35	35	DBM	10	Dolerite	Some up to 5mm	Intact	Good	None indicated
35	100	65	DBM	20	Dolerite	Occasional up to 5mm	Intact	Good	None indicated
100	210	110	DBM	28	Dolerite	None	Intact	Unbonded	None indicated
210	330	120	DBM	28	Dolerite	None	Intact	-	None indicated



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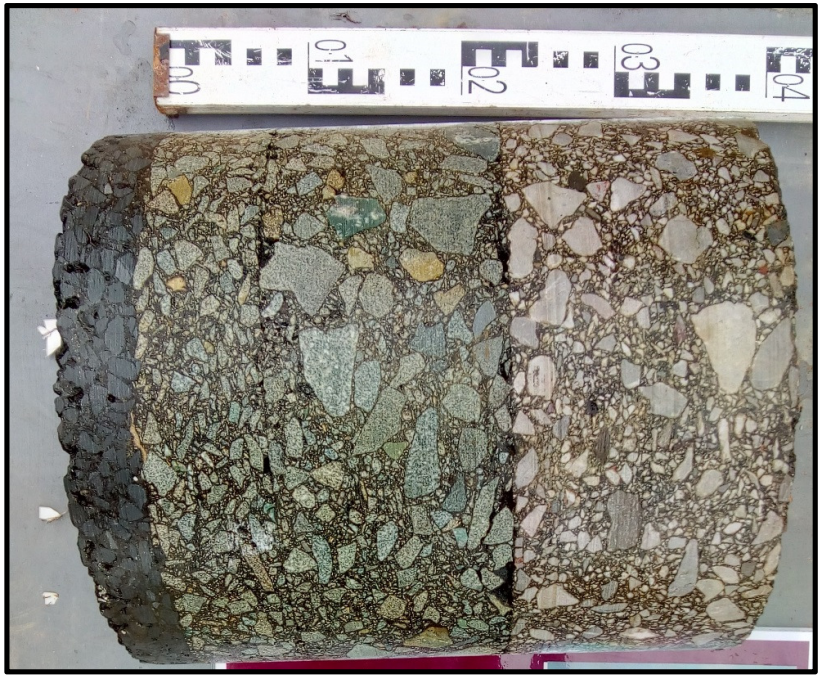
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Pavement Core Description

Project Name: A55 J15 and J16 Improvements
Project Number: PN193981
Road Name/Number: A55
Lane:
Traffic Direction:

Date cored:
Cored by: A Jones
Diameter of core: 350mm
Core reference: WS102
Co-ordinates:

From (mm)	To (mm)	Thickness (mm)	Material type	Max Gravel Size (mm)	Aggregate type	Voids	Degradation	Bonding with layer below	PAK Paint (PAH indicator)
0	30	30	DBM	10	Dolerite	None	Intact	Good	None indicated
30	90	60	DBM	20	Dolerite	None	Intact	Good	None indicated
90	200	110	DBM	40	Dolerite	None	Intact	Good	None indicated
200	330	130	DBM	40	Limestone	None	Intact	-	None indicated



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APPENDIX 8

Dynamic Cone Penetration Test Results

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268417.4 E, 375458.8 N **Ground Level** 9.29 m OD

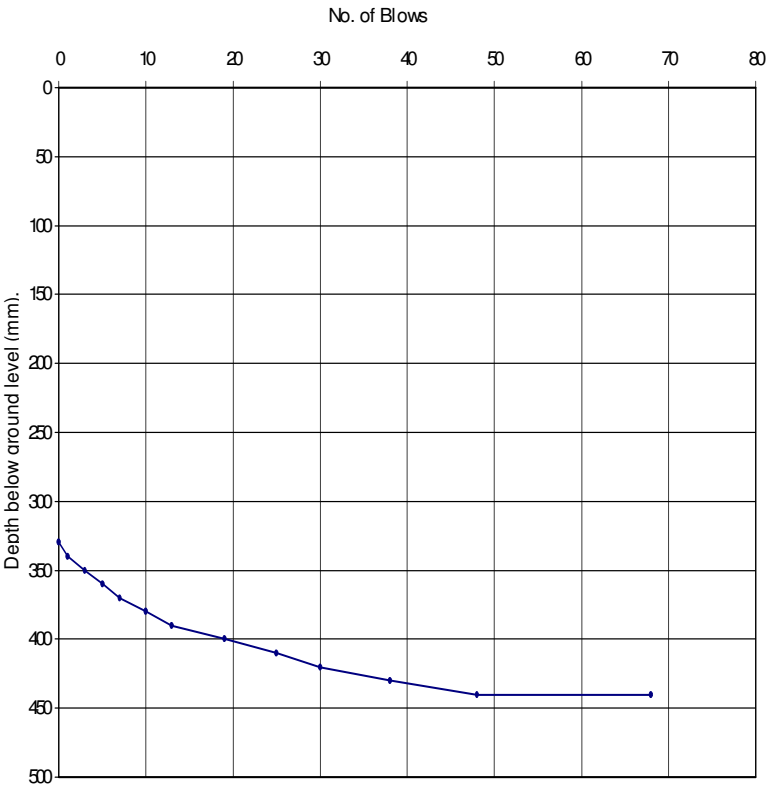
Location No. PC101
Project No. PN193981
Test No. 1
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	380	330
1	1	1	390	340
2	3	1	400	350
2	5	1	410	360
2	7	1	420	370
3	10	1	430	380
3	13	1	440	390
6	19	1	450	400
6	25	1	460	410
5	30	1	470	420
8	38	1	480	430
10	48	1	490	440
20	68	1	490	440

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	380

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	370	0	7	6	47.9
370	390	7	13	3	84.6
390	420	13	30	2	165.7
420	440	30	48	1	270.2



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.44m depth due to refusal.

Printed: 13/09/2019

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AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268417.4 E, 375458.8 N **Ground Level** 9.29 m OD

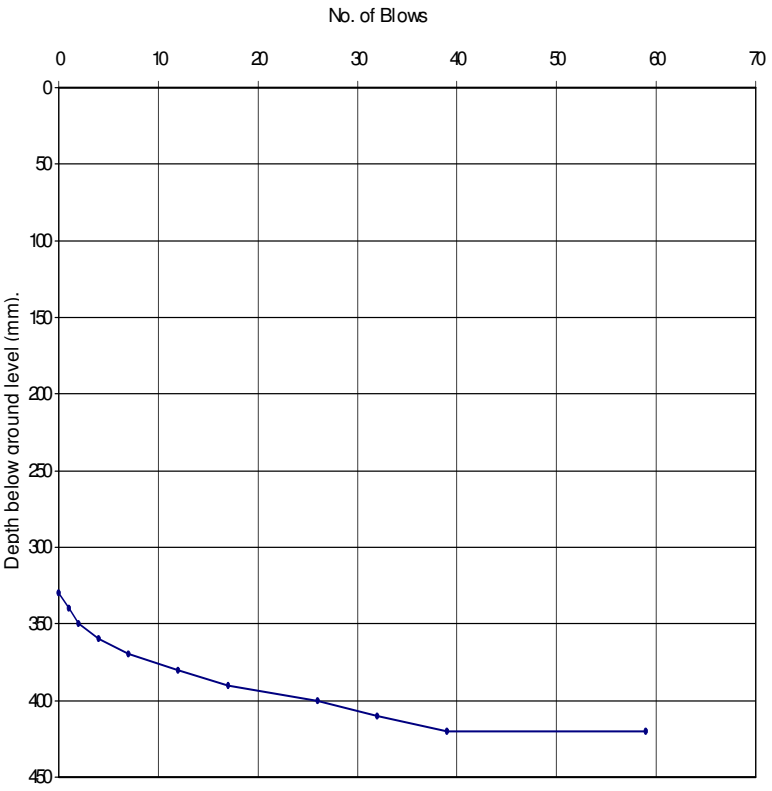
Location No. PC101
Project No. PN193981
Test No. 2
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	380	330
1	1	1	390	340
1	2	1	400	350
2	4	1	410	360
3	7	1	420	370
5	12	1	430	380
5	17	1	440	390
9	26	1	450	400
6	32	1	460	410
7	39	1	470	420
20	59	1	470	420

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
2	380

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	350	0	2	10	26.5
350	370	2	7	4	69.8
370	390	7	17	2	145.1
390	420	17	39	1	217.6



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.42m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268437.2 E, 375450.7 N **Ground Level** 9.59 m OD

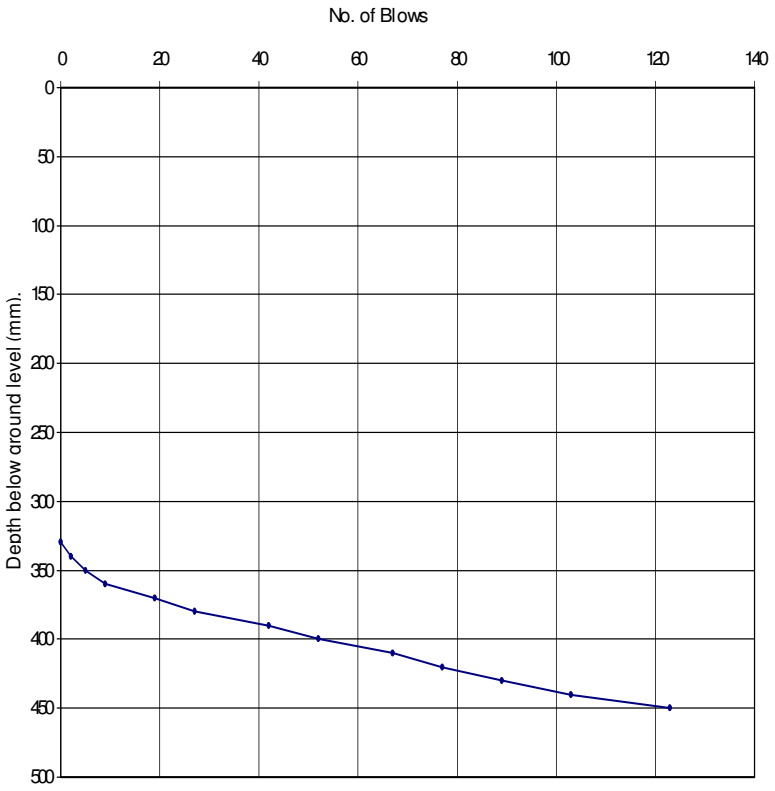
Location No. PC102
Project No. PN193981
Test No. 1
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	420	330
2	2	1	430	340
3	5	1	440	350
4	9	1	450	360
10	19	1	460	370
8	27	1	470	380
15	42	1	480	390
10	52	1	490	400
15	67	1	500	410
10	77	1	510	420
12	89	1	520	430
14	103	1	530	440
20	123	1	540	450

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	420

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	360	0	9	3	84.6
360	410	9	67	1	353.3
410	450	67	123	1	431.0



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.45m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268437.2 E, 375450.7 N **Ground Level** 9.59 m OD

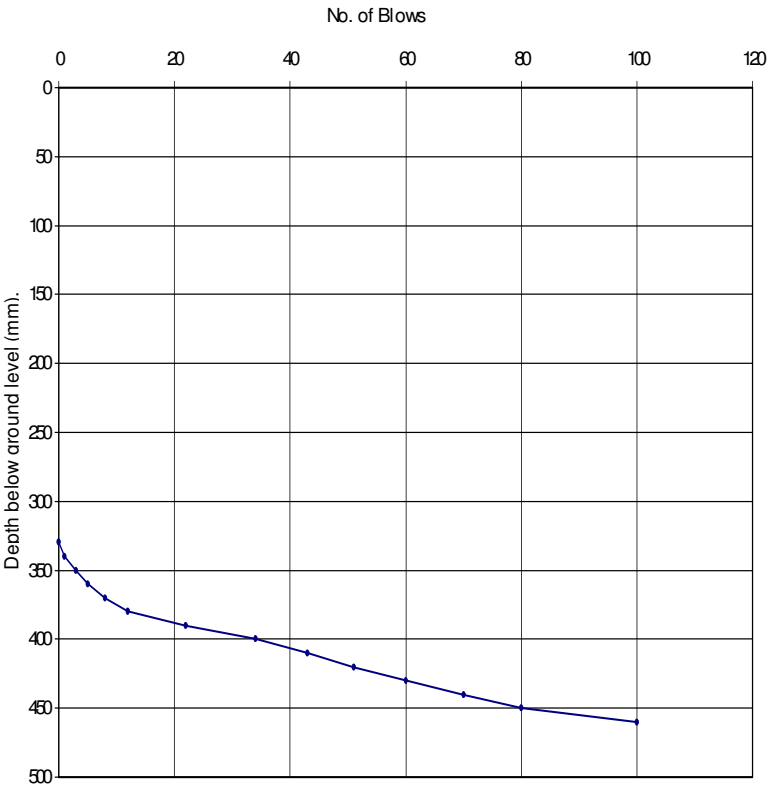
Location No. PC102
Project No. PN193981
Test No. 2
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	390	330
1	1	1	400	340
2	3	1	410	350
2	5	1	420	360
3	8	1	430	370
4	12	1	440	380
10	22	1	450	390
12	34	1	460	400
9	43	1	470	410
8	51	1	480	420
9	60	1	490	430
10	70	1	500	440
10	80	1	510	450
20	100	1	520	460

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	390

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	360	0	5	6	45.4
360	380	5	12	3	99.6
380	400	12	34	1	334.0
400	450	34	80	1	276.5



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.46m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268587.0 E, 375553.9 N **Ground Level** 11.20 m OD

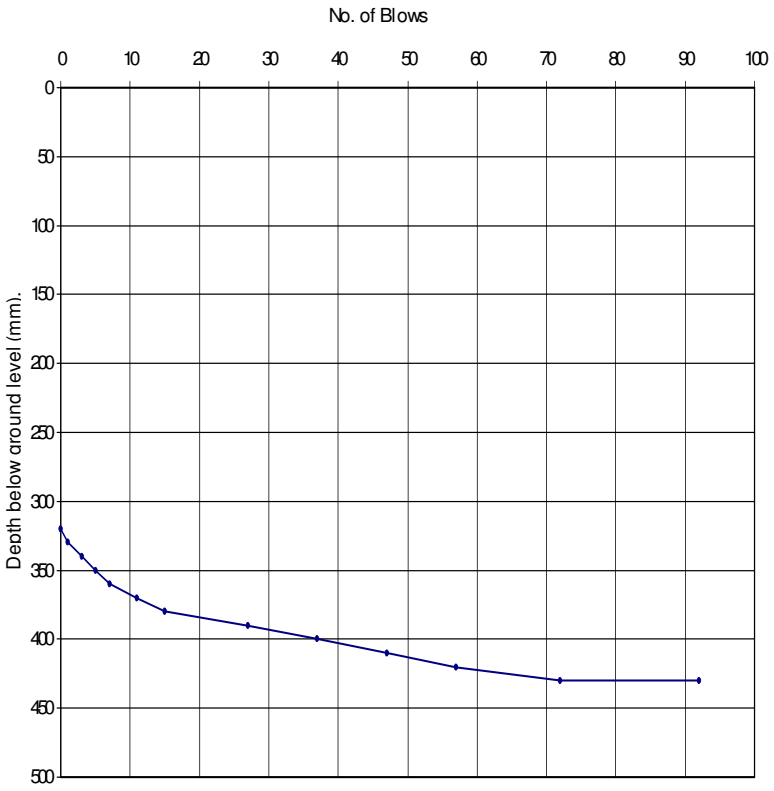
Location No. PC103
Project No. PN193981
Test No. 1
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	370	320
1	1	1	380	330
2	3	1	390	340
2	5	1	400	350
2	7	1	410	360
4	11	1	420	370
4	15	1	430	380
12	27	1	440	390
10	37	1	450	400
10	47	1	460	410
10	57	1	470	420
15	72	1	480	430
20	92	1	480	430

Test Started at	0.32 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	370

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
320	360	0	7	6	47.9
360	380	7	15	3	114.7
380	430	15	72	1	346.9



Remarks

CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.43m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268587.0 E, 375553.9 N **Ground Level** 11.20 m OD

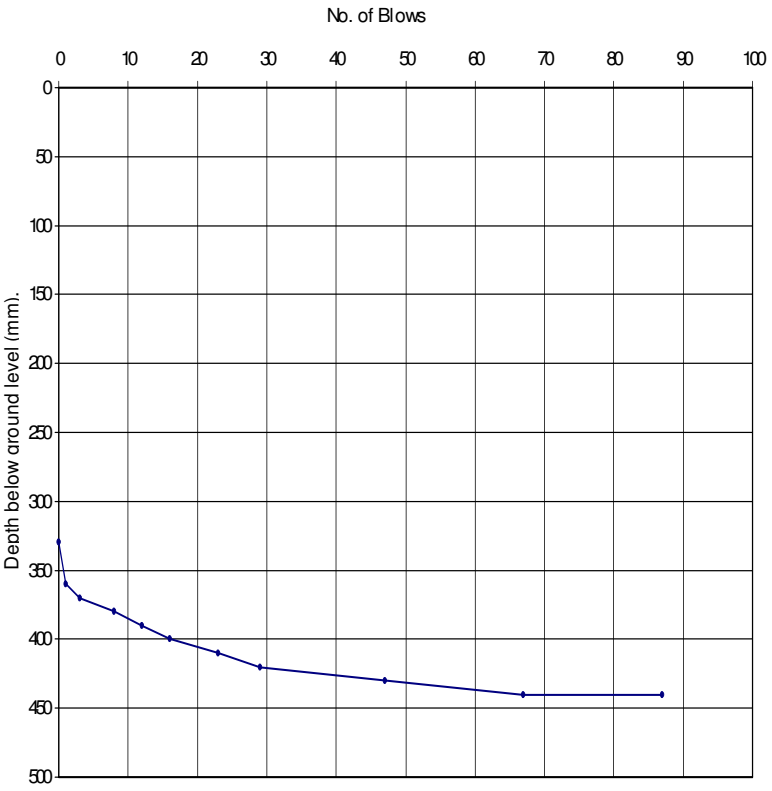
Location No. PC103
Project No. PN193981
Test No. 2
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	380	330
1	1	1	410	360
2	3	1	420	370
5	8	1	430	380
4	12	1	440	390
4	16	1	450	400
7	23	1	460	410
6	29	1	470	420
18	47	1	480	430
20	67	1	490	440
20	87	1	490	440

Test Started at	0.32 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	380

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
320	360	0	1	40	6.1
360	370	1	3	5	55.1
370	420	3	29	2	151.3
420	440	29	67	1	595.2



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.44m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 268595.8 E, 375539.2 N **Ground Level** 11.20 m OD

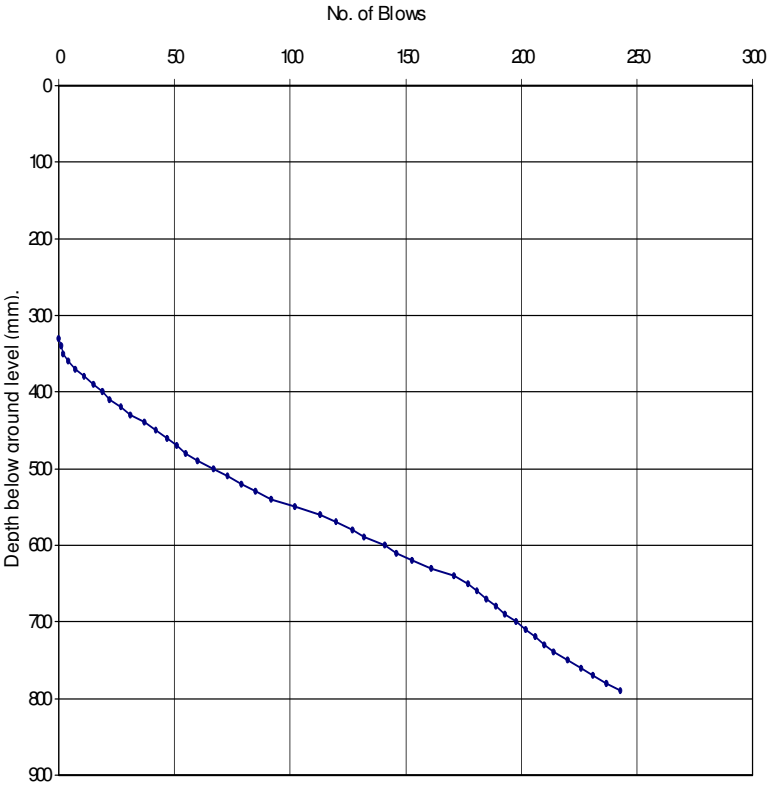
Location No. PC104
Project No. PN193981
Test No. 1
Test Date 06/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	430	330
1	1	1	440	340
1	2	1	450	350
2	4	1	460	360
3	7	1	470	370
4	11	1	480	380
4	15	1	490	390
4	19	1	500	400
3	22	1	510	410
5	27	1	520	420
4	31	1	530	430
6	37	1	540	440
5	42	1	550	450
5	47	1	560	460
4	51	1	570	470
4	55	1	580	480
5	60	1	590	490
7	67	1	600	500
6	73	1	610	510
6	79	1	620	520
6	85	1	630	530
7	92	1	640	540
10	102	1	650	550
11	113	1	660	560
7	120	1	670	570
7	127	1	680	580
5	132	1	690	590
9	141	1	700	600
5	146	1	710	610
7	153	1	720	620
8	161	1	730	630
10	171	1	740	640
6	177	1	750	650
4	181	1	760	660
4	185	1	770	670
4	189	1	780	680
4	193	1	790	690
5	198	1	800	700
4	202	1	810	710
4	206	1	820	720
4	210	1	830	730
4	214	1	840	740
6	220	1	850	750
6	226	1	860	760
5	231	1	870	770
6	237	1	880	780
6	243	1	890	790

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	430

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	350	0	2	10	26.5
350	480	2	55	2	117.0
480	540	55	92	2	181.2
540	560	92	113	1	318.0
560	640	113	171	1	215.0
640	790	171	243	2	139.0



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.

Printed: 13/09/2019

GEOTECHNICS

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In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 272786.0 E, 377182.2 N **Ground Level** 12.83 m OD

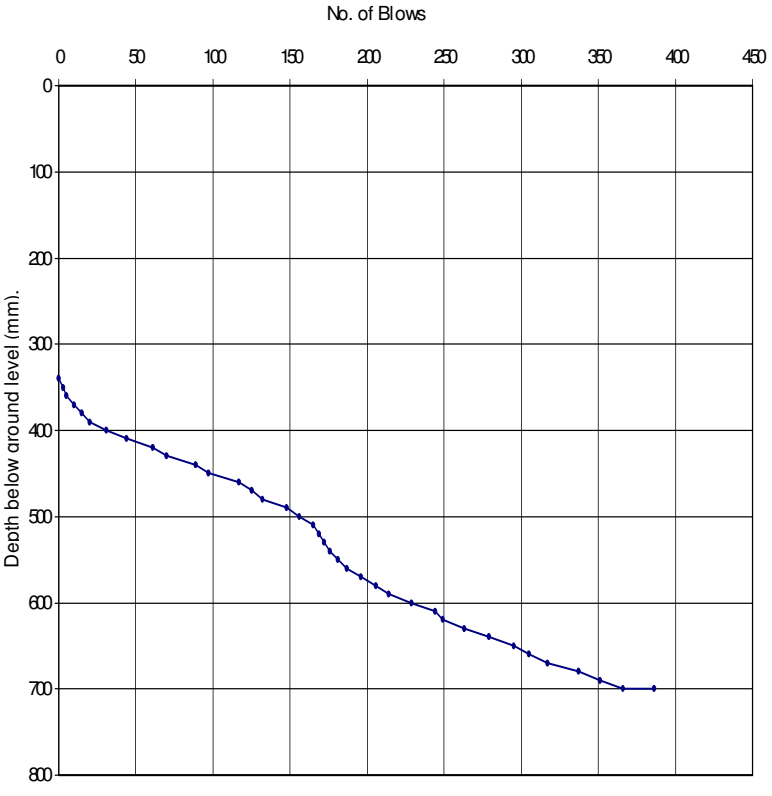
Location No. PC201
Project No. PN193981
Test No. 1
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	420	340
3	3	1	430	350
2	5	1	440	360
5	10	1	450	370
5	15	1	460	380
5	20	1	470	390
11	31	1	480	400
13	44	1	490	410
17	61	1	500	420
9	70	1	510	430
19	89	1	520	440
8	97	1	530	450
20	117	1	540	460
8	125	1	550	470
7	132	1	560	480
16	148	1	570	490
8	156	1	580	500
9	165	1	590	510
4	169	1	600	520
3	172	1	610	530
4	176	1	620	540
5	181	1	630	550
6	187	1	640	560
9	196	1	650	570
10	206	1	660	580
8	214	1	670	590
15	229	1	680	600
15	244	1	690	610
5	249	1	700	620
14	263	1	710	630
16	279	1	720	640
16	295	1	730	650
10	305	1	740	660
12	317	1	750	670
20	337	1	760	680
14	351	1	770	690
15	366	1	780	700
20	386	1	780	700

Test Started at	0.34 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	420

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
340	360	0	5	4	69.8
360	390	5	20	2	145.1
390	510	20	165	1	368.9
510	560	165	187	2	126.8
560	700	187	366	1	391.6



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.70m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

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In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 273751.9 E, 377892.0 N **Ground Level** 12.33 m OD

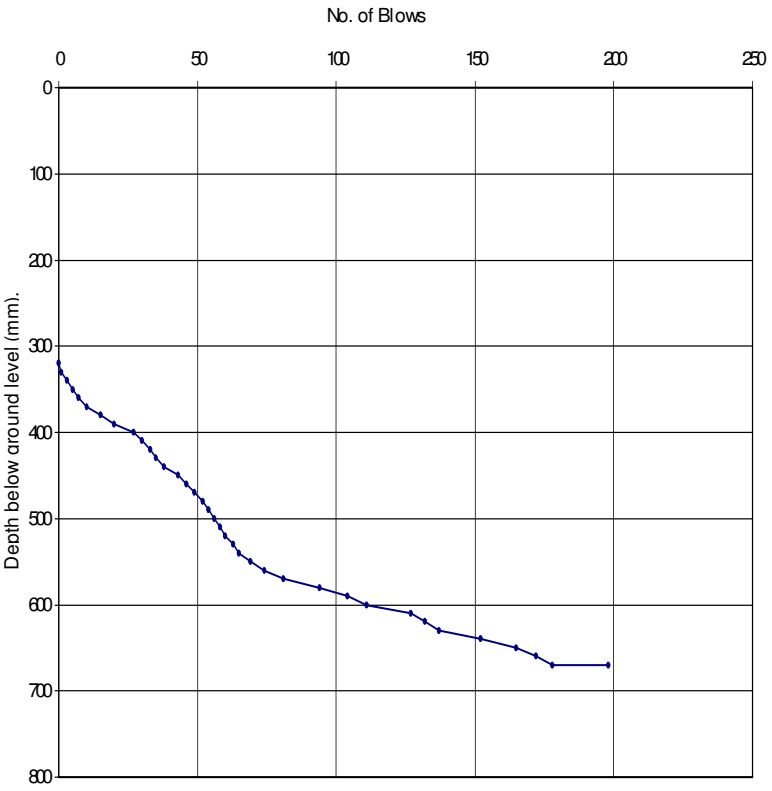
Location No. PC202
Project No. PN193981
Test No. 1
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	410	320
1	1	1	420	330
2	3	1	430	340
2	5	1	440	350
2	7	1	450	360
3	10	1	460	370
5	15	1	470	380
5	20	1	480	390
7	27	1	490	400
3	30	1	500	410
3	33	1	510	420
2	35	1	520	430
3	38	1	530	440
5	43	1	540	450
3	46	1	550	460
3	49	1	560	470
3	52	1	570	480
2	54	1	580	490
2	56	1	590	500
2	58	1	600	510
2	60	1	610	520
3	63	1	620	530
2	65	1	630	540
4	69	1	640	550
5	74	1	650	560
7	81	1	660	570
13	94	1	670	580
10	104	1	680	590
7	111	1	690	600
16	127	1	700	610
5	132	1	710	620
5	137	1	720	630
15	152	1	730	640
13	165	1	740	650
7	172	1	750	660
6	178	1	760	670
20	198	1	760	670

Test Started at	0.32 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	410

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
320	370	0	10	5	55.1
370	400	10	27	2	165.7
400	470	27	49	3	88.9
470	540	49	65	4	63.5
540	570	65	81	2	155.4
570	670	81	178	1	292.4



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.67m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

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In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

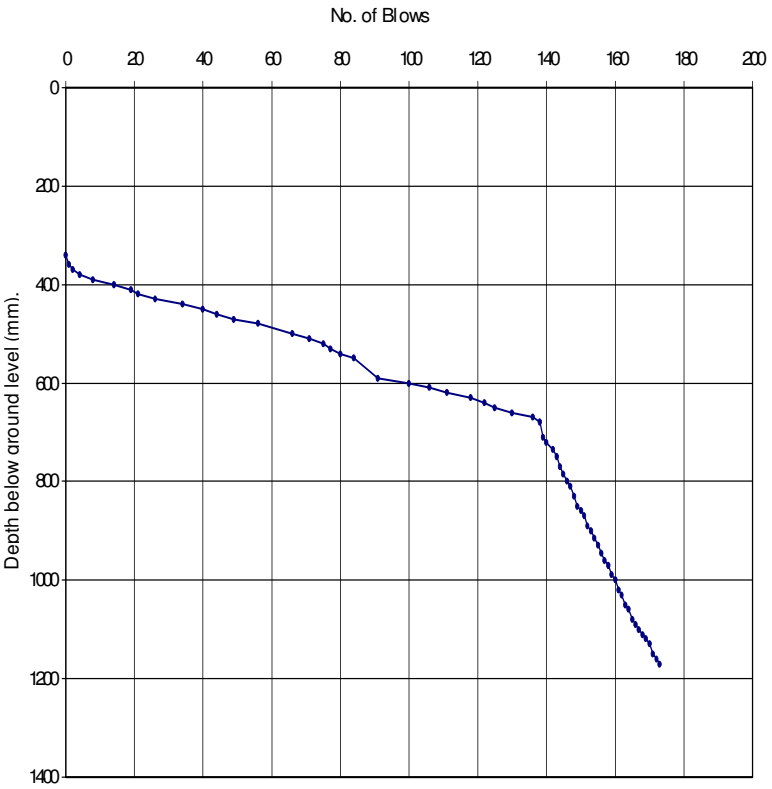
Location No. PC203
Project No. PN193981
Test No. 1
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	420	340
1	1	1	440	360
1	2	1	450	370
2	4	1	460	380
4	8	1	470	390
6	14	1	480	400
5	19	1	490	410
2	21	1	500	420
5	26	1	510	430
8	34	1	520	440
6	40	1	530	450
4	44	1	540	460
5	49	1	550	470
7	56	1	560	480
10	66	1	580	500
5	71	1	590	510
4	75	1	600	520
2	77	1	610	530
3	80	1	620	540
4	84	1	630	550
7	91	1	670	590
9	100	1	680	600
6	106	1	690	610
5	111	1	700	620
7	118	1	710	630
4	122	1	720	640
3	125	1	730	650
5	130	1	740	660
6	136	1	750	670
2	138	1	760	680
1	139	1	790	710
1	140	1	800	720
2	142	1	815	735
1	143	1	830	750
1	144	1	850	770
1	145	2	25	785
1	146	2	40	800
1	147	2	50	810
1	148	2	70	830
1	149	2	90	850
1	150	2	100	860
1	151	2	110	870
1	152	2	130	890
1	153	2	140	900
1	154	2	155	915
1	155	2	170	930
1	156	2	185	945
1	157	2	200	960
1	158	2	210	970
1	159	2	230	990
1	160	2	240	1000
1	161	2	260	1020
1	162	2	270	1030
1	163	2	290	1050
1	164	2	300	1060
1	165	2	320	1080
1	166	2	330	1090
1	167	2	340	1100
1	168	2	350	1110
1	169	2	360	1120
1	170	2	370	1130
1	171	2	390	1150
1	172	2	400	1160

Test Started at	0.34 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	420
2	10

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
340	380	0	4	10	26.5
380	550	4	84	2	136.1
550	590	84	91	6	47.9
590	680	91	138	2	152.0
680	1170	138	173	14	18.6



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.

Printed: 13/09/2019

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In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

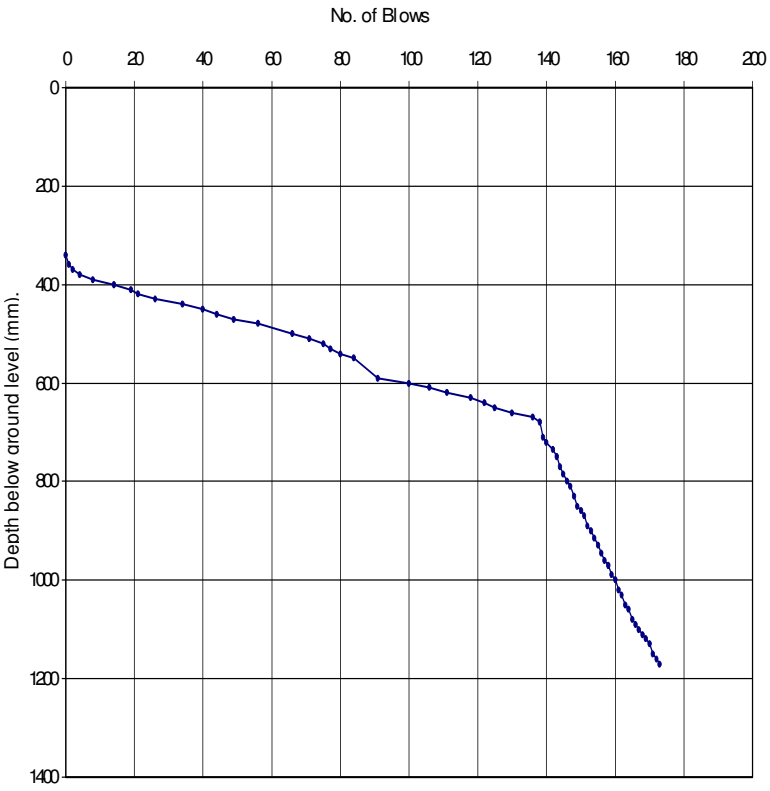
Location No. PC203
Project No. PN193981
Test No. 1
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
1	173	2	410	1170

Test Started at	0.34 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	420
2	10

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
340	380	0	4	10	26.5
380	550	4	84	2	136.1
550	590	84	91	6	47.9
590	680	91	138	2	152.0
680	1170	138	173	14	18.6



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.

Printed: 13/09/2019

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In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 274201.5 E, 378174.1 N **Ground Level** 7.65 m OD

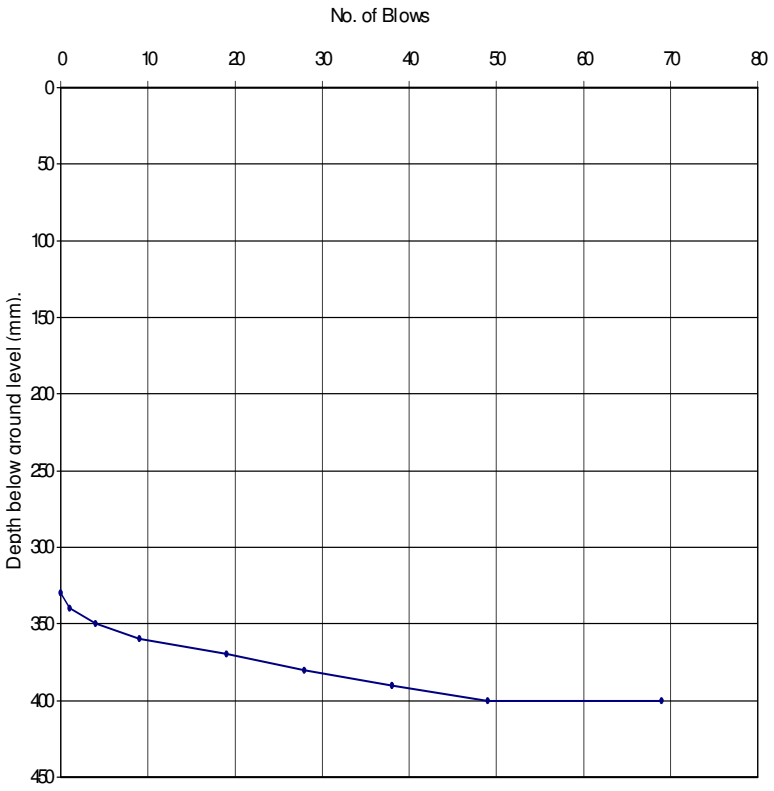
Location No. PC204
Project No. PN193981
Test No. 1
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	400	330
1	1	1	410	340
3	4	1	420	350
5	9	1	430	360
10	19	1	440	370
9	28	1	450	380
10	38	1	460	390
11	49	1	470	400
20	69	1	470	400

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	400

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	360	0	9	3	84.6
360	400	9	49	1	302.0



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.40m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

In Situ Testing - CBR (TRL Probe) Test

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Client RAMBOLL UK LIMITED

Coordinates 274201.5 E, 378174.1 N **Ground Level** 7.65 m OD

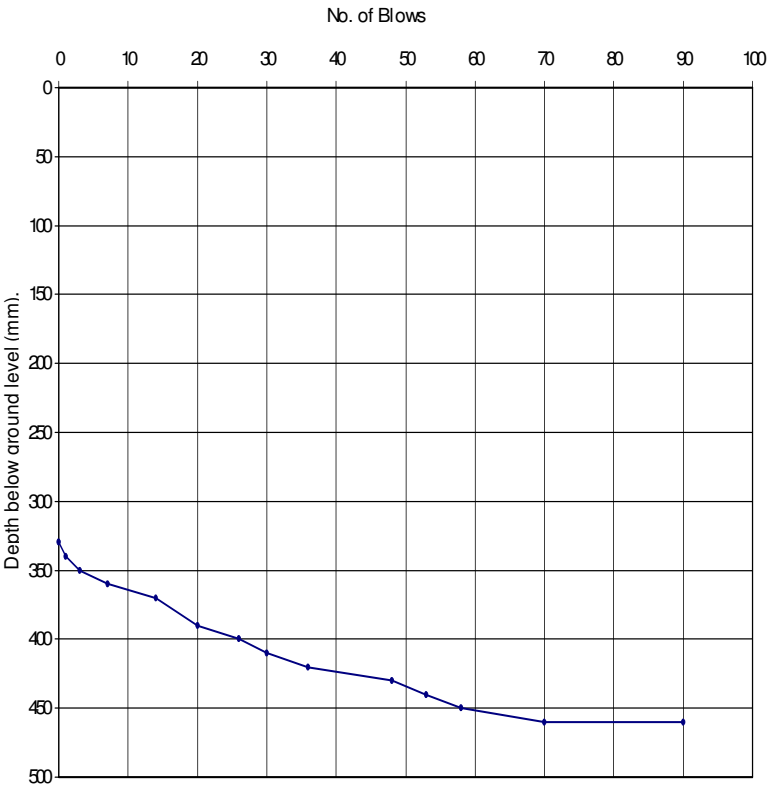
Location No. PC204
Project No. PN193981
Test No. 2
Test Date 03/06/2019

Blows No.	Blows Total	Rod No.	Reading (mm)	Corrected Depth (mm)
0	0	1	400	330
1	1	1	410	340
2	3	1	420	350
4	7	1	430	360
7	14	1	440	370
6	20	1	460	390
6	26	1	470	400
4	30	1	480	410
6	36	1	490	420
12	48	1	500	430
5	53	1	510	440
5	58	1	520	450
12	70	1	530	460
20	90	1	530	460

Test Started at	0.33 **m**
Operator	MM
Checked by	AF

Rod No.	Zero Reading (mm)
1	400

Depth bgl (mm) Top	Depth bgl (mm) Base	Blows No. Top	Blows No. Base	DCP mm/blow	CBR %
330	350	0	3	7	40.7
350	370	3	14	2	160.5
370	390	14	20	3	84.6
390	430	20	48	1	207.1
430	450	48	58	2	145.1
450	460	58	70	1	366.2



Remarks
CBR estimated using correlation in Highways Agency Interim Advice Note 73/06 Rev 1 (2009).
Dynamic Cone Penetration (TRL) Test carried out following Pavement Core.
Test terminated at 0.46m depth due to refusal.

Printed: 13/09/2019

GEOTECHNICS

AGS

APPENDIX 9

Plate Load Test Results

INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP201
		Project No	PN193981
Client	Ramboll UK	Date	21 May 2019
		Test No	1

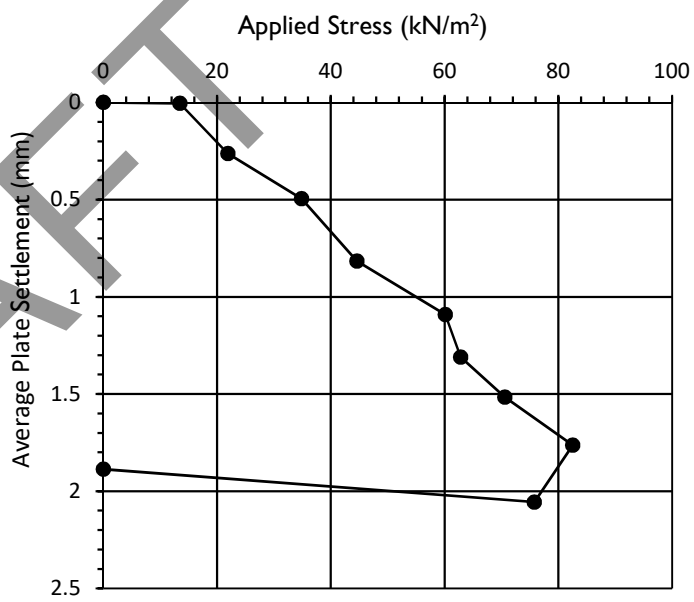
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.50	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

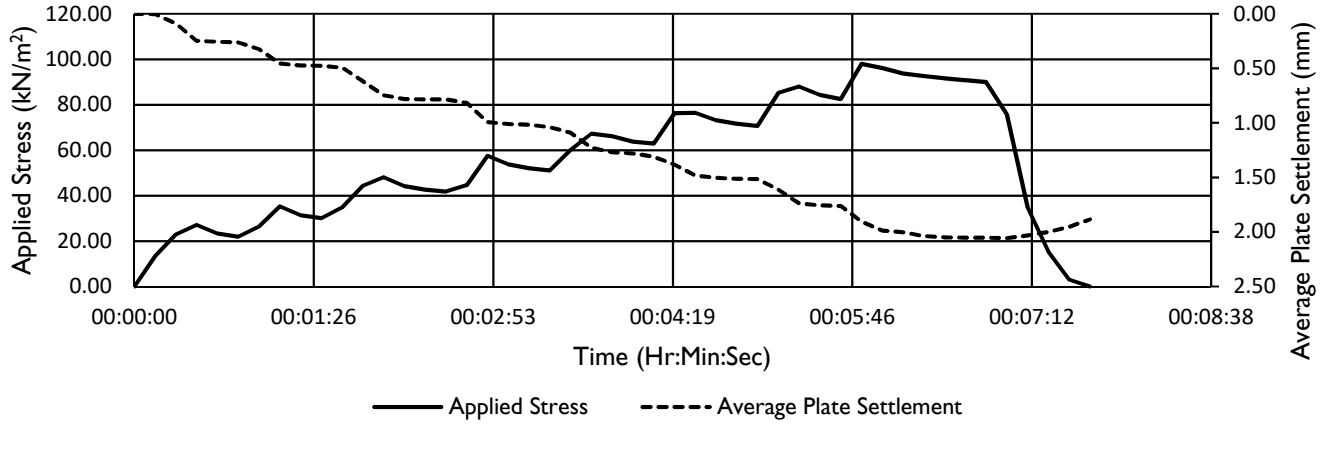
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
0.95	13.48	0.00
1.55	21.94	0.26
2.47	34.89	0.50
3.15	44.58	0.82
4.25	60.14	1.09
4.44	62.86	1.31
4.99	70.62	1.52
5.83	82.53	1.76
5.36	75.80	2.06
0.00	0.00	1.89

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	67.3 kN/m^2
Modulus of Subgrade Reaction	23.8 MN/m^2/m
Equivalent CBR Value	2.3 %

Remarks

GEOTECHNICS
geotechnical and geoenvironmental specialists

INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP202
		Project No	PN193981
Client	Ramboll UK	Date	22 May 2019
		Test No	1

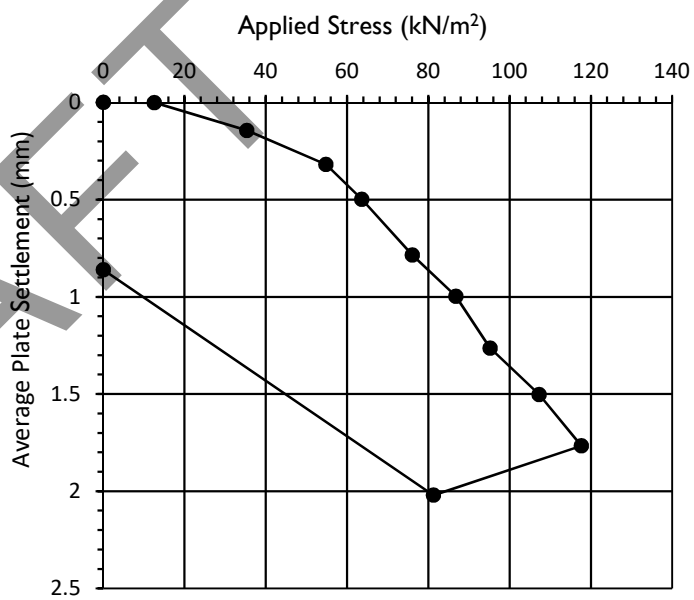
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.25	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

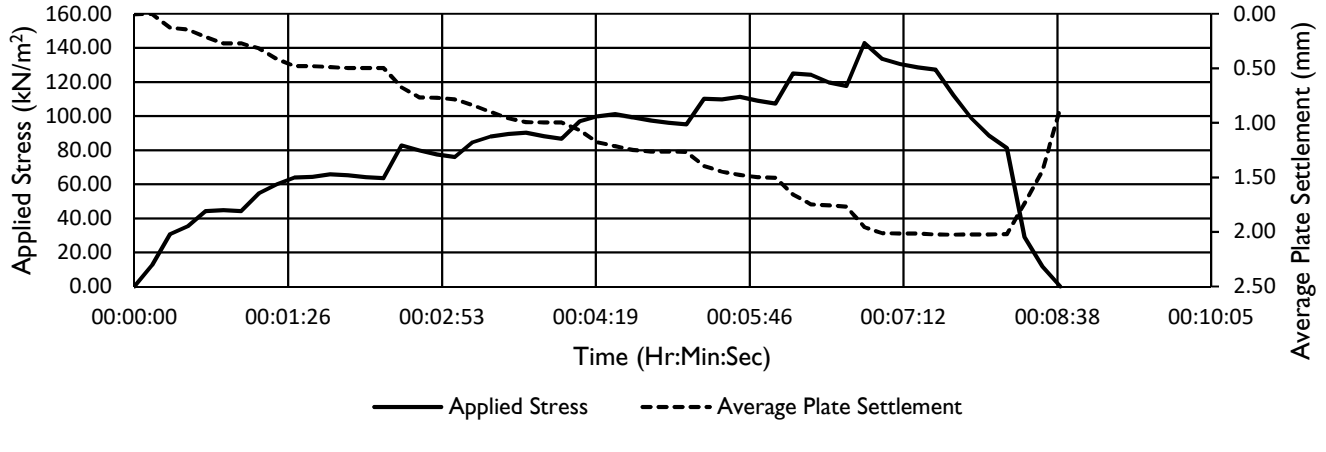
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
0.89	12.59	0.00
2.50	35.35	0.15
3.87	54.78	0.32
4.50	63.62	0.50
5.38	76.05	0.78
6.13	86.76	1.00
6.73	95.22	1.27
7.58	107.28	1.50
8.32	117.66	1.77
5.74	81.23	2.02
0.00	0.00	0.86

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	99.3 kN/m^2
Modulus of Subgrade Reaction	35.1 MN/m^2/m
Equivalent CBR Value	4.6 %

Remarks

GEOTECHNICS
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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP203
		Project No	PN193981
Client	Ramboll UK	Date	22 May 2019
		Test No	1

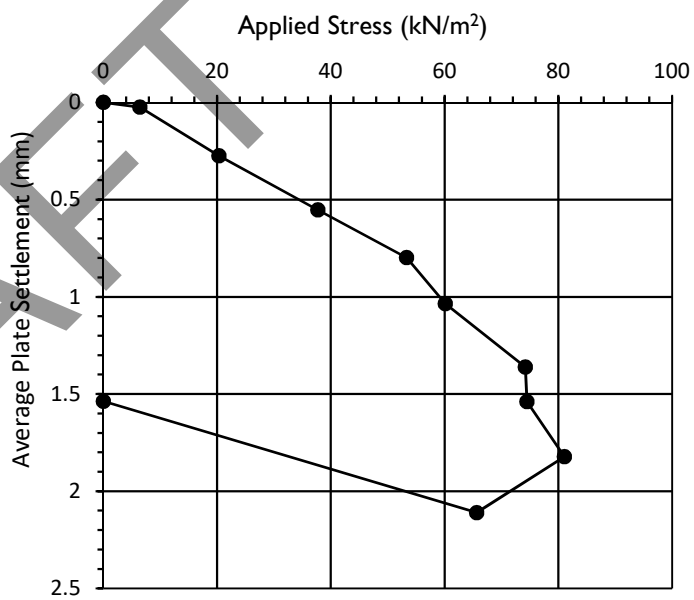
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.50	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

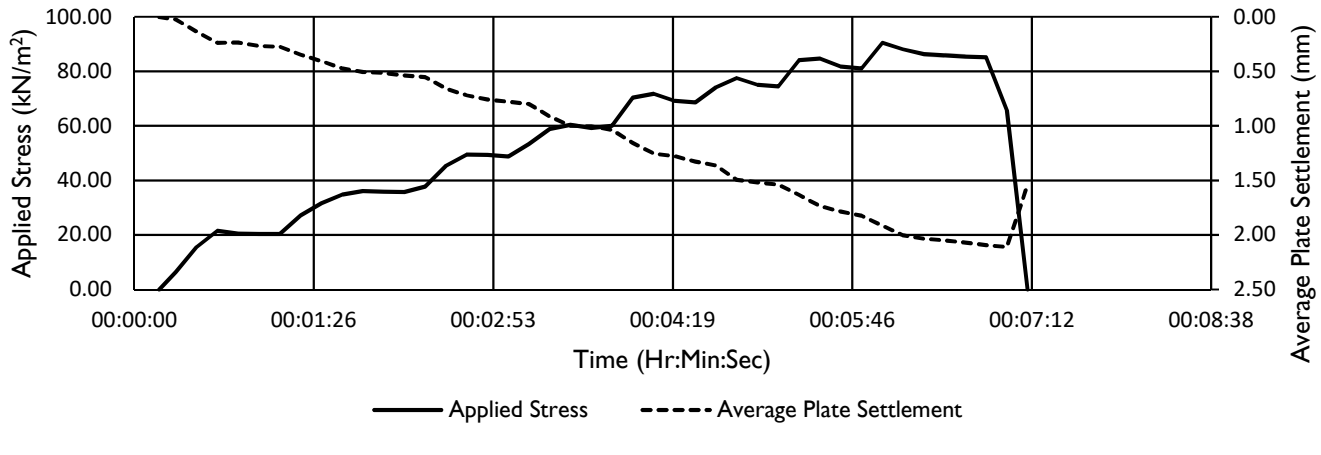
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
0.46	6.47	0.02
1.44	20.36	0.27
2.67	37.73	0.55
3.77	53.35	0.80
4.25	60.11	1.04
5.24	74.19	1.36
5.27	74.51	1.54
5.73	81.08	1.82
4.64	65.64	2.11
0.00	0.00	1.54

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	70.4 kN/m^2
Modulus of Subgrade Reaction	24.9 MN/m^2/m
Equivalent CBR Value	2.5 %

Remarks

GEOTECHNICS
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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP204
		Project No	PN193981
Client	Ramboll UK	Date	23 May 2019
		Test No	1

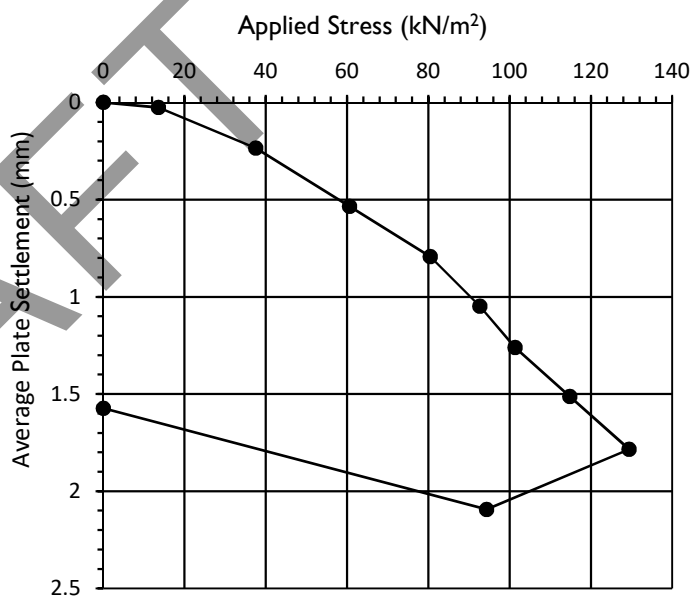
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.25	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

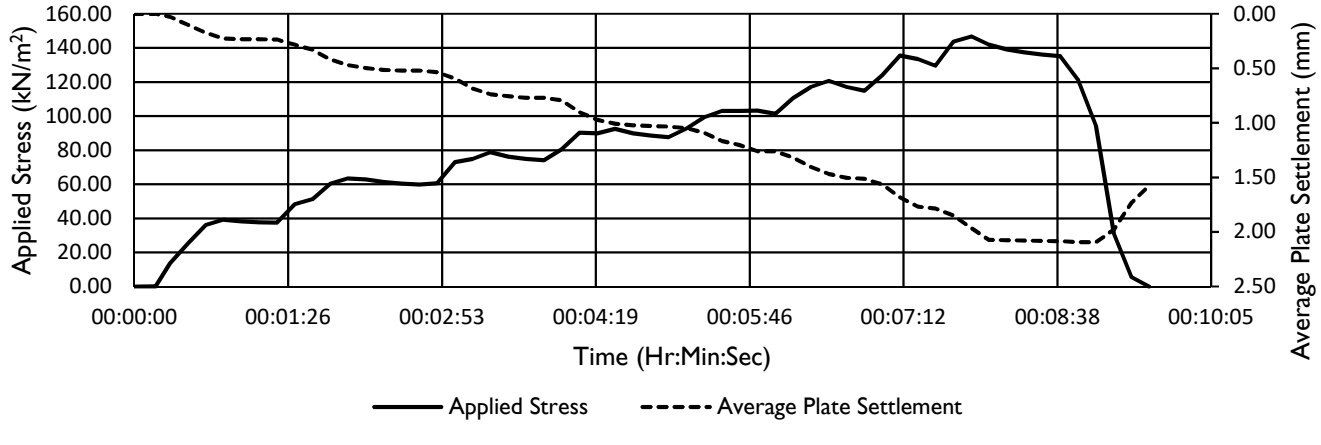
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
0.96	13.61	0.03
2.65	37.50	0.23
4.28	60.59	0.53
5.69	80.51	0.79
6.55	92.69	1.05
7.16	101.35	1.26
8.12	114.82	1.51
9.15	129.45	1.79
6.67	94.36	2.09
0.00	0.00	1.57

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	103.1 kN/m^2
Modulus of Subgrade Reaction	36.4 MN/m^2/m
Equivalent CBR Value	4.9 %

Remarks

GEOTECHNICS
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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP205
		Project No	PN193981
Client	Ramboll UK	Date	23 May 2019
		Test No	1

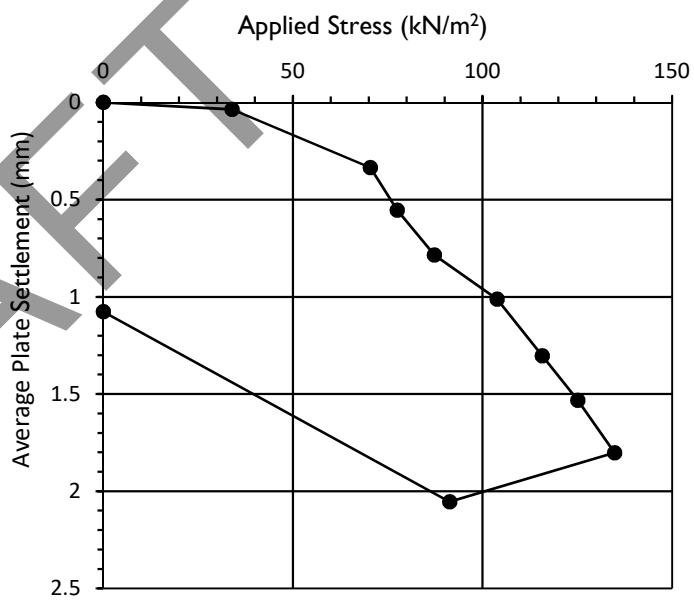
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.30	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

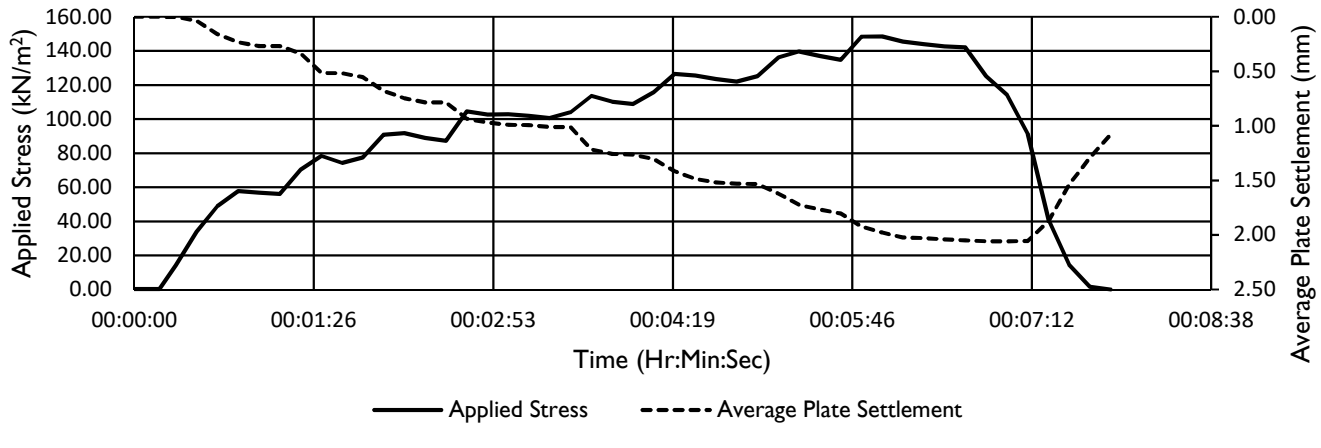
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
2.40	33.94	0.04
4.98	70.44	0.34
5.48	77.57	0.55
6.17	87.33	0.78
7.34	103.90	1.01
8.19	115.81	1.30
8.85	125.17	1.53
9.53	134.84	1.80
6.46	91.40	2.05
0.00	0.00	1.08

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	113.6 kN/m^2
Modulus of Subgrade Reaction	40.1 MN/m^2/m
Equivalent CBR Value	5.8 %

Remarks

GEOTECHNICS
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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP206
		Project No	PN193981
Client	Ramboll UK	Date	23 May 2019
		Test No	1

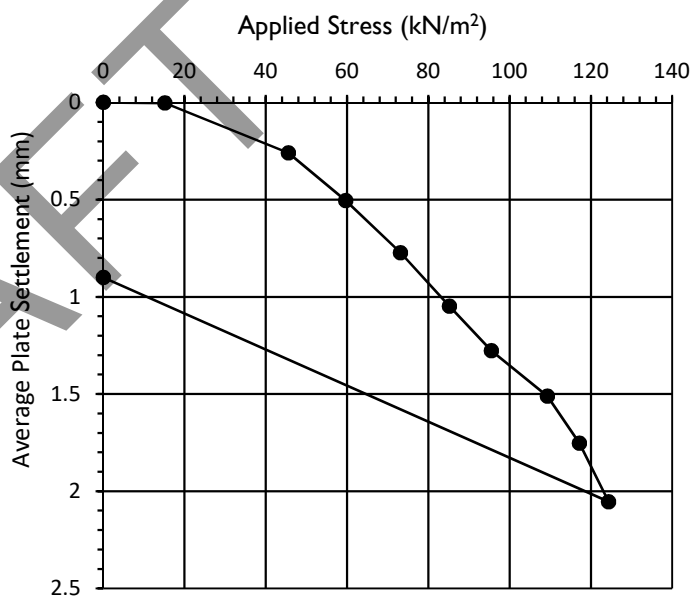
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.30	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

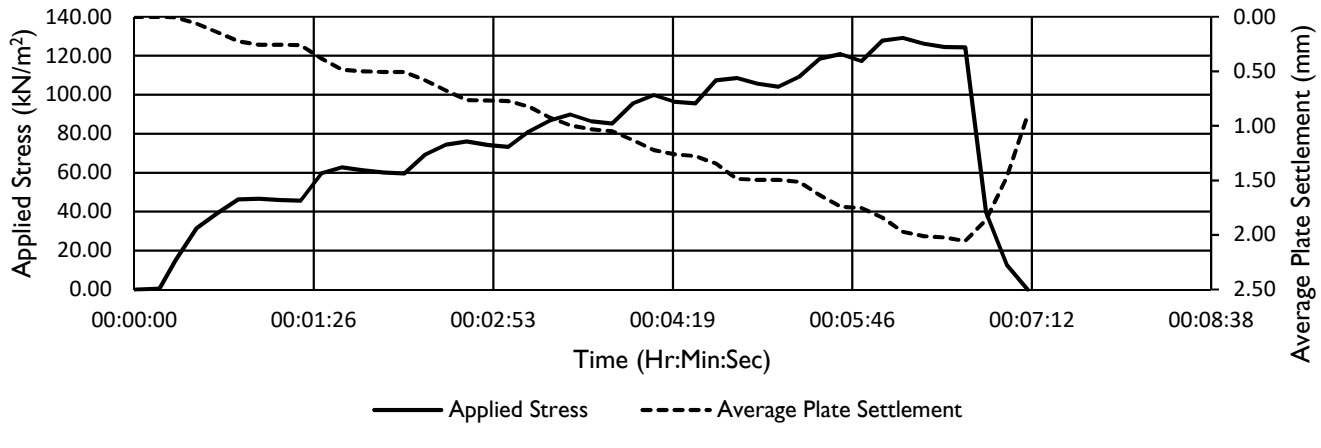
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
1.07	15.15	0.00
3.22	45.58	0.26
4.22	59.64	0.51
5.17	73.18	0.77
6.03	85.24	1.05
6.76	95.56	1.28
7.73	109.30	1.51
8.29	117.22	1.75
8.79	124.40	2.05
0.00	0.00	0.90

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	99.8 kN/m^2
Modulus of Subgrade Reaction	35.3 MN/m^2/m
Equivalent CBR Value	4.6 %

Remarks

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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP210
		Project No	PN193981
Client	Ramboll UK	Date	21 May 2019
		Test No	1

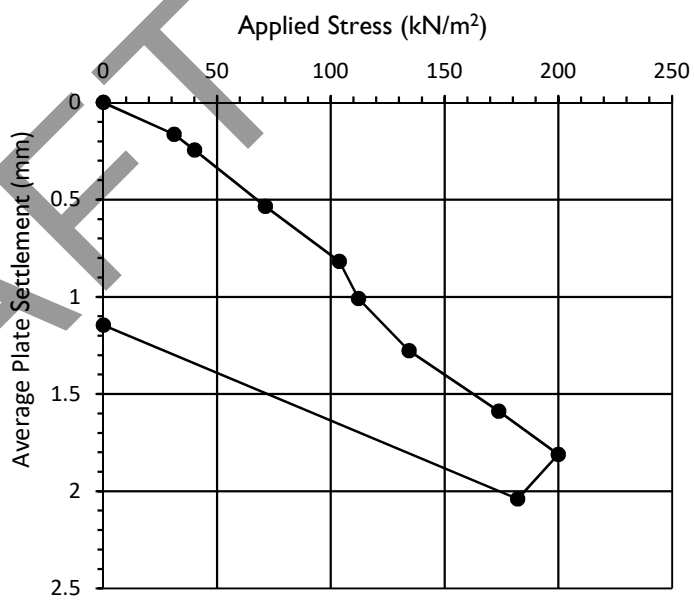
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.25	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

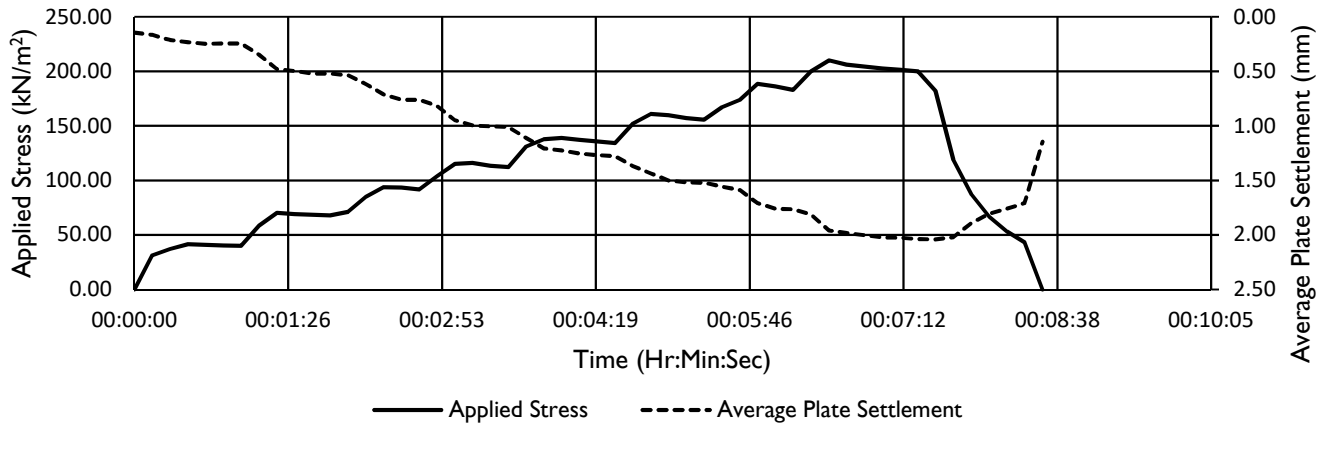
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
2.20	31.17	0.16
2.84	40.19	0.24
5.04	71.26	0.53
7.34	103.77	0.82
7.93	112.20	1.01
9.50	134.43	1.28
12.29	173.87	1.59
14.14	199.97	1.81
12.88	182.20	2.04
0.00	0.00	1.15

Applied Stress vs Average Plate Settlement



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Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	139.0 kN/m^2
Modulus of Subgrade Reaction	49.1 MN/m^2/m
Equivalent CBR Value	8.2 %

Remarks

INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP211
		Project No	PN193981
Client	Ramboll UK	Date	22 May 2019
		Test No	1

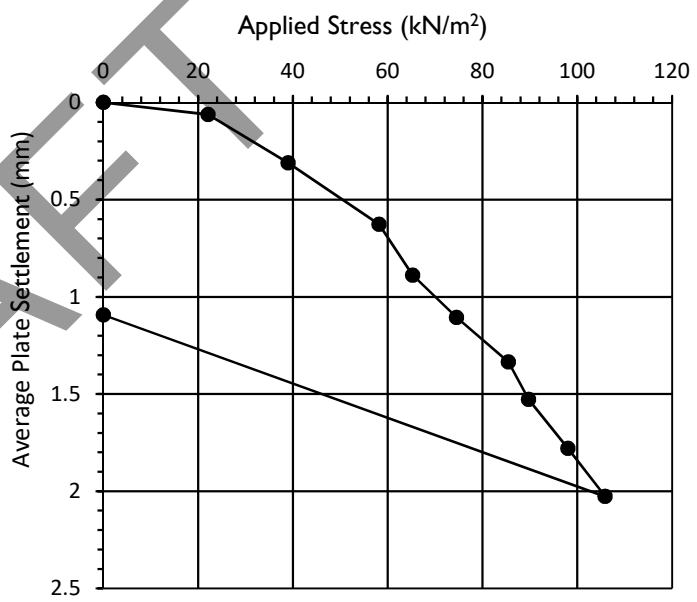
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.25	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

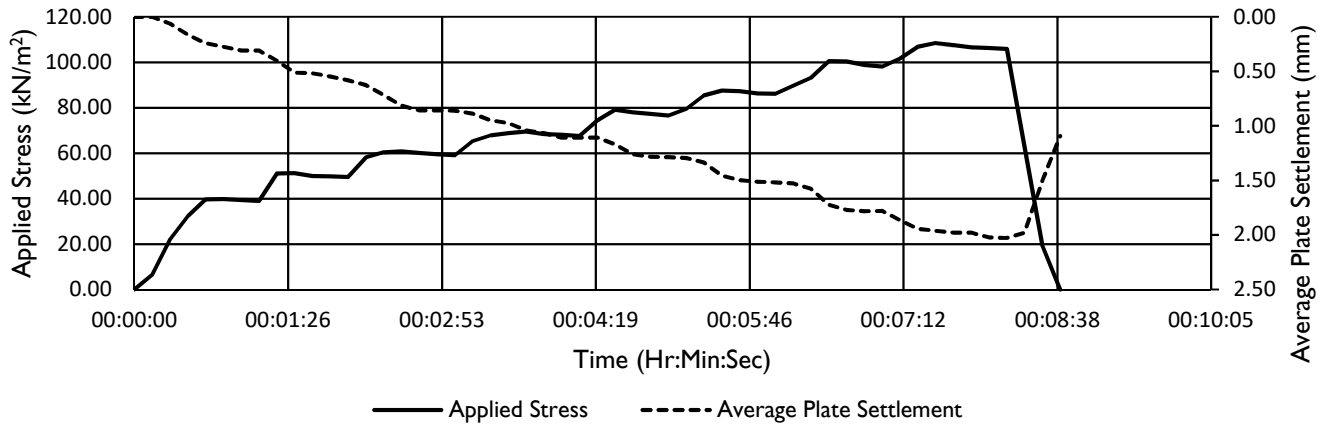
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
1.56	22.13	0.06
2.76	39.02	0.31
4.11	58.16	0.63
4.61	65.26	0.89
5.27	74.51	1.11
6.04	85.43	1.34
6.34	89.72	1.53
6.93	98.05	1.78
7.49	105.89	2.03
0.00	0.00	1.09

Applied Stress vs Average Plate Settlement



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Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	79.2 kN/m^2
Modulus of Subgrade Reaction	28.0 MN/m^2/m
Equivalent CBR Value	3.1 %

Remarks

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INSITU TESTING - *Plate Load Test*

Project	A55 JUNCTIONS 15 AND 16 IMPROVEMENTS	Test Location	TP212
		Project No	PN193981
Client	Ramboll UK	Date	22 May 2019
		Test No	1

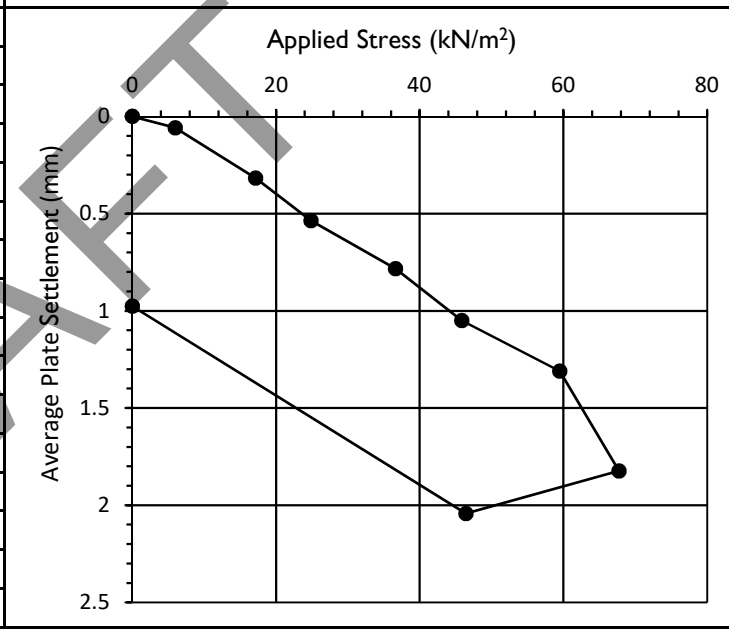
Test carried out in accordance with
BS 1377-9:1990 & Design Manual for Roads & Bridges IAN 73/06 Revision 1 (2009)

Soil Description		Plate Diameter (mm)	300
Test Depth (m bgl)	0.25	Kentledge Type	JCB 3CX
Carried out by	AJ	Checked by	AF

Test Results

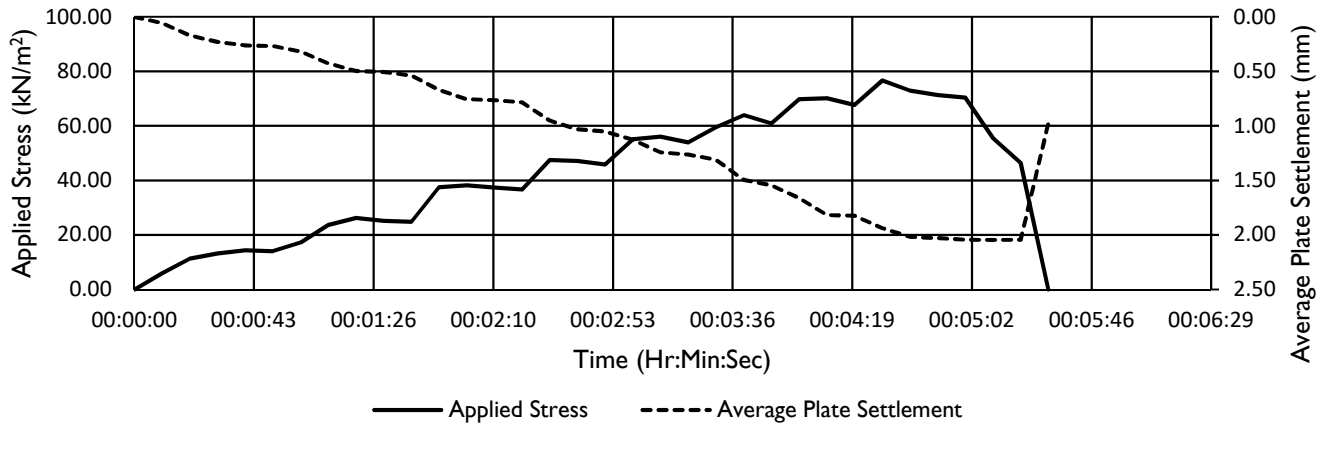
Applied Load (kN)	Applied Stress (kN/m^2)	Average Plate Settlement (mm)
0.00	0.00	0.00
0.42	5.97	0.06
1.21	17.17	0.32
1.76	24.88	0.54
2.59	36.66	0.78
3.24	45.88	1.05
4.20	59.47	1.31
4.79	67.72	1.82
3.28	46.44	2.04
0.00	0.00	0.98

Applied Stress vs Average Plate Settlement



DRAFT

Applied Stress & Average Plate Settlement vs Time



Applied Stress at 1.25mm Settlement	56.0 kN/m^2
Modulus of Subgrade Reaction	19.8 MN/m^2/m
Equivalent CBR Value	1.7 %

Remarks

GEOTECHNICS
geotechnical and geoenvironmental specialists

In-Situ Plate Loading
Determination of Equivalent In-Situ CBR Value
Test Results

A55
Junction 16A
Eastbound

FACTUAL REPORT

Prepared for:

Geotechnics
The Geotechnical Centre
Unit 1B, Borders Industrial Park
River Lane
Saltney
Chester
CH4 8RJ

Report Reference: FTR 34876A

ISSUE REF: **1**

Issue Date: **31st July 2019**

Prepared by:

Celtest Limited
Trefelin
Llandegai
Bangor
Gwynedd
LL57 4LH
☎ - 01248 355 269

FTR 34876A

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FTR 34876A

1.0 Introduction

Following your instructions Two (2) plate-loading tests were carried out in accordance with BS 1377-9: 1990, and the Design Guidance for Road Pavement Foundations IAN 73/06.

A 300mm ∅ were loaded in increments until at least 1.25mm of settlement was recorded.

Settlement was recorded for each increment at one-minute intervals until movement ceased (<0.05mm after one minute). The modulus of sub grade reaction was then calculated and the equivalent CBR determined in accordance with the Design Guidance for Road Pavement Foundations IAN 73/06.

*This report replaces FTR 34876 with corrected site address.

Site Address: A55, Junction 16A, Eastbound

Date of Test: 24/07/2019

Material Tested: Sand / Stone / Silt / Soil / Made Ground

Weather Conditions: Dry

Tested By: Mr Neil Hughes

This report was prepared by: _____

Mr Neil Hughes – Site Testing Team Co-Ordinator

This report is issued on behalf of Celtest Limited by: _____

Mr. Irfon Lloyd Owen – Site Testing Team Manager

Date of issue: 25th July 2019

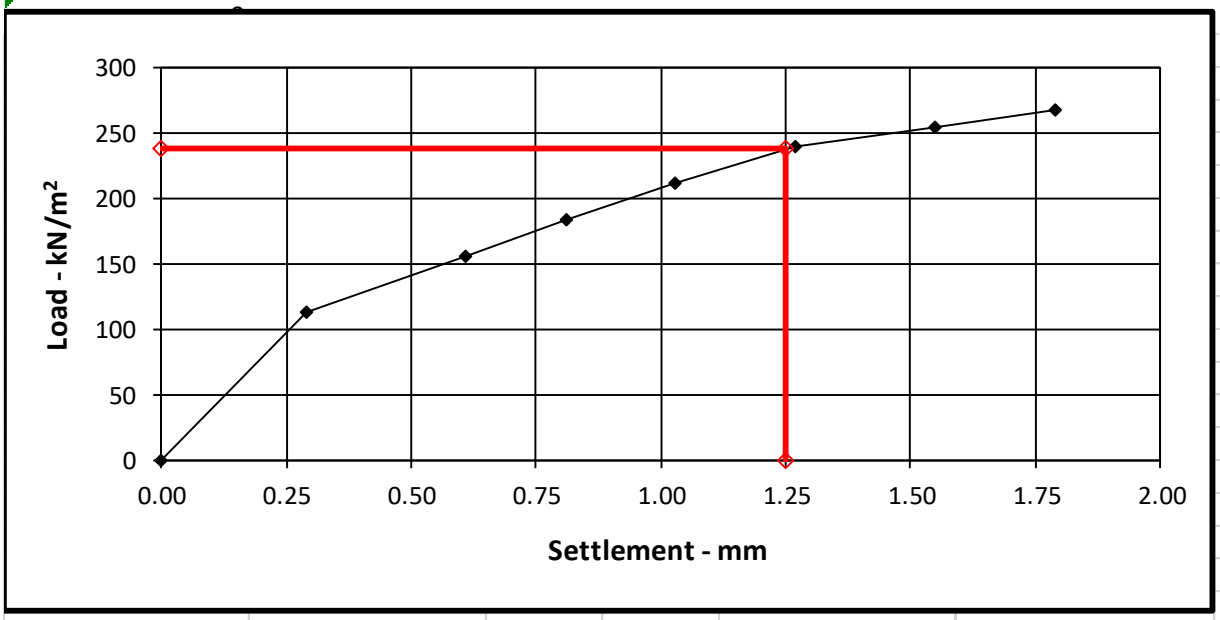
2.0 Location Plan
(Not provided)

FTR 34876A

3.1 – Test 1

Test Location:	TP 208 (A55 EB) Centre res
Plate Size:	300 mm
Material:	Sand / Stone / Silt / Soil / Made Ground
Reaction Load:	JCB
Initial Temp:	18.0°C
Final Temp:	18.0°C
Depth of Test level from Ground Level:	500mm
Distance Between Edge of Loaded Plate and Wall of Excavation:	200mm

Load (Tonne)	Load (kN)	Pressure (kN/m2)	Cumulative Settlement (mm)	Time Taken To Achieve Settlement (min)
0.0	0.0	0.00	0.00	0
0.82	8.0	113.16	0.29	3
1.12	11.0	155.60	0.61	3
1.33	13.0	183.89	0.81	3
1.53	15.0	212.18	1.03	3
1.73	17.0	240.47	1.27	3
1.83	18.0	254.61	1.55	3
1.94	19.0	268.76	1.79	3



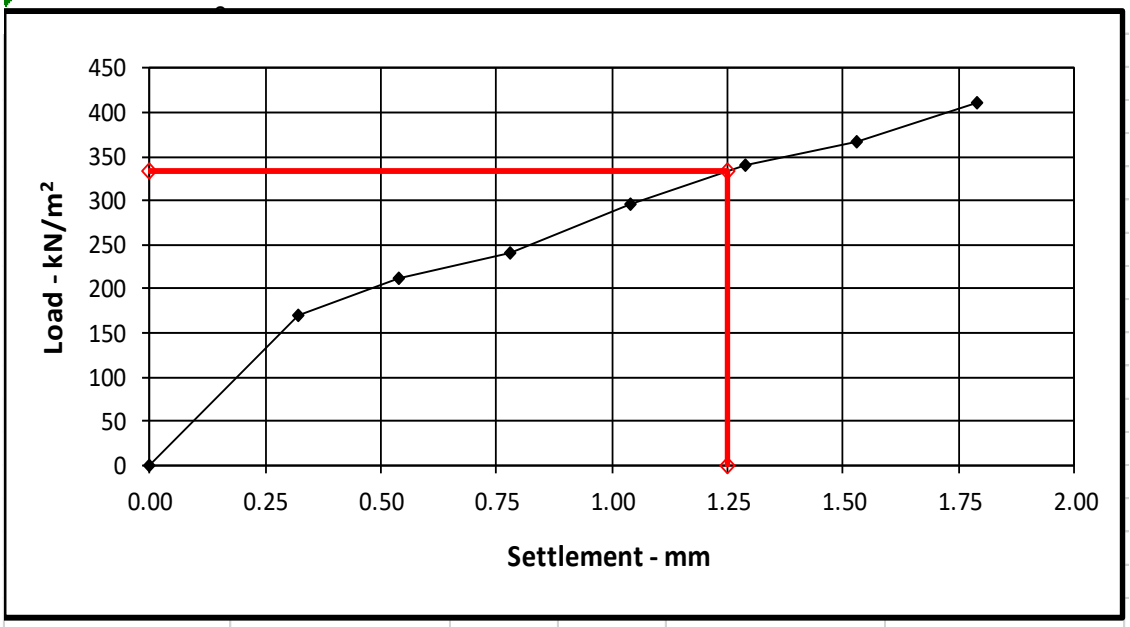
Load at settlement of 1.25mm		**238**	**kN/m²**
Modulus of sub-grade reaction		**84177**	**kN/m²/m**
Equivalent CBR Value		**20.9**	**%**

FTR 34876A

3.2 – Test 2

Test Location:	TP 208 (A55 EB) Centre res
Plate Size:	300 mm
Material:	Sand / Stone / Silt / Soil / Made Ground
Reaction Load:	JCB
Initial Temp:	18.0°C
Final Temp:	18.0°C
Depth of Test level from Ground Level:	500mm
Distance Between Edge of Loaded Plate and Wall of Excavation:	200mm

Load (Tonne)	Load (kN)	Pressure (kN/m2)	Cumulative Settlement (mm)	Time Taken To Achieve Settlement (min)
0.0	0.0	0.00	0.00	0
1.22	12.0	169.74	0.32	3
1.53	15.0	212.18	0.54	3
1.73	17.0	240.47	0.78	3
2.14	21.0	297.05	1.04	3
2.45	24.0	339.49	1.29	3
2.65	26.0	367.78	1.53	3
2.96	29.0	410.21	1.79	3



Load at settlement of 1.25mm	**333**	**kN/m²**
Modulus of sub-grade reaction	**117615**	**kN/m²/m**
Equivalent CBR Value	**37.4**	**%**

Trefelin Bangor Gwynedd LL57 4LH T +44 (0)1248 355269 F +44 (0)1248 351563 E postmaster@celtest.com W www.celtest.com

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APPENDIX 10

Monitoring Results

FIELDWORK – *Water Level Monitoring*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No PN193981

Client RAMBOLL UK LIMITED

Sheet No 1

Borehole		BH101		BH102		BH104		BH105		BH106		BH109	
Instrument (dia. mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)	
Depth to Base (m)		7.00		5.00		7.00		6.00		10.00		9.60	
Filter Zone (m)		3.00-7.00		3.00-5.00		3.00-7.00		3.00-6.00		5.00-10.00		1.00-9.60	
Level		5.84 m OD		4.34 m OD		3.97 m OD		9.75 m OD		6.41 m OD		7.25 m OD	
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
8 Jul 2019		2.64	*3.20*	1.71	*2.63*							4.93	*2.32*
24 Jul 2019		DIVER		DIVER		DIVER						5.00	*2.25*
6 Aug 2019		DIVER		DIVER		DIVER				4.00	*2.41*	4.75	*2.50*
14 Aug 2019		DIVER		DIVER		DIVER				Damage		4.80	*2.45*
28 Aug 2019												4.70	*2.55*
17 Sep 2019												4.95	*2.30*

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
geotechnical and geoenvironmental specialists

FIELDWORK – *Water Level Monitoring*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No PN193981

Client RAMBOLL UK LIMITED

Sheet No 2

Borehole		BH110		BH111		BH114B		BH201		BH202		BH204A	
Instrument (dia. mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)	
Depth to Base (m)		4.40		2.00		12.00		6.50		14.75		10.00	
Filter Zone (m)		3.00-4.40		0.50-2.00		6.00-12.00		1.00-6.50		11.00-14.75		8.00-10.00	
Level		20.53 m OD		12.31 m OD		6.12 m OD		16.11 m OD		19.19 m OD		15.02 m OD	
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
8 Jul 2019		1.24	*19.29*	DRY		0.55	*5.57*	1.33	*14.78*	9.15	*10.04*	4.80	*10.22*
23 Jul 2019								1.35	*14.76*	9.30	*9.89*	4.55	*10.47*
24 Jul 2019		1.50	*19.03*	DRY		DIVER							
6 Aug 2019		1.78	*18.75*	DRY		DIVER		1.30	*14.81*	9.25	*9.94*	4.40	*10.62*
14 Aug 2019		1.95	*18.58*	DRY		DIVER		1.30	*14.81*	9.40	*9.79*	4.35	*10.67*
28 Aug 2019		1.75	*18.78*	DRY				1.30	*14.81*	9.30	*9.89*	4.30	*10.72*
17 Sep 2019		2.70	*17.83*					1.35	*14.76*	9.10	*10.09*	4.60	*10.42*

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
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FIELDWORK – *Water Level Monitoring*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No PN193981

Client RAMBOLL UK LIMITED

Sheet No 3

Borehole		BH210		BH212		BH213		BH216A		BH217		BH218	
Instrument (dia. mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)	
Depth to Base (m)		8.00		10.00		20.00		15.00		8.00		10.00	
Filter Zone (m)		5.00-8.00		6.00-10.00		15.00-20.00		10.00-15.00		3.00-8.00		6.00-10.00	
Level		6.63 m OD		12.44 m OD		12.07 m OD		9.86 m OD		8.02 m OD		6.14 m OD	
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
8 Jul 2019						9.87	*2.20*	7.46	*2.40*			2.75	*3.39*
23 Jul 2019		2.65	*3.98*			10.60	*1.47*	7.60	*2.26*			2.80	*3.34*
6 Aug 2019		2.70	*3.93*			10.05	*2.02*	7.45	*2.41*			2.55	*3.59*
14 Aug 2019		2.50	*4.13*			9.25	*2.82*	7.20	*2.66*			2.65	*3.49*
28 Aug 2019		2.45	*4.18*			9.15	*2.92*	7.15	*2.71*			2.55	*3.59*
17 Sep 2019		2.80	*3.83*			9.20	*2.87*	7.26	*2.60*			2.80	*3.34*

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
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FIELDWORK – *Water Level Monitoring*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No PN193981

Client RAMBOLL UK LIMITED

Sheet No 4

Borehole		BH219		BH220A		BH221		BH228		WS201		WS202	
Instrument (dia. mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)	
Depth to Base (m)		9.00		12.70		6.00		9.00		4.50		3.50	
Filter Zone (m)		5.00-9.00		10.00-13.07		1.00-6.00		7.00-9.00		1.50-4.50		1.00-3.50	
Level		5.29 m OD		30.02 m OD		18.68 m OD		11.60 m OD		22.04 m OD		10.92 m OD	
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
8 Jul 2019		1.90	*3.39*			0.91	*17.77*	3.63	*7.97*	1.05	*20.99*		
23 Jul 2019		1.90	*3.39*			3.00	*15.68*	3.80	*7.80*	0.95	*21.09*		
24 Jul 2019												3.05	*7.87*
6 Aug 2019		1.95	*3.34*			3.05	*15.63*	3.80	*7.80*	0.90	*21.14*	3.05	*7.87*
14 Aug 2019		1.95	*3.34*	11.05	*18.97*	3.00	*15.68*	3.70	*7.90*	0.70	*21.34*	3.10	*7.82*
28 Aug 2019		1.95	*3.34*			2.90	*15.78*	3.60	*8.00*	0.65	*21.39*	3.00	*7.92*
17 Sep 2019		2.10	*3.19*			3.10	*15.58*	4.00	*7.60*			3.05	*7.87*

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
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FIELDWORK – *Water Level Monitoring*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No PN193981

Client RAMBOLL UK LIMITED

Sheet No 5

Borehole		WS203		WS204		WS205A		WS207					
Instrument (dia. mm)		S (50mm)		S (50mm)		S (50mm)		S (50mm)					
Depth to Base (m)		5.00		5.00		3.00		5.00					
Filter Zone (m)		1.00-5.00		1.00-5.45		1.00-3.00		1.00-5.00					
Level		9.58 m OD		30.79 m OD		14.01 m OD		10.44 m OD					
Date	Time	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level	Depth (m)	Level
8 Jul 2019				2.50	*28.29*	DRY							
23 Jul 2019				2.70	*28.09*								
24 Jul 2019		4.00	*5.58*			DRY		4.00	*6.44*				
6 Aug 2019		2.90	*6.68*	2.90	*27.89*	DRY		4.00	*6.44*				
14 Aug 2019		2.85	*6.73*	1.65	*29.14*	DRY		3.90	*6.54*				
28 Aug 2019		2.80	*6.78*	1.60	*29.19*	DRY		3.80	*6.64*				
17 Sep 2019		2.90	*6.68*			DRY		4.05	*6.39*				

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

GEOTECHNICS
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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **08/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	☐	Slight	x	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH101	7.00		2.64	10.10	0.0	0.0	0.0	0.0	
BH102	5.00		1.71	5.30	0.0	0.0	0.0	0.0	
BH104	7.00			6.90	0.0	0.0	0.0	0.0	
BH109	9.60		4.93	9.50	0.0	0.0	0.0	0.0	
BH110	4.40		1.24	4.00	0.1	0.1	0.1	0.1	
BH111	2.00		DRY	2.00	0.0	0.0	0.0	0.0	
BH114B	12.00		0.55	12.01	0.0	0.0	0.0	0.0	
BH201	6.50		1.33	5.90	0.0	0.0	0.0	0.0	
BH202	14.75		9.15	14.00	0.0	0.0	0.0	0.0	
BH204A	10.00		4.80	10.00	0.0	0.0	0.0	0.0	
BH213	20.00		9.87	20.60	0.0	0.0	0.0	0.0	
BH216A	15.00		7.46	15.50	0.0	0.0	0.0	0.0	
BH218	10.00		2.75	9.87	0.0	0.0	0.0	0.0	
BH219	9.00		1.90	8.90	0.1	0.1	0.1	0.1	
BH220A	12.70								No Access
BH221	6.00		0.91	6.00	0.0	0.0	0.0	0.0	
BH228	9.00		3.63	9.00	0.0	0.0	0.0	0.0	
WS201	4.50		1.05	5.00	0.0	0.0	0.0	0.0	
WS204	5.00		2.50	5.00	0.0	0.0	0.0	0.0	
WS205A	3.00		DRY	2.50	0.0	0.0	0.0	0.0	

Remarks

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FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**
Date **08/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	☐	Slight	x	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH101	7.00	0.1	0.1	20.2	20.2	0	0	0	
BH102	5.00	0.2	0.2	19.4	19.4	0	0	293	
BH104	7.00	0.1	0.1	20.1	20.1	0	0	3	
BH109	9.60	0.1	0.1	19.3	19.3	0	0	0	
BH110	4.40	0.7	0.7	18.0	18.0	0	0	6	
BH111	2.00	0.1	0.1	20.5	20.5	0	0	1	
BH114B	12.00	0.5	0.5	19.3	19.3	0	0	153	
BH201	6.50	0.1	0.1	20.1	20.1	0	0	292	
BH202	14.75	0.1	0.1	20.2	20.2	0	0	175	
BH204A	10.00	0.0	0.0	21.0	21.0	0	0	>500	
BH213	20.00	0.0	0.0	21.1	21.1	0	0	5	
BH216A	15.00	0.0	0.0	20.8	20.8	0	0	3	
BH218	10.00	0.0	0.0	21.2	21.2	0	0	5	
BH219	9.00	0.7	0.7	20.6	20.6	0	0	5	
BH220A	12.70								No Access
BH221	6.00	0.3	0.3	19.9	19.9	0	0	3	
BH228	9.00	0.1	0.1	20.4	20.4	0	0	12	
WS201	4.50	0.1	0.1	20.2	20.2	0	0	4	
WS204	5.00	0.0	0.0	20.5	20.5	0	0	3	
WS205A	3.00	0.1	0.1	20.5	20.5	0	0	1	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **08/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 [ ] MK2 [ ] GA2000 [ ]

Other **GA5000;**

Weather / Site Conditions

Wind	Still	[ ]	Light	[x]	Moderate	[ ]	Strong [ ]
Cloud Cover	None	[ ]	Slight	[x]	Cloudy	[ ]	Overcast [ ]
Precipitation	Dry	[x]	Slight	[ ]	Moderate	[ ]	Heavy [ ]

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH101	7.00	0	97	-0.2	-0.2	1021	
BH102	5.00	293	80	-0.2	-0.2	1021	
BH104	7.00	3	79	-0.2	-0.2	1021	
BH109	9.60	0	80	-0.2	-0.2	1021	
BH110	4.40	6	81	0.0	0.0	1021	
BH111	2.00	1	79	-0.3	-0.3	1021	
BH114B	12.00	153	80	-0.2	-0.2	1021	
BH201	6.50	292	80	-0.2	-0.2	1021	
BH202	14.75	175	79	-0.1	-0.1	1021	
BH204A	10.00	>500	78	-0.1	-0.1	1021	
BH213	20.00	5	78	-0.1	-0.1	1021	
BH216A	15.00	3	79	-0.1	-0.1	1021	
BH218	10.00	5	78	-0.1	-0.1	1021	
BH219	9.00	5	79	-0.1	-0.1	1021	
BH220A	12.70						No Access
BH221	6.00	3	79	-0.2	-0.2	1021	
BH228	9.00	12	80	-0.1	-0.1	1021	
WS201	4.50	4	79	-0.1	-0.1	1021	
WS204	5.00	3	78	-0.2	-0.2	1021	
WS205A	3.00	1	79	-0.3	-0.3	1021	

Remarks

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Form 002/3

FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **23/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	x	Slight	☐	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH201	6.50		1.35	5.90	0.0	0.0	0.0	0.0	
BH202	14.75		9.30	14.00	0.0	0.0	0.0	0.0	
BH204A	10.00		4.55	10.00	0.0	0.0	0.0	0.0	
BH210	8.00		2.65	8.00	0.0	0.0	0.0	0.0	
BH213	20.00		10.60	20.60	0.0	0.0	0.0	0.0	
BH216A	15.00		7.60	15.50	0.1	0.1	0.1	0.1	
BH218	10.00		2.80	9.87	0.2	0.2	0.2	0.2	
BH219	9.00		1.90	8.90	0.0	0.0	0.0	0.0	
BH220A	12.70								No Access
BH221	6.00		3.00	6.00	0.0	0.0	0.0	0.0	
BH228	9.00		3.80	9.00	0.1	0.1	0.1	0.1	
WS201	4.50		0.95	5.00	0.0	0.0	0.0	0.0	
WS204	5.00		2.70	5.00	0.1	0.1	0.1	0.1	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **23/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	x	Slight	☐	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH201	6.50	0.1	0.1	20.1	20.1	0	0	265	
BH202	14.75	0.3	0.3	18.5	18.5	0	0	4	
BH204A	10.00	2.0	2.0	18.4	18.4	1	1	>500	
BH210	8.00	0.0	0.0	20.3	20.3	0	0	2	
BH213	20.00	0.0	0.0	19.3	19.3	0	0	3	
BH216A	15.00	2.3	2.3	11.2	11.2	0	0	3	
BH218	10.00	2.6	2.6	16.9	16.9	0	0	3	
BH219	9.00	0.3	0.3	20.3	20.3	0	0	3	
BH220A	12.70								No Access
BH221	6.00	0.1	0.1	20.1	20.1	0	0	1	
BH228	9.00	0.4	0.4	18.3	18.3	0	0	2	
WS201	4.50	0.5	0.5	19.4	19.4	0	0	2	
WS204	5.00	1.2	1.2	14.5	14.5	0	0	1	

Remarks

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Form 002/3

FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **23/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	x	Slight	☐	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH201	6.50	265	80	-0.3	-0.3	1015	
BH202	14.75	4	82	-0.2	-0.2	1015	
BH204A	10.00	>500	80	-0.2	-0.2	1017	
BH210	8.00	2	80	-0.2	-0.2	1017	
BH213	20.00	3	84	-0.2	-0.2	1017	
BH216A	15.00	3	85	-0.2	-0.2	1017	
BH218	10.00	3	80	-0.2	-0.2	1017	
BH219	9.00	3	79	-0.2	-0.2	1017	
BH220A	12.70						No Access
BH221	6.00	1	80	-0.2	-0.2	1015	
BH228	9.00	2	81	-0.2	-0.2	1017	
WS201	4.50	2	81	-0.2	-0.2	1015	
WS204	5.00	1	79	-0.1	-0.1	1015	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **24/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH101	**7.00**		**DIVER**						**DIVER**
BH102	**5.00**		**DIVER**						**DIVER**
BH104	**7.00**		**DIVER**						**DIVER**
BH106	**10.00**			**10.20**	**0.2**	**0.2**	**0.2**	**0.2**	
BH109	**9.60**		**5.00**	**9.50**	**0.1**	**0.1**	**0.1**	**0.1**	
BH110	**4.40**		**1.50**	**4.00**	**0.1**	**0.1**	**0.1**	**0.1**	
BH111	**2.00**		**DRY**	**2.00**	**0.1**	**0.1**	**0.1**	**0.1**	
BH114B	**12.00**		**DIVER**						**DIVER**
WS202	**3.50**		**3.05**	**3.40**	**0.0**	**0.0**	**0.0**	**0.0**	
WS203	**5.00**		**4.00**	**4.60**	**0.1**	**0.1**	**0.1**	**0.1**	
WS205A	**3.00**		**DRY**	**2.50**	**0.1**	**0.1**	**0.1**	**0.1**	
WS207	**5.00**		**4.00**	**4.80**	**0.0**	**0.0**	**0.0**	**0.0**	

Remarks

geotechnics

FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **24/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH101	**7.00**								**DIVER**
BH102	**5.00**								**DIVER**
BH104	**7.00**								**DIVER**
BH106	**10.00**	**0.5**	**0.5**	**16.4**	**16.4**	**0**	**0**	**113**	
BH109	**9.60**	**0.8**	**0.8**	**19.8**	**19.8**	**0**	**0**	**1**	
BH110	**4.40**	**0.9**	**0.9**	**19.0**	**19.0**	**0**	**0**	**4**	
BH111	**2.00**	**1.8**	**1.8**	**20.4**	**20.4**	**0**	**0**	**1**	
BH114B	**12.00**								**DIVER**
WS202	**3.50**	**1.2**	**1.2**	**19.2**	**19.2**	**0**	**0**	**1**	
WS203	**5.00**	**1.0**	**1.0**	**19.3**	**19.3**	**0**	**0**	**2**	
WS205A	**3.00**	**0.3**	**0.3**	**19.9**	**19.9**	**0**	**0**	**1**	
WS207	**5.00**	**0.3**	**0.3**	**19.5**	**19.5**	**1**	**1**	**2**	

Remarks

geotechnics

FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **24/07/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH101	**7.00**						**DIVER**
BH102	**5.00**						**DIVER**
BH104	**7.00**						**DIVER**
BH106	**10.00**	**113**	**83**	**-0.2**	**-0.2**	**1017**	
BH109	**9.60**	**1**	**79**	**-0.2**	**-0.2**	**1017**	
BH110	**4.40**	**4**	**80**	**0.0**	**0.0**	**1017**	
BH111	**2.00**	**1**	**79**	**-0.2**	**-0.2**	**1017**	
BH114B	**12.00**						**DIVER**
WS202	**3.50**	**1**	**80**	**-0.2**	**-0.2**	**1010**	
WS203	**5.00**	**2**	**80**	**-0.2**	**-0.2**	**1010**	
WS205A	**3.00**	**1**	**80**	**-0.2**	**-0.2**	**1010**	
WS207	**5.00**	**2**	**80**	**-0.1**	**-0.1**	**1010**	

Remarks

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FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **06/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH101	7.00		DIVER						DIVER
BH102	5.00		DIVER						DIVER
BH104	7.00		DIVER						DIVER
BH106	10.00		4.00	10.20	0.5	0.5	12.6	12.6	
BH109	9.60		4.75	9.50	0.0	0.0	0.0	0.0	
BH110	4.40		1.78	4.00	0.0	0.0	0.0	0.0	
BH111	2.00		DRY	2.00	0.0	0.0	0.0	0.0	
BH114B	12.00		DIVER						DIVER
BH201	6.50		1.30	5.90	0.0	0.0	0.0	0.0	
BH202	14.75		9.25	14.00	0.0	0.0	0.0	0.0	
BH204A	10.00		4.40	10.00	0.0	0.0	0.0	0.0	
BH210	8.00		2.70	8.00	0.0	0.0	0.0	0.0	
BH213	20.00		10.05	20.45	0.0	0.0	0.0	0.0	
BH216A	15.00		7.45	15.45	0.0	0.0	0.0	0.0	
BH218	10.00		2.55	9.55	0.0	0.0	0.0	0.0	
BH219	9.00		1.95	8.90	0.0	0.0	0.0	0.0	
BH220A	12.70								No Access
BH221	6.00		3.05	6.00	0.0	0.0	0.0	0.0	
BH228	9.00		3.80	9.00	0.0	0.0	0.0	0.0	
WS201	4.50		0.90	5.00	0.0	0.0	0.0	0.0	
WS202	3.50		3.05	3.40	0.0	0.0	0.0	0.0	
WS203	5.00		2.90	4.60	0.0	0.0	0.0	0.0	
WS204	5.00		2.90	5.00	0.0	0.0	0.0	0.0	
WS205A	3.00		DRY	2.50	0.0	0.0	0.0	0.0	
WS207	5.00		4.00	4.80	0.0	0.0	0.0	0.0	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **06/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH101	7.00								DIVER
BH102	5.00								DIVER
BH104	7.00								DIVER
BH106	10.00	0.8	0.8	15.5	15.5	0	0	0	
BH109	9.60	0.8	0.8	18.5	18.9	0	0	0	
BH110	4.40	1.8	0.8	17.2	17.2	0	0	0	
BH111	2.00	2.0	2.0	18.3	18.3	0	0	0	
BH114B	12.00								DIVER
BH201	6.50	1.1	1.1	18.4	18.4	0	0	0	
BH202	14.75	0.3	0.3	18.9	18.9	0	0	0	
BH204A	10.00	1.7	1.7	18.5	18.5	0	0	0	
BH210	8.00	2.5	0.2	19.5	20.4	0	0	0	
BH213	20.00	0.8	0.8	16.0	16.0	0	0	0	
BH216A	15.00	2.9	2.9	12.5	12.5	0	0	0	
BH218	10.00	2.2	2.2	16.1	16.1	0	0	3	
BH219	9.00	2.1	0.3	17.1	20.4	0	0	0	
BH220A	12.70								No Access
BH221	6.00	0.2	0.2	19.7	19.7	0	0	0	
BH228	9.00	0.3	0.1	20.2	20.2	0	0	0	
WS201	4.50	0.2	0.2	18.3	19.3	0	0	0	
WS202	3.50	1.7	1.7	18.1	18.1	0	0	0	
WS203	5.00	1.0	1.0	19.2	19.2	0	0	0	
WS204	5.00	2.2	1.2	14.7	14.7	0	0	0	
WS205A	3.00	0.2	0.2	20.7	20.7	0	0	0	
WS207	5.00	1.6	0.7	19.3	19.3	15	10	0	

Remarks

geotechnics

FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **06/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH101	7.00						DIVER
BH102	5.00						DIVER
BH104	7.00						DIVER
BH106	10.00	0	83	0.0	0.0	1001	
BH109	9.60	0	80	0.0	0.0	1001	
BH110	4.40	0	82	0.0	0.0	1001	
BH111	2.00	0	79	0.0	0.0	1001	
BH114B	12.00						DIVER
BH201	6.50	0	80	0.0	0.0	1001	
BH202	14.75	0	81	0.0	0.0	1001	
BH204A	10.00	0	79	0.0	0.0	1001	
BH210	8.00	0	79	0.0	0.0	1001	
BH213	20.00	0	83	0.0	0.0	1001	
BH216A	15.00	0	84	0.0	0.0	1001	
BH218	10.00	3	79	0.0	0.0	1001	
BH219	9.00	0	79	0.0	0.0	1001	
BH220A	12.70						No Access
BH221	6.00	0	80	0.0	0.0	1001	
BH228	9.00	0	79	0.0	0.0	1001	
WS201	4.50	0	80	0.0	0.0	1001	
WS202	3.50	0	80	0.0	0.0	1001	
WS203	5.00	0	79	0.0	0.0	1001	
WS204	5.00	0	84	0.0	0.0	1001	
WS205A	3.00	0	79	0.0	0.0	1001	
WS207	5.00	0	80	0.0	0.0	1001	

Remarks

geotechnics

FIELDWORK **-** *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **14/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH101	7.00		DIVER						DIVER
BH102	5.00		DIVER						DIVER
BH104	7.00		DIVER						DIVER
BH106	10.00		Damaged C						Damaged Cover
BH109	9.60		4.80	9.50	0.0	0.0	0.0	0.0	
BH110	4.40		1.95	4.00	0.0	0.0	0.0	0.0	
BH111	2.00		DRY	2.00	0.0	0.0	0.0	0.0	
BH114B	12.00		DIVER						DIVER
BH201	6.50		1.30	5.90	0.0	0.0	0.0	0.0	
BH202	14.75		9.40	14.00	0.0	0.0	0.0	0.0	
BH204A	10.00		4.35	10.00	0.0	0.0	0.0	0.0	
BH210	8.00		2.50	8.00	0.0	0.0	0.0	0.0	
BH213	20.00		9.25	20.45	0.0	0.0	0.0	0.0	
BH216A	15.00		7.20	15.45	0.0	0.0	0.0	0.0	
BH218	10.00		2.65	9.55	0.0	0.0	0.0	0.0	
BH219	9.00		1.95	8.90	0.0	0.0	0.0	0.0	
BH220A	12.70		11.05	13.00	0.0	0.0	0.0	0.0	
BH221	6.00		3.00	6.00	0.0	0.0	0.0	0.0	
BH228	9.00		3.70	9.00	0.0	0.0	0.0	0.0	
WS201	4.50		0.70	5.00	0.0	0.0	0.0	0.0	
WS202	3.50		3.10	3.40	0.0	0.0	0.0	0.0	
WS203	5.00		2.85	4.60	0.0	0.0	0.0	0.0	
WS204	5.00		1.65	5.00	0.0	0.0	0.0	0.0	
WS205A	3.00		DRY	2.50	0.0	0.0	0.0	0.0	
WS207	5.00		3.90	4.80	0.0	0.0	0.0	0.0	

Remarks

geotechnics

FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **14/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH101	7.00								DIVER
BH102	5.00								DIVER
BH104	7.00								DIVER
BH106	10.00								Damaged Cover
BH109	9.60	0.8	0.8	19.4	20.0	0	0	0	
BH110	4.40	0.7	0.7	16.2	16.2	0	0	0	
BH111	2.00	1.8	1.8	18.6	18.6	0	0	0	
BH114B	12.00								DIVER
BH201	6.50	0.9	0.9	18.8	18.8	0	0	10	
BH202	14.75	1.7	0.0	18.7	20.4	0	0	23	
BH204A	10.00	1.7	1.7	18.4	18.4	0	0	0	
BH210	8.00	2.9	0.5	19.9	20.2	0	0	0	
BH213	20.00	3.0	0.8	13.7	15.5	0	0	0	
BH216A	15.00	3.1	3.1	12.6	12.6	0	0	0	
BH218	10.00	2.0	2.0	16.2	16.2	0	0	3	
BH219	9.00	0.3	0.1	19.9	20.3	0	0	0	
BH220A	12.70	1.5	1.5	17.0	17.0	0	0	0	
BH221	6.00	0.9	0.2	19.1	19.1	0	0	0	
BH228	9.00	0.7	0.1	18.6	20.5	0	0	0	
WS201	4.50	0.2	0.0	19.1	19.8	0	0	0	
WS202	3.50	1.9	1.9	18.9	18.9	0	0	0	
WS203	5.00	1.2	1.2	19.3	19.3	0	0	0	
WS204	5.00	1.3	1.3	19.3	19.3	0	0	0	
WS205A	3.00	0.5	0.5	20.5	20.5	0	0	0	
WS207	5.00	1.8	0.5	19.1	19.1	9	9	0	

Remarks

geotechnics

FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **14/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind Still ☐ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☐

Precipitation Dry ☐ Slight ☐ Moderate ☐ Heavy ☐

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH101	7.00						DIVER
BH102	5.00						DIVER
BH104	7.00						DIVER
BH106	10.00						Damaged Cover
BH109	9.60	0	79	0.0	0.0	1007	
BH110	4.40	0	83	0.0	0.0	1007	
BH111	2.00	0	80	0.0	0.0	1007	
BH114B	12.00						DIVER
BH201	6.50	10	80	0.0	0.0	1007	
BH202	14.75	14	79	0.0	0.0	1007	
BH204A	10.00	0	79	0.0	0.0	1007	
BH210	8.00	0	79	0.0	0.0	1007	
BH213	20.00	0	83	0.0	0.0	1007	
BH216A	15.00	0	84	0.0	0.0	1007	
BH218	10.00	3	78	0.0	0.0	1007	
BH219	9.00	0	79	0.0	0.0	1007	
BH220A	12.70	0	81	0.0	0.0	1007	
BH221	6.00	0	80	0.0	0.0	1007	
BH228	9.00	0	79	0.0	0.0	1007	
WS201	4.50	0	80	0.0	0.0	1007	
WS202	3.50	0	79	0.0	0.0	1007	
WS203	5.00	0	79	0.0	0.0	1007	
WS204	5.00	0	78	0.0	0.0	1007	
WS205A	3.00	0	79	0.0	0.0	1007	
WS207	5.00	0	80	0.0	0.0	1007	

Remarks

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FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **28/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **Gas Data LMSxi gas analyser;**

Weather / Site Conditions

Wind	Still ☐	Light ☐	Moderate ☐	Strong ☐
Cloud Cover	None ☐	Slight ☐	Cloudy [x]	Overcast ☐
Precipitation	Dry ☐	Slight [x]	Moderate ☐	Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH109	9.60		4.70	9.50	0.0	0.0	0.0	0.0	
BH110	4.40		1.75	4.00	0.0	0.0	0.0	0.0	
BH111	2.00		DRY	2.00	0.0	0.0	0.0	0.0	
BH201	6.50		1.30	5.90	0.0	0.0	0.0	0.0	
BH202	14.75		9.30	14.00	0.0	0.0	0.0	0.0	
BH204A	10.00		4.30	10.00	0.0	0.0	0.0	0.0	
BH210	8.00		2.45	8.00	0.0	0.0	0.0	0.0	
BH213	20.00		9.15	20.45	0.0	0.0	0.0	0.0	
BH216A	15.00		7.15	15.50	0.0	0.0	0.0	0.0	
BH218	10.00		2.55	9.55	0.0	0.0	0.0	0.0	
BH219	9.00		1.95	8.90	0.0	0.0	0.0	0.0	
BH220A	12.70								No Access
BH221	6.00		2.90	6.00	0.0	0.0	0.0	0.0	
BH228	9.00		3.60	9.00	0.0	0.0	0.0	0.0	
WS201	4.50		0.65	5.00	0.0	0.0	0.0	0.0	
WS202	3.50		3.00	3.40	0.0	0.0	0.0	0.0	
WS203	5.00		2.80	4.60	0.0	0.0	0.0	0.0	
WS204	5.00		1.60	5.00	0.0	0.0	0.0	0.0	
WS205A	3.00		DRY	2.50	0.0	0.0	0.0	0.0	
WS207	5.00		3.80	4.80	0.0	0.0	0.0	0.0	

Remarks

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FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **28/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **Gas Data LMSxi gas analyser;**

Weather / Site Conditions

Wind	Still ☐	Light ☐	Moderate ☐	Strong ☐
Cloud Cover	None ☐	Slight ☐	Cloudy [x]	Overcast ☐
Precipitation	Dry ☐	Slight [x]	Moderate ☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH109	9.60	1.0	0.8	18.6	19.4	0	0	0	
BH110	4.40	1.1	0.7	20.4	17.3	0	0	0	
BH111	2.00	1.1	1.9	19.5	18.5	0	0	0	
BH201	6.50	0.4	1.0	19.6	18.6	0	0	0	
BH202	14.75	0.6	0.2	19.1	19.6	0	0	0	
BH204A	10.00	0.4	0.7	20.4	18.5	0	0	0	
BH210	8.00	2.4	0.2	19.8	20.4	0	0	0	
BH213	20.00	3.0	0.8	14.0	15.9	0	0	0	
BH216A	15.00	0.3	3.0	19.1	12.5	0	0	0	
BH218	10.00	0.3	2.1	20.2	16.0	0	0	3	
BH219	9.00	2.0	0.4	20.0	20.4	0	0	0	
BH220A	12.70								No Access
BH221	6.00	1.0	0.2	20.1	19.8	0	0	0	
BH228	9.00	1.0	0.1	19.0	20.4	0	0	3	
WS201	4.50	0.4	0.2	18.9	19.5	0	0	0	
WS202	3.50	0.2	1.8	20.9	18.6	0	0	0	
WS203	5.00	0.3	1.1	20.4	19.1	0	0	0	
WS204	5.00	0.5	1.3	20.4	19.8	0	0	0	
WS205A	3.00	0.5	0.2	21.0	20.9	0	0	0	
WS207	5.00	1.7	0.6	19.5	19.3	0	0	0	

Remarks

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FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **28/08/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **Gas Data LMSxi gas analyser;**

Weather / Site Conditions

Wind	Still ☐	Light ☐	Moderate ☐	Strong ☐
Cloud Cover	None ☐	Slight ☐	Cloudy [x]	Overcast ☐
Precipitation	Dry ☐	Slight [x]	Moderate ☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH109	9.60	0		0.0	0.0	1010	
BH110	4.40	0		0.0	0.0	1010	
BH111	2.00	0		0.0	0.0	1010	
BH201	6.50	0		0.0	0.0	1010	
BH202	14.75	0		0.0	0.0	1010	
BH204A	10.00	0		0.0	0.0	1010	
BH210	8.00	0		0.0	0.0	1010	
BH213	20.00	0		0.0	0.0	1010	
BH216A	15.00	0		0.0	0.0	1010	
BH218	10.00	2		0.0	0.0	1010	
BH219	9.00	0		0.0	0.0	1010	
BH220A	12.70						No Access
BH221	6.00	0		0.0	0.0	1010	
BH228	9.00	3		0.0	0.0	1010	
WS201	4.50	0		0.0	0.0	1010	
WS202	3.50	0		0.0	0.0	1010	
WS203	5.00	0		0.0	0.0	1010	
WS204	5.00	0		0.0	0.0	1010	
WS205A	3.00	0		0.0	0.0	1010	
WS207	5.00	0		0.0	0.0	1010	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **17/09/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (1 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	☐	Slight	x	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Time (hh:mm)	Depth to Water (m bgl)	Current Hole Depth (m bgl)	Methane (Peak) CH4 (% VOL)	Methane (Steady) CH4 (% VOL)	Methane (Peak) CH4 (% LEL)	Methane (Steady) CH4 (% LEL)	Remarks
BH109	**9.60**		**4.95**	**9.50**	**0.0**	**0.0**	**0.0**	**0.0**	
BH110	**4.40**		**2.70**	**4.00**	**0.0**	**0.0**	**0.0**	**0.0**	
BH201	**6.50**		**1.35**	**5.90**	**0.0**	**0.0**	**0.0**	**0.0**	
BH202	**14.75**		**9.10**	**14.00**	**0.0**	**0.0**	**0.0**	**0.0**	
BH204A	**10.00**		**4.60**	**10.00**	**0.0**	**0.0**	**0.0**	**0.0**	
BH210	**8.00**		**2.80**	**8.00**	**0.0**	**0.0**	**0.0**	**0.0**	
BH213	**20.00**		**9.20**	**20.60**	**0.0**	**0.0**	**0.0**	**0.0**	
BH216A	**15.00**		**7.26**	**15.50**	**0.0**	**0.0**	**0.0**	**0.0**	
BH218	**10.00**		**2.80**	**9.87**	**0.0**	**0.0**	**0.0**	**0.0**	
BH219	**9.00**		**2.10**	**8.90**	**0.0**	**0.0**	**0.0**	**0.0**	
BH221	**6.00**		**3.10**	**6.00**	**0.0**	**0.0**	**0.0**	**0.0**	
BH228	**9.00**		**4.00**	**9.00**	**0.0**	**0.0**	**0.0**	**0.0**	
WS201	**4.50**			**5.00**	**0.0**	**0.0**	**0.0**	**0.0**	
WS202	**3.50**		**3.05**	**3.40**	**0.0**	**0.0**	**0.0**	**0.0**	
WS203	**5.00**		**2.90**	**4.60**	**0.0**	**0.0**	**0.0**	**0.0**	
WS205A	**3.00**		**DRY**	**2.50**	**0.0**	**0.0**	**0.0**	**0.0**	
WS207	**5.00**		**4.05**	**4.80**	**0.0**	**0.0**	**0.0**	**0.0**	

Remarks

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Form 002/3

FIELDWORK *- Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **17/09/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (2 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	☐	Slight	x	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

Borehole	Depth to Base (m)	Carbon Dioxide (Peak) (% VOL)	Carbon Dioxide (Steady) (% VOL)	Oxygen (Peak) (% VOL)	Oxygen (Steady) (% VOL)	Hydrogen Sulphide (Peak) (ppm)	Hydrogen Sulphide (Steady) (ppm)	Carbon Monoxide (Peak) (ppm)	Remarks
BH109	9.60	0.7	0.7	20.2	20.2	0	0	0	
BH110	4.40	0.7	0.7	20.1	19.1	0	0	0	
BH201	6.50	0.9	0.1	20.7	19.3	0	0	0	
BH202	14.75	0.4	0.3	19.6	19.5	0	0	0	
BH204A	10.00	1.7	1.7	18.1	18.1	0	0	0	
BH210	8.00					0	0	0	
BH213	20.00	1.9	1.8	17.3	17.3	0	0	0	
BH216A	15.00	3.8	3.8	19.6	14.5	0	0	0	
BH218	10.00	1.3	1.3	18.4	18.4	0	0	0	
BH219	9.00	1.9	0.20	18.9	20.8	0	0	0	
BH221	6.00	0.8	0.5	19.5	18.3	0	0	0	
BH228	9.00	0.1	0.1	21.1	21.1	0	0	0	
WS201	4.50	0.3	0.1	20.7	20.4	0	0	0	
WS202	3.50	3.0	1.9	19.2	17.2	0	0	0	
WS203	5.00	2.0	2.0	20.1	19.0	0	0	0	
WS205A	3.00	2.9	0.3	20.5	20.5	0	0	0	
WS207	5.00	0.7	0.3	20.4	19.7	0	0	0	

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Daily Record*

Project **A55 JUNCTIONS 15 AND 16 IMPROVEMENTS**

Project No **PN193981**

Date **17/09/2019**

Client **RAMBOLL UK LIMITED**

Sheet No. **1 (3 of 3)**

Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other **GA5000;**

Weather / Site Conditions

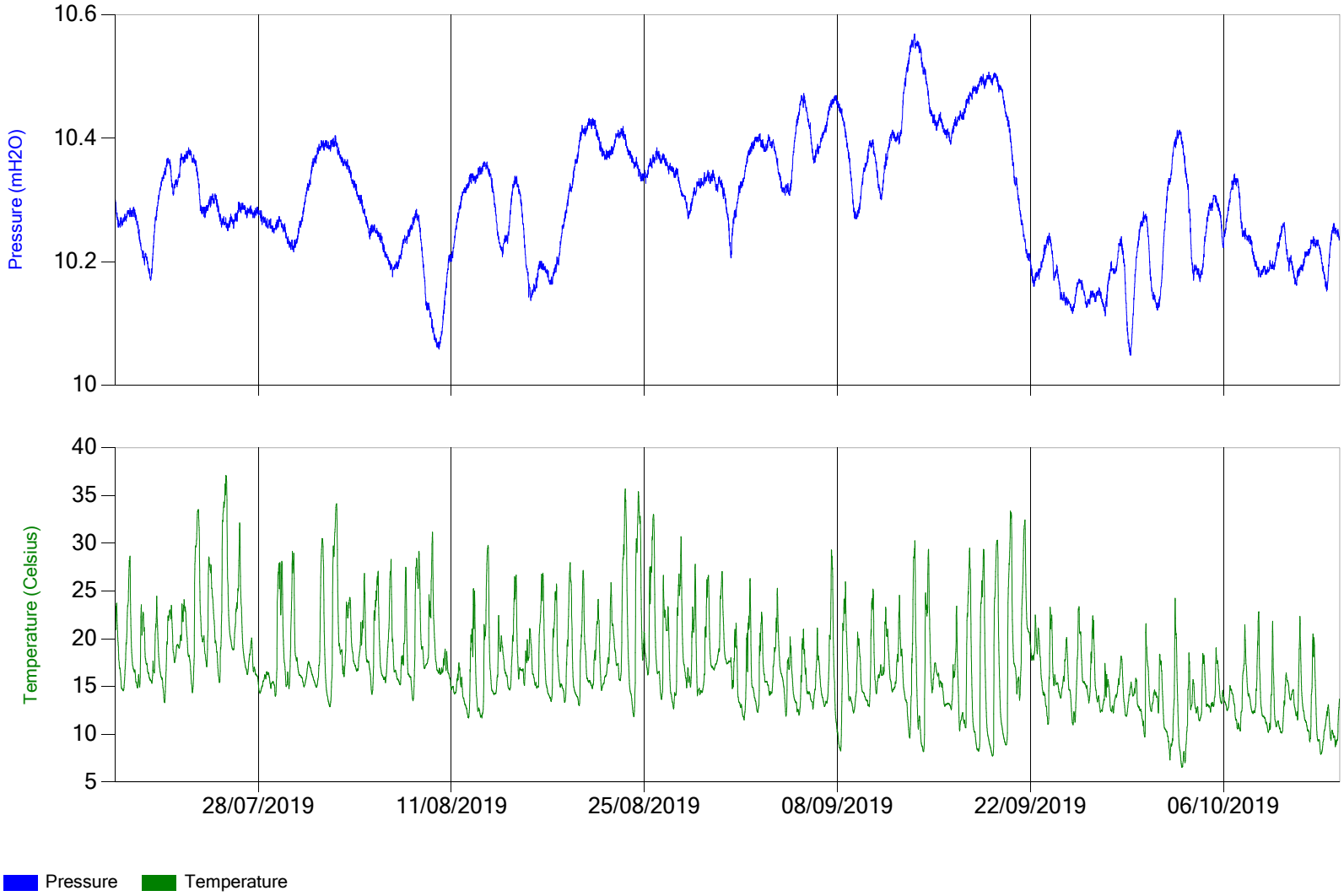
Wind	Still	☐	Light	x	Moderate	☐	Strong ☐
Cloud Cover	None	☐	Slight	x	Cloudy	☐	Overcast ☐
Precipitation	Dry	x	Slight	☐	Moderate	☐	Heavy ☐

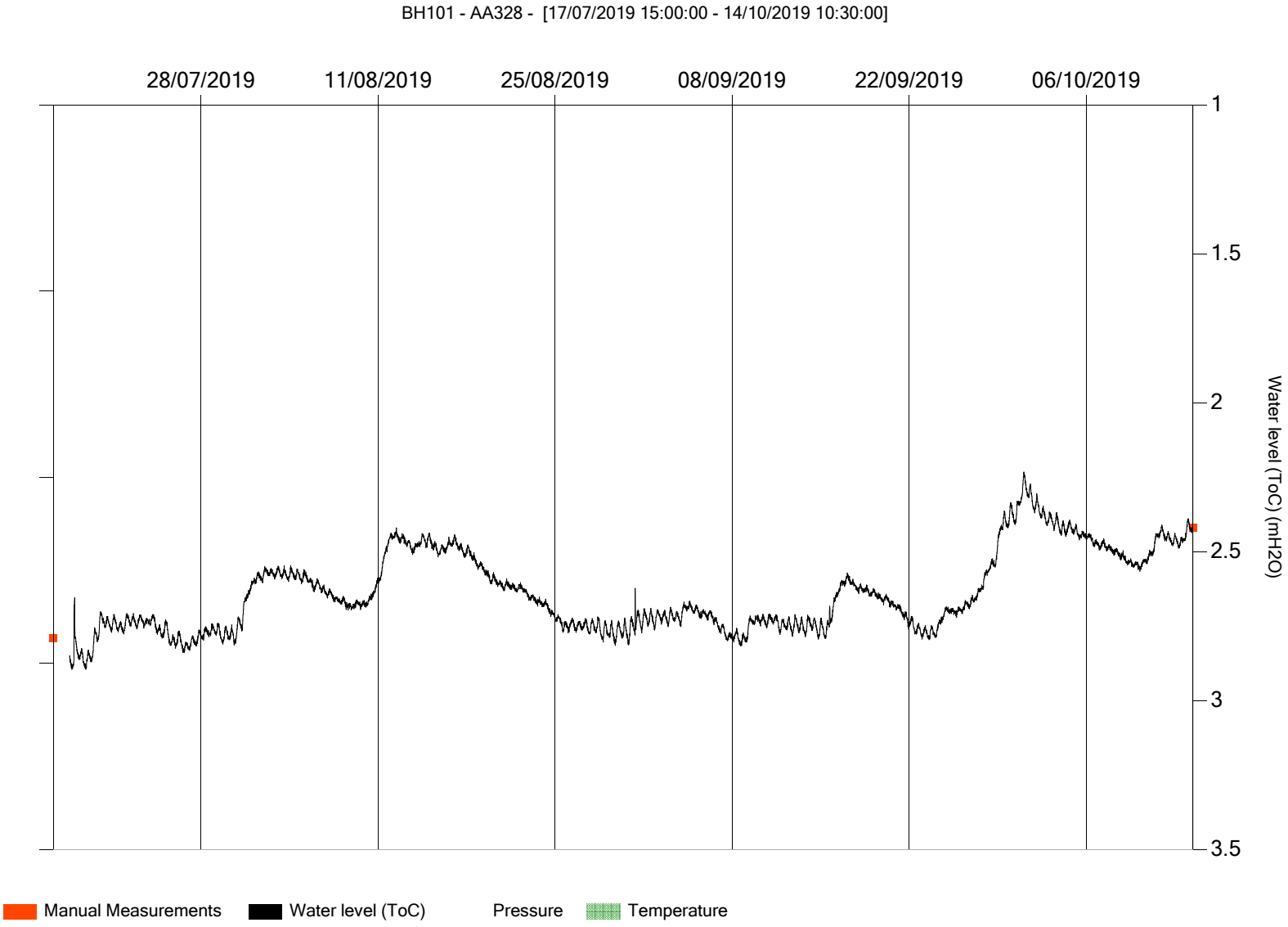
Borehole	Depth to Base (m)	Carbon Monoxide (Steady) (ppm)	Balance Check (%)	Flow Rate (Peak) (l/hr)	Flow Rate (Steady) (l/hr)	Barometric Pressure (mBars)	Remarks
BH109	9.60	0	79	0.0	0.0	1023	
BH110	4.40	0	80	0.0	0.0	1023	
BH201	6.50	0	80	0.0	0.0	1023	
BH202	14.75	0	80	0.0	0.0	1023	
BH204A	10.00	0	80	0.0	0.0	1023	
BH210	8.00	0		0.0	0.0	1023	
BH213	20.00	0	81	0.0	0.0	1023	
BH216A	15.00	0	82	0.0	0.0	1023	
BH218	10.00	0	80	0.0	0.0	1023	
BH219	9.00	0	79	0.0	0.0	1023	
BH221	6.00	0	81	0.0	0.0	1023	
BH228	9.00	0	79	0.0	0.0	1023	
WS201	4.50	0	79	0.0	0.0	1023	
WS202	3.50	0	80	0.0	0.0	1023	
WS203	5.00	0	79	0.0	0.0	1023	
WS205A	3.00	0	79	0.0	0.0	1023	
WS207	5.00	0	80	0.0	0.0	1023	

Remarks

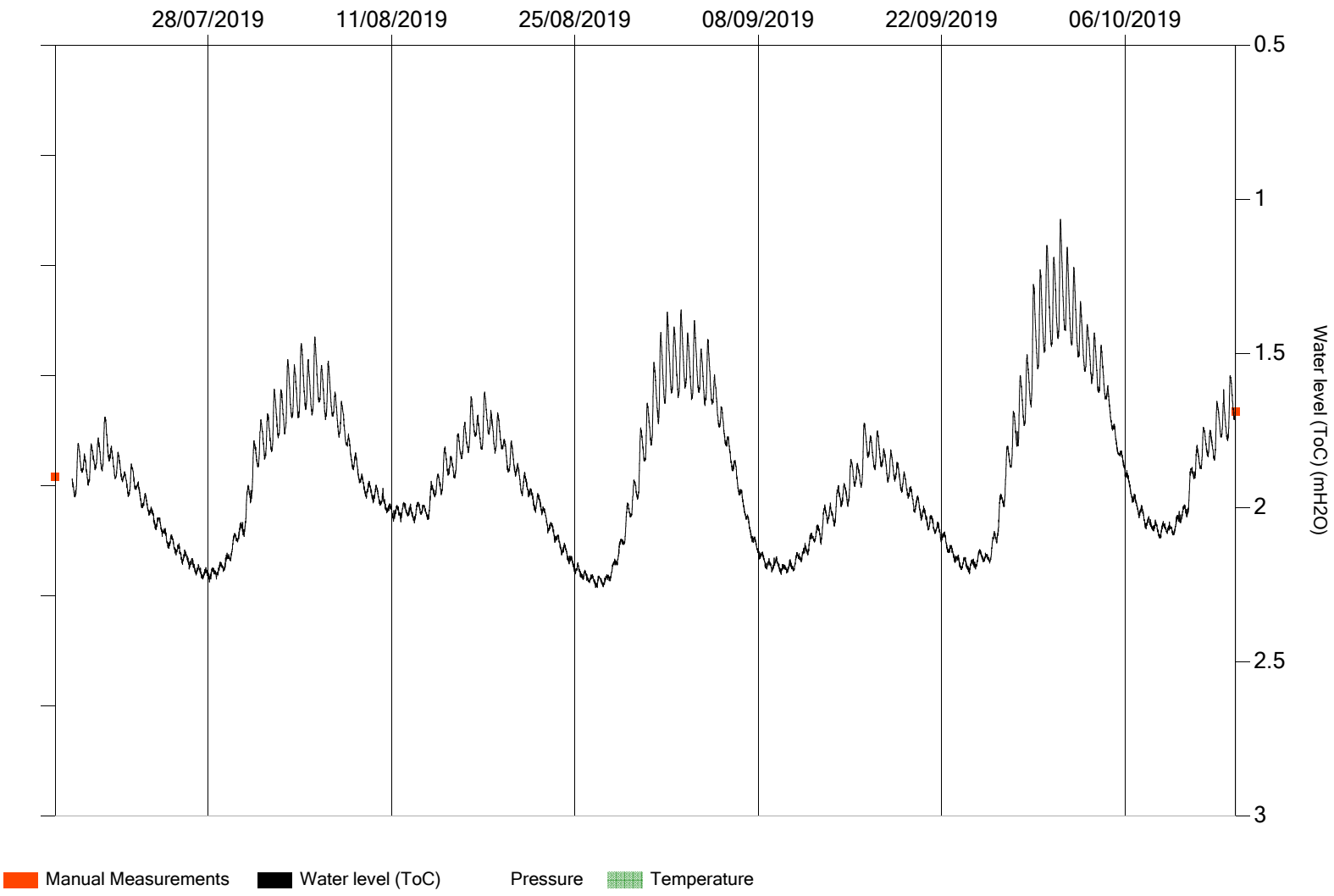
geotechnics

A55 BAROLOGGER - AA290 - [17/07/2019 15:00:00 - 14/10/2019 10:15:00]

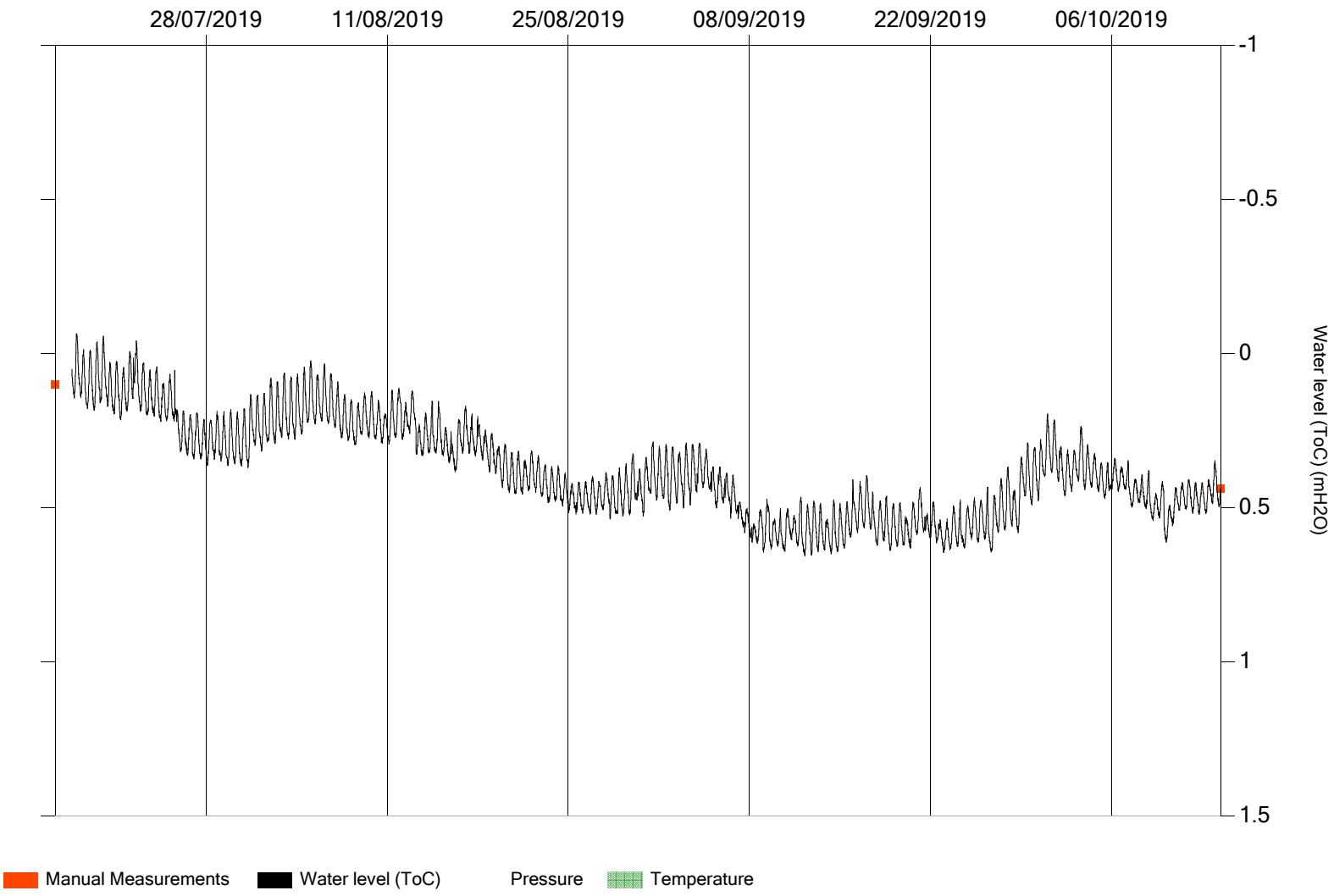


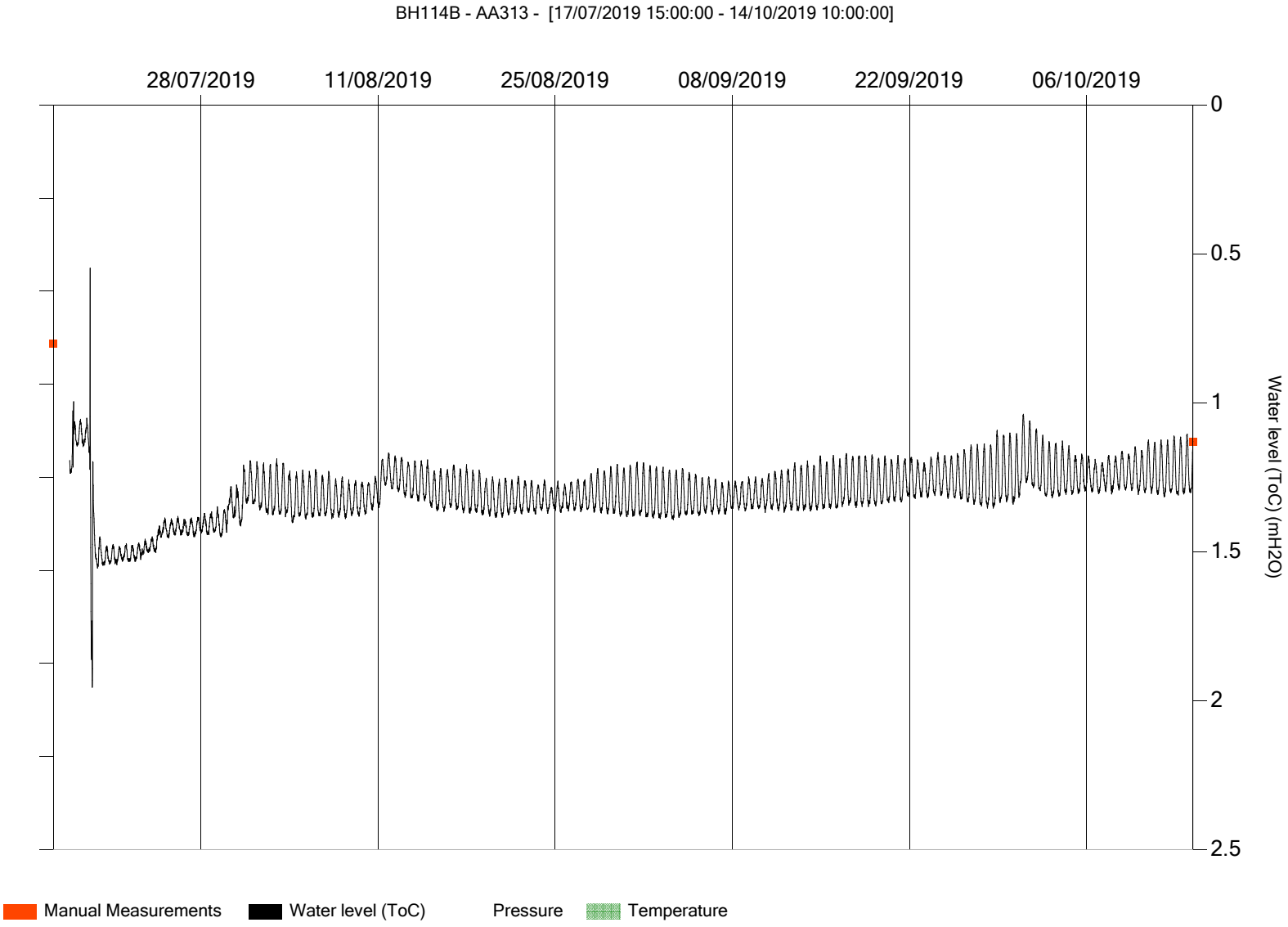

BH101 - AA328 - [17/07/2019 15:00:00 - 14/10/2019 10:30:00]
28/07/2019
11/08/2019
25/08/2019
08/09/2019
22/09/2019
06/10/2019
1
1.5
2
2.5
3
3.5
Water level (ToC) (mH2O)
Manual Measurements
Water level (ToC)
Pressure
Temperature

BH102 - AA297 - [17/07/2019 15:00:00 - 14/10/2019 10:30:00]



BH104 - AA315 - [17/07/2019 15:00:00 - 14/10/2019 10:15:00]




BH114B - AA313 - [17/07/2019 15:00:00 - 14/10/2019 10:00:00]
28/07/2019
11/08/2019
25/08/2019
08/09/2019
22/09/2019
06/10/2019
0
0.5
1
1.5
2
2.5
Water level (ToC) (mH2O)
Manual Measurements
Water level (ToC)
Pressure
Temperature

APPENDIX II

Laboratory Test Results - Geotechnical

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Geotechnics Ltd The Geotechnical Centre Unit 1B, Borders Industrial Estate River Lane, Saltney Chester CH4 8RJ	**Date of issue**	15/10/2019
		Issue No.	2
		Client Ref. No.	-
		Samples / Material Source	
		Samples Recv'd	01/10/2019
Testing Start Date	01/10/2019	Sample State	As received
Testing Complete	15/10/2019	Sampled by	Geotechnics Limited
Comments	Issue 2 superseedes issue 1 Issue 2 - Additional Testing		
Project No	PN193981		
Project Name	A55 JUNCTION 15 AND 16 IMPROVEMENTS		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	137	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit	105	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	82	Yes
BS EN ISO 17892-4:2016 Cl. 5.4	Particle Size Distribution by Pipette Method	52	Yes
BS EN ISO 17892-2:2014 Cl. 5.1	Bulk Density by Linear Measurement	6	Yes
BS 1377-7:1990 Cl. 3.0	Shear Strength by Laboratory Vane	14	No
BS 1377-4:1990 Cl. 3.5	4.5 kg Rammer Dry Density/Moisture Content Relationship (Compaction)	16	Yes
BS 1377-7:1990 Cl. 8	Shear Strength by Quick Undrained Triaxial Test - Single Stage.	16	Yes
BS EN ISO 17892-5:2017	Incremental Loading Oedometer	12	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.
The results within this report relate only to the samples tested and received from the client.

UKAS TESTING
1365

Test Results checked and approved for issue.
Signed for and on behalf of Geotechnics Limited

Schiano

Stephane Schiano (Laboratory Testing Manager)

GEOTECHNICS
geotechnical and geoenvironmental specialists
203 Torrington Avenue, Tile Hill,
Coventry, CV4 9UT

DATA SHEET - Laboratory Test Symbols

Classification and Strength

Symbol	**C - Clay**	**M - Silt**
	(0 - containing organic matter)	
	Plasticity	L - Low
		I - Intermediate
		H - High
		V - Very High
		E - Extremely High
Ip	Plasticity Index	
%	% retained on 425 µm sieve, shown under Ip value	
w_L	Liquid Limit	
w_P	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
P_d	Particle Density	
Test	**Quick undrained triaxial tests**	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm²)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - $\sqrt{t}$

Rock

UF	Unacceptable Failure

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO_3 %, value in brackets expressed as SO_4 %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5	= 2.5 kg Rammer
	4.5	= 4.5 kg Rammer
	V	= Vibrating Hammer
γ_b	Bulk Density	
γ_d	Dry Density	

CBR California Bearing Ratio

Type	2.5	= Test on Specimen Recompacted using 2.5 kg Rammer
	4.5	= As above but using 4.5 kg Rammer
	V	= As above but using Vibrating Hammer
	M	= Test on open drive mould specimen cut in field
	S	= Soaked Specimen
Top	CBR at top of mould	
Bottom	CBR at bottom of mould	
ND	None Detected	
*	In the Sample Description denotes a laboratory only description	

LABORATORY RESULTS - Classification and Strength

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH102	2.00-2.45 (2.00)	U	N76021	Soft dark grey slightly gravelly CLAY over soft fibrous black PEAT.		(20%)	84	NP	74.8						
BH102	9.00-9.45 (9.00)	B	N76025	Soft grey slightly sandy CLAY.	CI	28 (1%)	50	22	40.4						
BH102	10.50-10.95 (10.50)	B	N76026	Very soft grey slightly sandy CLAY.	CH	32 (3%)	56	24	55.8						
BH102	21.40-21.65 (21.40-21.64)	C	N76147	Very stiff extremely high strength slightly sandy slightly gravelly CLAY.	CI	20 (7%)	35	15	14.7	SS	2.24	400	721	361 ##	361
BH102	25.90-26.25 (25.90-26.15)	C	N76148	Stiff high strength brown slightly gravelly CLAY.	CI	22 (3%)	41	19	21.0	SS	2.07	475	205	103	103
BH102	32.40-32.70 (32.40-32.65)	C	N76149	Stiff high strength brown mottled grey slightly gravelly CLAY.	CI	19 (3%)	37	18	20.2	SS	2.12	600	154	77 ##	77
BH102	33.90-34.25 (33.90-34.15)	C	N76150	Stiff high strength brown slightly gravelly CLAY.	CH	34 (7%)	52	18	26.5	SS	2.02	600	206	103	103
BH104	1.00-1.20 (1.00)	B	N76176	Grey slightly sandy slightly gravelly organic SILT.	MH	30 (28%)	69	39	66.1						
BH104	2.00-2.45 (2.00)	B	N76177	Soft grey slightly gravelly sandy CLAY.					66.7 12.4	SS-Rem	1.86	50	551	276	276
BH104	7.50-7.95 (7.50)	B	N76180	Stiff grey slightly sandy gravelly CLAY.	CL	12 (50%)	25	13	12.9						
BH104	14.40-14.67 (14.40-14.60)	C	N76181	Very stiff very high strength brown slightly sandy gravelly CLAY.	CI	21 (67%)	41	20	13.0	SS	2.29	250	517	258	258
BH104	19.20-19.40 (19.20)	C	N76182	Grey very sandy clayey GRAVEL. (See Test Remarks Sheet for further information)		(54%)	31	NP	9.4	SS HV	2.41	350	NST Top= Mid= Bot=	 60 58 62	 Avg= 60

Remarks AGS
NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
^ Rock water content test
QUT Water Contents: <Failure Zone>, [After test]

GEOTECHNICS
geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Classification and Strength

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH105	2.00-2.45 (2.00)	B	N76475	Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.	CL	14 (48%)	29	15	16.1						
BH105	3.00-3.45 (3.00)	B	N76476	Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.					17.2						
BH105	4.00-4.45 (4.00)	B	N76477	Stiff brown slightly sandy slightly gravelly CLAY with a high cobble content.	CL	13 (41%)	30	17	15.4						
BH105	6.00-6.45 (6.00)	B	N76478	Stiff grey slightly sandy slightly gravelly CLAY with a medium cobble content.	CL	12 (48%)	26	14	14.2						
BH105	7.50-7.95 (7.50)	B	N76479	Stiff grey slightly gravelly sandy clayey SILT.		(52%)	23	NP	12.4						
BH105	10.50-10.95 (10.50)	B	N76480	Firm brown slightly gravelly sandy CLAY.	CL	12 (18%)	24	12	13.8						
BH106	10.20 (10.20)	B	N76443	Soft grey slightly gravelly sandy CLAY.	CL	14 (44%)	32	18	19.6						
BH106	19.93-20.10 (19.93)	C	N76448	Firm to stiff high strength grey mottled orange slightly gravelly sandy CLAY.	CI	19 (60%)	42	23	14.2	HV			Top= 104 Mid= 140 Bot= 126		Avg= 123
BH106	20.62-20.75 (20.62)	C	N76449	Firm medium strength grey mottled orange and yellow sandy gravelly clayey SILT.		(82%)	36	NP	13.7	HV			Top= 40 Mid= 38 Bot= 46		Avg= 41
BH106	21.21-21.42 (21.21)	C	N76450	Firm to stiff medium/high strength grey slightly gravelly sandy SILT.		(41%)	28	NP	8.6	HV			Top= 50 Mid= 96 Bot= 80		Avg= 75
BH106	21.82-22.00 (21.82)	C	N76451	Firm to stiff high strength dark grey gravelly SILT.		(53%)	29	NP	8.1	HV			Top= 120 Mid= 140 Bot= 120		Avg= 127
BH106	22.05-22.30 (22.05)	C	N76452	Firm medium strength dark grey/black gravelly SILT.		(65%)	27	NP	5.7	HV			Top= 62 Mid= 70 Bot= 48		Avg= 60

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
^ Rock water content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Classification and Strength*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH107A	1.20-1.65 (1.20)	B	N76279	Firm brown slightly sandy gravelly CLAY.					15.9						
BH107A	2.00-2.45 (2.00)	B	N76280	Soft brown slightly sandy gravelly CLAY with a medium cobble content.	CL	13 (61%)	29	16	23.9						
BH107A	5.00-5.39 (5.00)	B	N76282	Firm to stiff grey slightly sandy gravelly CLAY.					15.3						
BH107A	7.50-7.95 (7.50)	B	N76283	Firm to stiff grey slightly sandy slightly gravelly CLAY.					18.3						
BH108	2.65-3.20 (2.65)	D	N76447	Very stiff brown slightly gravelly sandy CLAY.	CL	12 (69%)	28	16	7.5						
BH109	9.60 (9.60)	D	N76301	Stiff greyish brown slightly sandy gravelly CLAY.	CL	8 (61%)	25	17	10.4						
BH109	10.05-11.10 (10.05)	D	N76303	Stiff brown slightly sandy slightly gravelly CLAY.	CL	17 (26%)	31	14	16.4						
BH109	11.45-12.60 (11.45)	D	N76304	Stiff brown slightly sandy gravelly CLAY.	CL	11 (72%)	22	11	11.0						
BH109	15.95-17.00 (15.95)	D	N76306	Soft grey slightly sandy slightly gravelly CLAY.	CI	23 (47%)	39	16	25.6						
BH110	1.20-1.65 (1.20)	B	N76284	Soft brown sandy gravelly CLAY.	CL	14 (50%)	31	17	18.4						
BH110	3.00-3.45 (3.00)	B	N76285	Firm brown slightly sandy slightly gravelly CLAY.	CI	23 (29%)	41	18	17.7						
BH114	3.00-3.45 (3.00)	B	N76289	Spongy grey and black clayey PEAT.					56.0						
BH114A	2.45-2.60 (2.45)	D	N76310	Dark brown PEAT with some soft grey clay.		(17%)	87	NP	91.3						
BH114B	7.50-7.80 (7.50)	D	N76313	Stiff yellowish brown slightly sandy gravelly CLAY.	CL	10 (78%)	26	16	9.8						
BH114B	10.00-10.50 (10.00)	B	N76314	Stiff brownish grey slightly sandy slightly gravelly CLAY.	CL	9 (53%)	25	16	11.6						

Remarks AGS
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LABORATORY RESULTS - Classification and Strength

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH114B	17.20-17.35 (17.20)	C	N76327	Firm medium to high strength brown slightly sandy slightly gravelly CLAY.	CL	16 (10%)	27	11	16.0	HV			Top= Mid= Bot=	84 70 74	Avg= 76
BH114B	20.30-20.40 (20.30)	C	N76328	Stiff grey slightly sandy gravelly clayey SILT.		(52%)	26	NP	9.0	HV			Top= Mid= Bot=	64 72 66	Avg= 67
BH114B	25.10-25.30 (25.10)	C	N76329	Stiff medium to high strength grey slightly sandy slightly gravelly CLAY.	CI	19 (38%)	37	18	12.0	HV			Top= Mid= Bot=	50 120 76	Avg= 82
BH114B	26.00-26.20 (26.00)	C	N76330	Firm medium strength grey slightly sandy slightly gravelly CLAY.	CI	14 (24%)	35	21	19.3	HV			Top= Mid= Bot=	42 48 42	Avg= 44
BH114B	26.30-26.50 (26.30)	C	N76331	Firm medium to high strength grey slightly sandy slightly gravelly CLAY.	CI	17 (13%)	39	22	22.0	HV			Top= Mid= Bot=	42 76 64	Avg= 61
BH114B	27.55-27.70 (27.55)	C	N76332	Soft very low strength brown and grey slightly sandy slightly gravelly CLAY.	CL	15 (37%)	32	17	16.6	HV			Top= Mid= Bot=	8 10 32	Avg= 17
BH201	0.70-1.20 (0.70)	B	N76315	MADE GROUND: Firm brown slightly gravelly sandy clay with a medium cobble content.	CL	18 (52%)	34	16	10.1						
BH201	2.00-2.45 (2.00)	B	N76317	Firm to stiff high strength grey slightly sandy slightly gravelly CLAY.					11.5	SS-Rem	2.31	50	154	77 ##	77
BH201	2.45-3.00 (2.45)	D	N76318	Stiff grey slightly sandy slightly gravelly CLAY.	CL	13 (38%)	27	14	14.5						
BH202	2.00-2.45 (2.00)	B	N76320	Firm medium strength grey slightly sandy gravelly CLAY.					10.2	SS-Rem	2.33	50	89	45	45
BH202	2.45-3.00 (2.45)	D	N76321	POSSIBLE MADE GROUND: Firm yellowish brown slightly sandy gravelly clay.	CL	9 (43%)	24	15	11.1						

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LABORATORY RESULTS - *Classification and Strength*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

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Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH202	5.00-5.45 (5.15)	UT	N76322	Stiff high strength yellowish brown slightly sandy slightly gravelly CLAY.					19.3	SS	2.27	100	218	109	109
BH202	5.45-5.60 (5.45)	D	N76323	Stiff yellowish brown slightly sandy slightly gravelly CLAY.	CL	15 (28%)	33	18	19.4						
BH202	6.95-8.00 (6.95)	D	N76324	Stiff yellowish brown slightly sandy slightly gravelly CLAY.	CL	13 (43%)	28	15	13.0						
BH203	1.20-1.65 (1.20)	B	N75936	Stiff greyish brown slightly sandy gravelly CLAY with a medium cobble content.	CL	18 (58%)	34	16	7.7						
BH203	2.00-2.45 (2.00)	B	N75937	Very stiff greyish brown slightly sandy gravelly CLAY. (See Test Remarks Sheet for further information)	CI	18 (72%)	35	17	10.9						
BH203	4.00-4.45 (4.00-4.25)	UT	N75938	Stiff high strength brown slightly sandy slightly gravelly CLAY.	CI	18 (11%)	35	17	9.7 <15.4>	SS	2.26	80	153	76	76
BH204A	2.00-2.45 (2.00)	B	N75990	Firm to stiff yellowish brown slightly sandy gravelly CLAY with a medium cobble content. (See Test Remarks Sheet for further information)	CL	15 (55%)	31	16	11.3						
BH204A	8.00-8.45 (8.00-8.25)	UT	N75992	Stiff high strength grey slightly sandy slightly gravelly CLAY.	CL	13 (3%)	30	17	19.3	SS	2.16	150	293	146 ##	146
BH205C	2.00-2.45 (2.00)	B	N76030	MADE GROUND: Very stiff brownish grey slightly gravelly sandy clay.					10.3						
BH205C	3.80 (3.80)	D	N76031	Very stiff yellow mottled brown slightly sandy slightly gravelly CLAY.	CL	12 (51%)	33	21	14.3						
BH205C	6.00 (6.00)	D	N76032	Brown slightly sandy slightly gravelly SILT.		(62%)	24	NP	9.7						
BH207	2.00-2.45 (2.00)	B	N76034	Stiff brownish orange slightly sandy slightly gravelly CLAY.					15.1						
BH207	3.00-3.45 (3.00)	UT	N76035	Very stiff grey slightly sandy gravelly CLAY. (See Test Remarks Sheet for further information)	CL	16 (41%)	31	15	11.3	SS	2.43	60	NST		

Remarks AGS

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LABORATORY RESULTS - Classification and Strength

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH208	2.00-2.45 (2.00)	B	N76291	Stiff brown slightly sandy gravelly CLAY with a low cobble content.	CL	18 (55%)	34	16	11.5						
BH209	1.20-1.65 (1.20)	B	N76183	MADE GROUND: Soft orange mottled bluish grey slightly sandy slightly gravelly clay with a medium cobble content.	CL	14 (50%)	32	18	17.7						
BH209	3.00-3.45 (3.00)	B	N76184	Soft bluish grey slightly sandy gravelly CLAY.	CL	13 (50%)	28	15	15.4 9.4	SS-Rem	2.30	50	453	227	227
BH210	0.50-1.20 (0.50)	B	N76185	MADE GROUND: Soft brown slightly gravelly sandy clay.	CI	17 (31%)	35	18	28.8						
BH210	1.20-1.65 (1.20)	B	N76186	MADE GROUND: Soft brown slightly gravelly sandy clay.					32.3 10.5	SS-Rem	2.28	50	624	312	312
BH210	2.00-2.45 (2.00)	UT	N76187	MADE GROUND: Soft very low strength brown mottled grey slightly sandy gravelly clay. (See Test Remarks Sheet for further information)					40.8	SS HV	1.84	40	NST Top= Mid= Bot=	 10 12 10	 Avg= 11
BH210	2.50 (2.50)	D	N76188	MADE GROUND: Very soft brown mottled grey slightly sandy slightly gravelly clay.	CI	15 (23%)	37	22	41.0						
BH210	4.80 (4.80)	D	N76189	Firm brown slightly sandy CLAY.	CL	19 (1%)	31	12	21.1						
BH210	5.00-5.45 (5.00)	UT	N76190	Firm medium strength laminated brown slightly sandy CLAY. (See Test Remarks Sheet for further information)					20.4	SS HV	2.04	90	NST Top= Mid= Bot=	 64 64 72	 Avg= 67
BH212	1.20-1.65 (1.20)	B	N76553	Stiff brown slightly gravelly CLAY.	CI	24 (6%)	42	18	19.1						
BH212	2.00-2.45 (2.25)	UT	N76554	Stiff high strength brown slightly gravelly CLAY.					14.4	SS	2.05	50	294	147	147
BH212	2.50 (2.50)	D	N76555	Stiff brown slightly gravelly CLAY.	CI	20 (9%)	37	17	14.0						
BH212	4.00-4.45 (4.00)	B	N76556	Stiff brown gravelly CLAY.	CL	12 (56%)	31	19	8.6						

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LABORATORY RESULTS - Classification and Strength

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

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Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH213	2.50 (2.50)	D	N76038	Stiff brown slightly gravelly sandy CLAY.	CI	20 (13%)	38	18	17.2						
BH213	4.50 (4.50)	D	N76041	Stiff brown slightly gravelly sandy CLAY.	CI	20 (15%)	36	16	17.7						
BH214	2.90-3.00 (2.90)	D	N77206	Stiff brown slightly sandy slightly gravelly CLAY.	CI	21 (10%)	40	19	17.9						
BH214	3.90-4.00 (3.90)	D	N77207	Stiff brown slightly sandy slightly gravelly CLAY.	CI	18 (56%)	36	18	20.5						
BH214	6.80-6.90 (6.80)	D	N77208	Very stiff grey slightly sandy gravelly CLAY.	CL	10 (61%)	27	17	11.1						
BH214	11.90-12.00 (11.90)	D	N77209	Grey sandy gravelly clayey SILT.		(72%)	31	NP	8.6						
BH214	15.90-16.00 (15.90)	D	N77210	Grey slightly sandy very gravelly clayey SILT.		(75%)	34	NP	10.4						
BH214	24.90-25.00 (24.90)	D	N77211	Grey slightly sandy slightly gravelly clayey SILT.		(24%)	28	NP	14.2						
BH214	40.20-40.30 (40.20)	D	N77212	Grey slightly sandy very gravelly clayey SILT.		(76%)	26	NP	7.7						
BH215	1.40-1.50 (1.40)	D	N77214	Firm brown slightly sandy slightly gravelly CLAY.	CI	24 (21%)	42	18	23.6						
BH215	4.40-4.50 (4.40)	D	N77215	Firm brown slightly sandy slightly gravelly CLAY.	CI	23 (8%)	41	18	19.3						
BH215	8.50-8.60 (8.50)	D	N77216	Dark grey slightly clayey SAND AND GRAVEL.	CI	19 (86%)	37	18	17.5						
BH215	13.00-13.10 (13.00)	D	N77217	Grey slightly sandy gravelly clayey SILT.		(58%)	29	NP	9.3						
BH216A	2.45-3.00 (2.45)	D	N76153	Soft brown slightly gravelly sandy CLAY.	CL	11 (10%)	24	13	21.6						
BH216A	3.00-3.60 (3.00)	B	N75943	Soft brown slightly gravelly sandy CLAY.	CL	13 (14%)	26	13	23.5						

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LABORATORY RESULTS - Classification and Strength

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BH216A	4.45-5.00 (4.45)	D	N75944	Firm to stiff brown slightly sandy slightly gravelly CLAY.	CI	20 (14%)	36	16	19.2						
BH216A	5.00-5.45 (5.00-5.30)	UT	N75945	Stiff brown slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information)	CI	20 (8%)	37	17	18.5 18.5 18.5	MS	2.16	50 100 200	NST		
BH216A	5.45-5.60 (5.45)	D	N76154	Stiff brown slightly sandy slightly gravelly CLAY.	CI	20 (9%)	37	17	20.7						
BH217	1.20-1.65 (1.20)	B	N76560	Firm brown slightly gravelly sandy CLAY.	CI	17 (10%)	35	18	18.9						
BH217	3.20-3.65 (3.45)	UT	N76562	Stiff very high strength brown slightly gravelly sandy CLAY.					16.2	SS	2.10	75	393	197	197
BH217	7.40-7.85 (7.65)	UT	N76565	Stiff high strength greyish brown slightly gravelly CLAY.					15.4	SS	2.12	100	176	88 ##	88
BH217	7.85-8.00 (7.85)	D	N76566	Stiff greyish brown gravelly CLAY.	CL	12 (64%)	29	17	11.6						
BH218	13.50-13.95 (13.50)	D	N75998	Soft grey mottled brown CLAY.	CL	14 (NAT 0%)	32	18	28.7						
BH218	15.00-15.45 (15.00)	B	N75999	Firm to stiff grey gravelly CLAY with a low cobble content. (See Test Remarks Sheet for further information)	CL	17 (60%)	33	16	16.4						
BH218	16.50-16.95 (16.50)	B	N76000	Firm grey gravelly CLAY with a low cobble content.	CL	17 (52%)	28	11	15.5						
BH219	1.20-1.65 (1.20)	B	N75947	Firm brown mottled grey slightly sandy gravelly CLAY. (See Test Remarks Sheet for further information)	CH	30 (58%)	61	31	32.9						
BH219	3.00-3.45 (3.00)	B	N75949	Spongy dark brown PEAT with some soft grey clay.					59.7						
BH219	4.00-4.45 (4.00-4.25)	UT	N75950	Very soft bluish grey slightly gravelly CLAY. (See Test Remarks Sheet for further information)		(3%)	43	NP	50.5 49.5 49.5 49.5	MS	NST	40 80 160	NST		

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BH219	4.50 (4.50)	D	N75951	Very soft bluish grey slightly gravelly CLAY.	CH	31 (NAT)	58	27	53.9						
BH219	12.00-12.45 (12.00)	B	N75953	Greyish brown very silty SAND with pockets of soft sandy silty clay.		(10%)	20	NP	19.2						
BH220	1.80 (1.80)	D	N76155	Stiff brown slightly sandy gravelly CLAY.	CI	18 (65%)	36	18	8.5						
BH220	2.00-2.45 (2.00)	B	N76156	Stiff brown slightly sandy slightly gravelly CLAY.					11.7						
BH220	3.00-3.45 (3.00)	B	N76157	Very stiff brown slightly sandy gravelly CLAY.	CL	14 (61%)	31	17	8.0						
BH220A	1.80 (1.80)	D	N76158	Very stiff yellowish brown slightly sandy gravelly CLAY.	CL	16 (66%)	34	18	10.6						
BH220A	2.00-2.45 (2.00)	B	N76159	Stiff to very stiff yellowish brown slightly sandy gravelly CLAY.					13.5						
BH220A	4.00-4.45 (4.00)	B	N76160	Very stiff yellowish brown slightly sandy gravelly CLAY.	CL	14 (49%)	31	17	16.3						
BH220A	6.50-6.95 (6.50)	UT	N76161	Very stiff medium strength greyish brown slightly sandy slightly gravelly CLAY. (See Test Remarks Sheet for further information)	CL	17 (19%)	33	16	13.4 13.4 13.4	MS HV	2.19	50 100 200	NST Top= Mid= Bot=	62 40 42	Avg= 48
BH221	1.20-1.65 (1.20)	B	N76387	Firm to stiff yellowish brown slightly sandy gravelly clayey SILT.		(56%)	32	NP	15.3						
BH221	2.65-3.20 (2.65)	D	N76388	Stiff yellowish brown slightly sandy gravelly CLAY.	CI	17 (45%)	35	18	11.2						
BH221	6.95-8.00 (6.95)	D	N76391	Firm to stiff grey gravelly clayey SILT.		(56%)	27	NP	24.4						
BH228	1.20-1.65 (1.20)	D	N76043	Stiff brown slightly sandy gravelly CLAY.	CL	13 (60%)	29	16	11.9						
BH228	2.00-2.45 (2.00)	B	N76044	Very stiff brown gravelly CLAY.					15.2						

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BHWS101	3.05 (3.05)	D	N76326	Firm greyish brown gravelly CLAY.	CL	16 (65%)	32	16	10.6						
TP202	2.50-3.50 (2.50)	B	N76004	Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY.	CI	17 (11%)	35	18	17.1						
TP203	1.50 (1.50)	D	N76006	POSSIBLY MADE GROUND: Firm yellow slightly gravelly sandy clay.	CI	17 (55%)	35	18	10.5						
TP204	1.50-2.50 (1.50)	B	N76009	Firm to stiff brown slightly sandy slightly gravelly silty CLAY.	CI	19 (5%)	39	20	19.8						
TP206	1.80-2.80 (1.80)	B	N76012	Stiff brown mottled grey slightly gravelly CLAY.	CI	20 (12%)	37	17	14.5						
TP207	0.50-0.60 (0.50)	B	N76482	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.					5.2						
TP208	0.50-0.60 (0.50)	B	N76486	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.					6.0						
TP208	1.10 (1.10)	B	N76488	MADE GROUND: Grey sandy medium to coarse gravel.					5.0						
TP211	1.00-2.00 (1.00)	B	N76015	MADE GROUND: Black very gravelly very clayey fine to coarse sand.					36.7						
TP211	2.00-3.00 (2.00)	B	N76016	Very soft bluish grey slightly sandy CLAY.	CL	13 (11%)	34	21	41.4						
TP212	1.00 (1.00)	D	N76017	MADE GROUND: Black very gravelly sand with brick, ash and glass fragments. (See Test Remarks Sheet for further information)		(70%)	76	NP	45.7						
TP212	1.20-2.00 (1.20)	B	N76018	Soft bluish grey CLAY.					60.2						
TP212	2.00 (2.00)	D	N76019	Soft bluish grey slightly sandy slightly gravelly CLAY.	CH	32 (7%)	63	31	54.2						

Remarks AGS

NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
^ Rock water content test
QUT Water Contents: <Failure Zone>, [After test]

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Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH102	2.00-2.45 (2.00)	U	N76021	Soft dark grey slightly gravelly CLAY over soft fibrous black PEAT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					20%	84	NP
BH102	9.00-9.45 (9.00)	B	N76025	Soft grey slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	28	1%	50	22
BH102	10.50-10.95 (10.50)	B	N76026	Very soft grey slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CH	32	3%	56	24
BH102	21.40-21.65 (21.40)	C	N76147	Very stiff extremely high strength slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	7%	35	15
BH102	25.90-26.25 (25.90)	C	N76148	Stiff high strength brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	22	3%	41	19
BH102	32.40-32.70 (32.40)	C	N76149	Stiff high strength brown mottled grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	3%	37	18
BH102	33.90-34.25 (33.90)	C	N76150	Stiff high strength brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CH	34	7%	52	18
BH104	1.00-1.20 (1.00)	B	N76176	Grey slightly sandy slightly gravelly organic SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MH	30	28%	69	39
BH104	7.50-7.95 (7.50)	B	N76180	Stiff grey slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	50%	25	13

Remarks

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Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH104	14.40-14.67 (14.40)	C	N76181	Very stiff very high strength brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	21	67%	41	20
BH104	19.20-19.40 (19.20)	C	N76182	Grey very sandy clayey GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					54%	31	NP
BH105	2.00-2.45 (2.00)	B	N76475	Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	48%	29	15
BH105	4.00-4.45 (4.00)	B	N76477	Stiff brown slightly sandy slightly gravelly CLAY with a high cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	41%	30	17
BH105	6.00-6.45 (6.00)	B	N76478	Stiff grey slightly sandy slightly gravelly CLAY with a medium cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	48%	26	14
BH105	7.50-7.95 (7.50)	B	N76479	Stiff grey slightly gravelly sandy clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					52%	23	NP
BH105	10.50-10.95 (10.50)	B	N76480	Firm brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	18%	24	12
BH106	10.20 (10.20)	B	N76443	Soft grey slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	44%	32	18
BH106	19.93-20.10 (19.93)	C	N76448	Firm to stiff high strength grey mottled orange slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	60%	42	23

Remarks AGS

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Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH106	20.62-20.75 (20.62)	C	N76449	Firm medium strength grey mottled orange and yellow sandy gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					82%	36	NP
BH106	21.21-21.42 (21.21)	C	N76450	Firm to stiff medium/high strength grey slightly gravelly sandy SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					41%	28	NP
BH106	21.82-22.00 (21.82)	C	N76451	Firm to stiff high strength dark grey gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					53%	29	NP
BH106	22.05-22.30 (22.05)	C	N76452	Firm medium strength dark grey/black gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					65%	27	NP
BH107A	2.00-2.45 (2.00)	B	N76280	Soft brown slightly sandy gravelly CLAY with a medium cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	61%	29	16
BH108	2.65-3.20 (2.65)	D	N76447	Very stiff brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	69%	28	16
BH109	9.60 (9.60)	D	N76301	Stiff greyish brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	8	61%	25	17
BH109	10.05-11.10 (10.05)	D	N76303	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	17	26%	31	14
BH109	11.45-12.60 (11.45)	D	N76304	Stiff brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	11	72%	22	11

Remarks

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Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH109	15.95-17.00 (15.95)	D	N76306	Soft grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	23	47%	39	16
BH110	1.20-1.65 (1.20)	B	N76284	Soft brown sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	50%	31	17
BH110	3.00-3.45 (3.00)	B	N76285	Firm brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	23	29%	41	18
BH114A	2.45-2.60 (2.45)	D	N76310	Dark brown PEAT with some soft grey clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					17%	87	NP
BH114B	7.50-7.80 (7.50)	D	N76313	Stiff yellowish brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	10	78%	26	16
BH114B	10.00-10.50 (10.00)	B	N76314	Stiff brownish grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	9	53%	25	16
BH114B	17.20-17.35 (17.20)	C	N76327	Firm medium to high strength brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	10%	27	11
BH114B	20.30-20.40 (20.30)	C	N76328	Stiff grey slightly sandy gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					52%	26	NP
BH114B	25.10-25.30 (25.10)	C	N76329	Stiff medium to high strength grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	38%	37	18

Remarks

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Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH114B	26.00-26.20 (26.00)	C	N76330	Firm medium strength grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	14	24%	35	21
BH114B	26.30-26.50 (26.30)	C	N76331	Firm medium to high strength grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	13%	39	22
BH114B	27.55-27.70 (27.55)	C	N76332	Soft very low strength brown and grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	15	37%	32	17
BH201	0.70-1.20 (0.70)	B	N76315	MADE GROUND: Firm brown slightly gravelly sandy clay with a medium cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	18	52%	34	16
BH201	2.45-3.00 (2.45)	D	N76318	Stiff grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	38%	27	14
BH202	2.45-3.00 (2.45)	D	N76321	POSSIBLE MADE GROUND: Firm yellowish brown slightly sandy gravelly clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	9	43%	24	15
BH202	5.45-5.60 (5.45)	D	N76323	Stiff yellowish brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	15	28%	33	18
BH202	6.95-8.00 (6.95)	D	N76324	Stiff yellowish brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	43%	28	15
BH203	1.20-1.65 (1.20)	B	N75936	Stiff greyish brown slightly sandy gravelly CLAY with a medium cobble content.	Fall Cone 4pt with decreasing water content, cone type: 80g/30, washed over 425um sieve			CL	18	58%	34	16

Remarks AGS

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Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH203	2.00-2.45 (2.00)	B	N75937	Very stiff greyish brown slightly sandy gravelly CLAY. Test Remark: 1-point cone	Fall Cone 1pt with decreasing water content, cone type: 80g/30, washed over 425um sieve	20.5	33.12 (0.000)	CI	18	72%	35	17
BH203	4.00-4.45 (4.00)	UT	N75938	Stiff high strength brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	18	11%	35	17
BH204A	2.00-2.45 (2.00)	B	N75990	Firm to stiff yellowish brown slightly sandy gravelly CLAY with a medium cobble content. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.5	29.38 (0.000)	CL	15	55%	31	16
BH204A	8.00-8.45 (8.00)	UT	N75992	Stiff high strength grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	3%	30	17
BH205C	3.80 (3.80)	D	N76031	Very stiff yellow mottled brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	51%	33	21
BH205C	6.00 (6.00)	D	N76032	Brown slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					62%	24	NP
BH207	3.00-3.45 (3.00)	UT	N76035	Very stiff grey slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	41%	31	15
BH208	2.00-2.45 (2.00)	B	N76291	Stiff brown slightly sandy gravelly CLAY with a low cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	18	55%	34	16
BH209	1.20-1.65 (1.20)	B	N76183	MADE GROUND: Soft orange mottled bluish grey slightly sandy slightly gravelly clay with a medium cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	50%	32	18

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Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH209	3.00-3.45 (3.00)	B	N76184	Soft bluish grey slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	50%	28	15
BH210	0.50-1.20 (0.50)	B	N76185	MADE GROUND: Soft brown slightly gravelly sandy clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	31%	35	18
BH210	2.50 (2.50)	D	N76188	MADE GROUND: Very soft brown mottled grey slightly sandy slightly gravelly clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	15	23%	37	22
BH210	4.80 (4.80)	D	N76189	Firm brown slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	19	1%	31	12
BH212	1.20-1.65 (1.20)	B	N76553	Stiff brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	24	6%	42	18
BH212	2.50 (2.50)	D	N76555	Stiff brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	9%	37	17
BH212	4.00-4.45 (4.00)	B	N76556	Stiff brown gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	56%	31	19
BH213	2.50 (2.50)	D	N76038	Stiff brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	13%	38	18
BH213	4.50 (4.50)	D	N76041	Stiff brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	15%	36	16

Remarks AGS

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Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH214	2.90-3.00 (2.90)	D	N77206	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	21	10%	40	19
BH214	3.90-4.00 (3.90)	D	N77207	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	18	56%	36	18
BH214	6.80-6.90 (6.80)	D	N77208	Very stiff grey slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	10	61%	27	17
BH214	11.90-12.00 (11.90)	D	N77209	Grey sandy gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					72%	31	NP
BH214	15.90-16.00 (15.90)	D	N77210	Grey slightly sandy very gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					75%	34	NP
BH214	24.90-25.00 (24.90)	D	N77211	Grey slightly sandy slightly gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					24%	28	NP
BH214	40.20-40.30 (40.20)	D	N77212	Grey slightly sandy very gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					76%	26	NP
BH215	1.40-1.50 (1.40)	D	N77214	Firm brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	24	21%	42	18
BH215	4.40-4.50 (4.40)	D	N77215	Firm brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	23	8%	41	18

Remarks

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Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH215	8.50-8.60 (8.50)	D	N77216	Dark grey slightly clayey SAND AND GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	86%	37	18
BH215	13.00-13.10 (13.00)	D	N77217	Grey slightly sandy gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					58%	29	NP
BH216A	2.45-3.00 (2.45)	D	N76153	Soft brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	11	10%	24	13
BH216A	3.00-3.60 (3.00)	B	N75943	Soft brown slightly gravelly sandy CLAY.	Fall Cone 4pt with decreasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	14%	26	13
BH216A	4.45-5.00 (4.45)	D	N75944	Firm to stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	14%	36	16
BH216A	5.00-5.45 (5.00)	UT	N75945	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	8%	37	17
BH216A	5.45-5.60 (5.45)	D	N76154	Stiff brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	9%	37	17
BH217	1.20-1.65 (1.20)	B	N76560	Firm brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	10%	35	18
BH217	7.85-8.00 (7.85)	D	N76566	Stiff greyish brown gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	12	64%	29	17

Remarks AGS

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Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH218	13.50-13.95 (13.50)	D	N75998	Soft grey mottled brown CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, natural			CL	14	0%	32	18
BH218	15.00-15.45 (15.00)	B	N75999	Firm to stiff grey gravelly CLAY with a low cobble content. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.4	31.18 (0.000)	CL	17	60%	33	16
BH218	16.50-16.95 (16.50)	B	N76000	Firm grey gravelly CLAY with a low cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	17	52%	28	11
BH219	1.20-1.65 (1.20)	B	N75947	Firm brown mottled grey slightly sandy gravelly CLAY. Test Remark: 1-point cone	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CH	30	58%	61	31
BH219	4.00-4.45 (4.00)	UT	N75950	Very soft bluish grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					3%	43	NP
BH219	4.50 (4.50)	D	N75951	Very soft bluish grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, natural			CH	31	0%	58	27
BH219	12.00-12.45 (12.00)	B	N75953	Greyish brown very silty SAND with pockets of soft sandy silty clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					10%	20	NP
BH220	1.80 (1.80)	D	N76155	Stiff brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	18	65%	36	18
BH220	3.00-3.45 (3.00)	B	N76157	Very stiff brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	61%	31	17
BH220A	1.80 (1.80)	D	N76158	Very stiff yellowish brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	66%	34	18

Remarks

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LABORATORY RESULTS - Atterberg Limit

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH220A	4.00-4.45 (4.00)	B	N76160	Very stiff yellowish brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	14	49%	31	17
BH220A	6.50-6.95 (6.50)	UT	N76161	Very stiff medium strength greyish brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	17	19%	33	16
BH221	1.20-1.65 (1.20)	B	N76387	Firm to stiff yellowish brown slightly sandy gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					56%	32	NP
BH221	2.65-3.20 (2.65)	D	N76388	Stiff yellowish brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	45%	35	18
BH221	6.95-8.00 (6.95)	D	N76391	Firm to stiff grey gravelly clayey SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					56%	27	NP
BH228	1.20-1.65 (1.20)	D	N76043	Stiff brown slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	60%	29	16
BHWS101	3.05 (3.05)	D	N76326	Firm greyish brown gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	65%	32	16
TP202	2.50-3.50 (2.50)	B	N76004	Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	11%	35	18
TP203	1.50 (1.50)	D	N76006	POSSIBLY MADE GROUND: Firm yellow slightly gravelly sandy clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	55%	35	18

Remarks AGS

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LABORATORY RESULTS - Atterberg Limit

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
TP204	1.50-2.50 (1.50)	B	N76009	Firm to stiff brown slightly sandy slightly gravelly silty CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	19	5%	39	20
TP206	1.80-2.80 (1.80)	B	N76012	Stiff brown mottled grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	12%	37	17
TP211	2.00-3.00 (2.00)	B	N76016	Very soft bluish grey slightly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	11%	34	21
TP212	1.00 (1.00)	D	N76017	MADE GROUND: Black very gravelly sand with brick, ash and glass fragments. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.3	69.55 (0.000)			70%	76	NP
TP212	2.00 (2.00)	D	N76019	Soft bluish grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CH	32	7%	63	31

Remarks AGS

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LABORATORY RESULTS - Particle Size Distribution

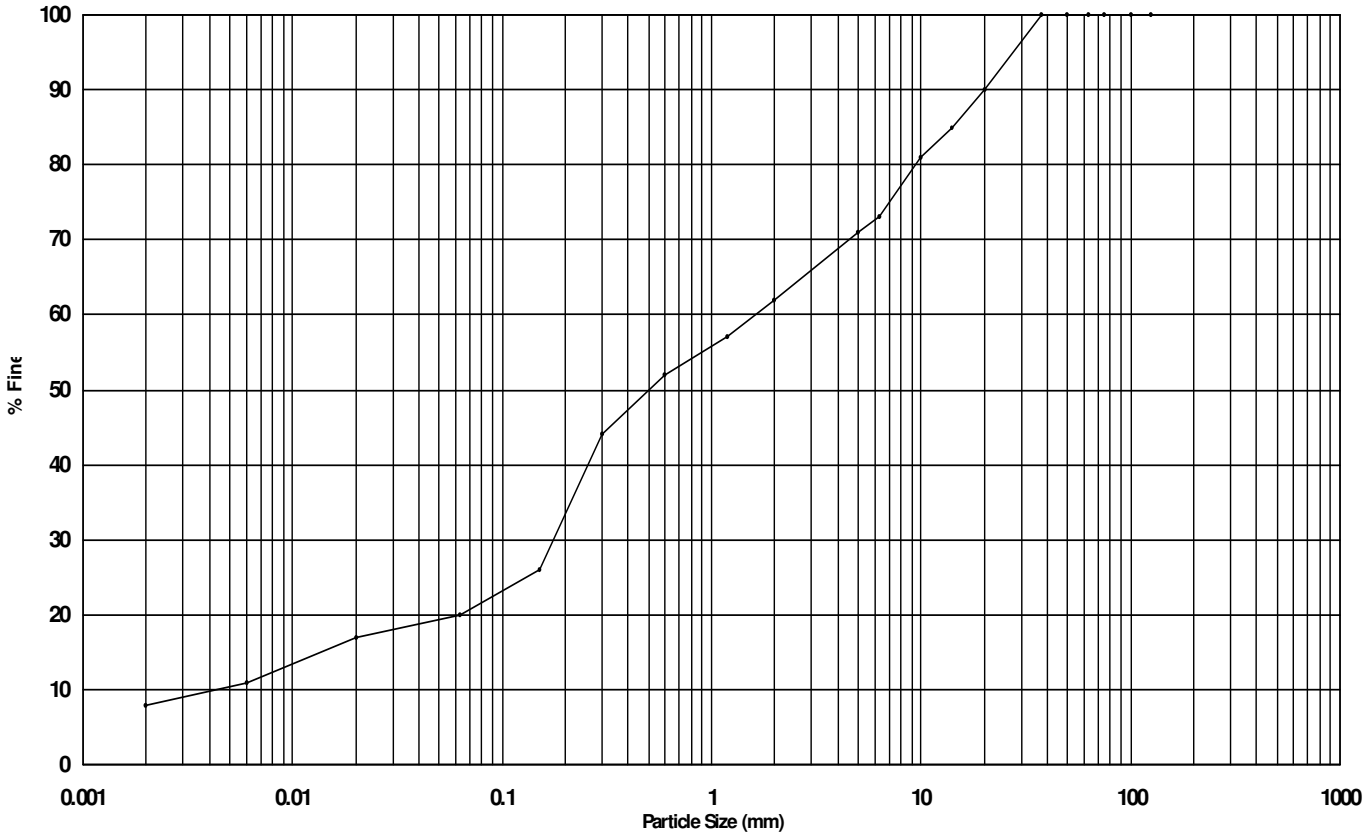
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH101
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76145

Sample Description

MADE GROUND: Soft dark brown sandy gravelly clay with brick and ash.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	8
SILT	12
SAND	42
GRAVEL	38
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	90
14 mm	85
10 mm	81
6.3 mm	73
5 mm	71
2 mm	62
1.18 mm	57
600 µm	52
300 µm	44
150 µm	26

Size	% Finer
63 µm	20
20 µm	17
6 µm	11
2 µm	8

Uniformity Coefficient
402.38

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

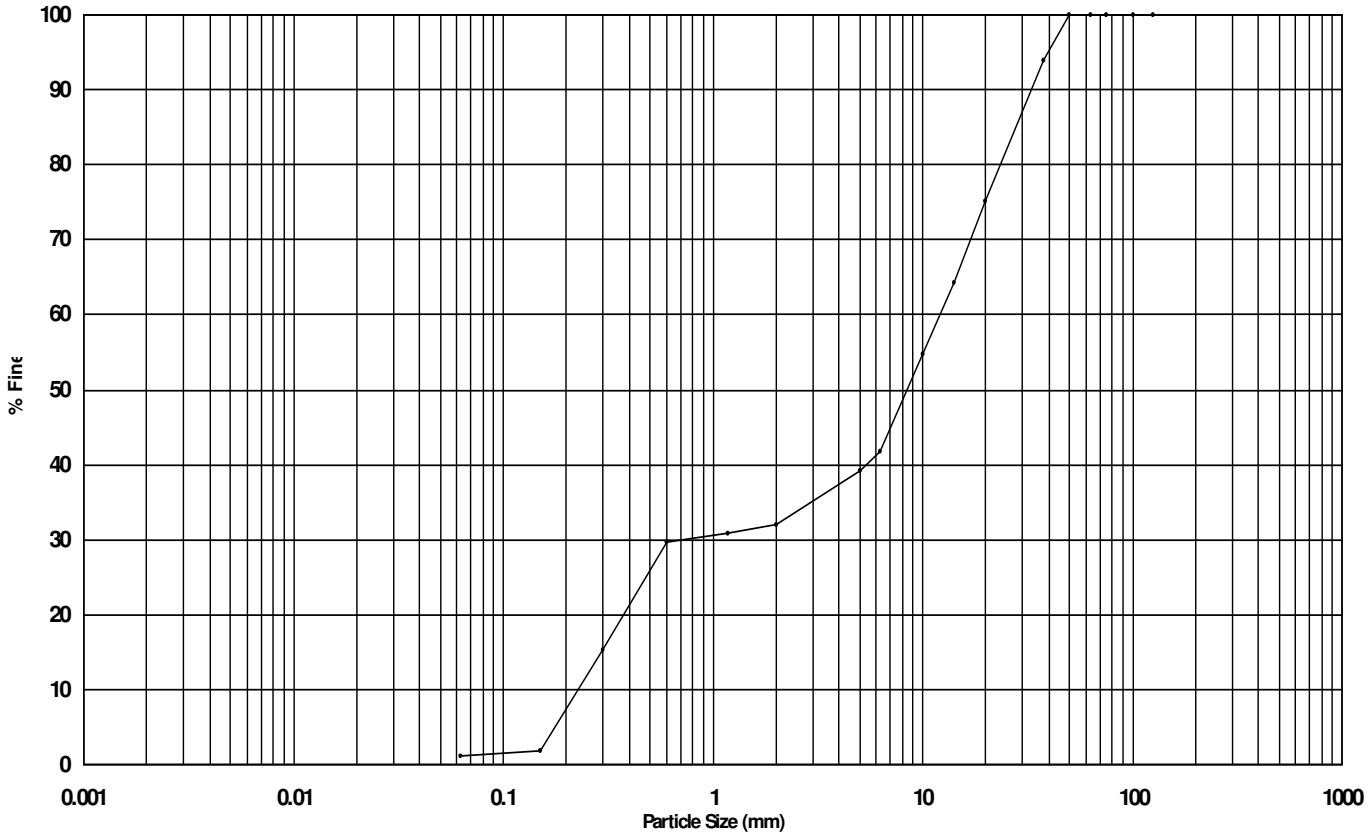
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH101
Sample Depth	5.00-5.45m
Sample Type	B
Sample Ref	N76146

Sample Description

Bluish grey very sandy slightly silty fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	31
GRAVEL	68
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	94
20 mm	75
14 mm	64
10 mm	55
6.3 mm	42
5 mm	39
2 mm	32
1.18 mm	31
600 µm	30
300 µm	15
150 µm	2

Size	% Finer
63 µm	1

Uniformity Coefficient
52.75
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

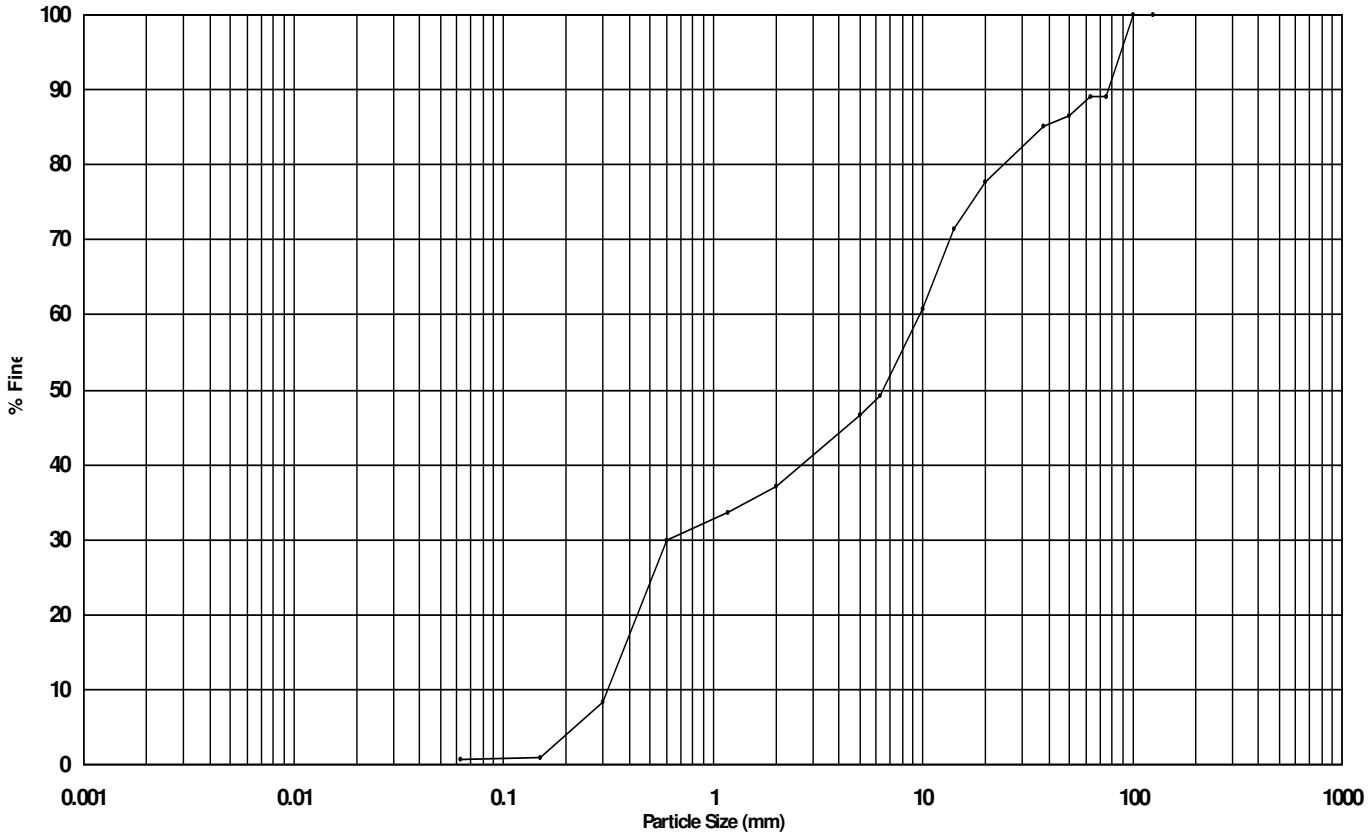
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH102
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N76023

Sample Description

Dark brownish grey very sandy slightly silty fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	36
GRAVEL	52
COBBLES	11
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	89
63 mm	89
50 mm	86
37.5 mm	85
20 mm	78
14 mm	71
10 mm	61
6.3 mm	49
5 mm	47
2 mm	37
1.18 mm	34
600 µm	30
300 µm	8
150 µm	1

Size	% Finer
63 µm	1

Uniformity Coefficient
30.55
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

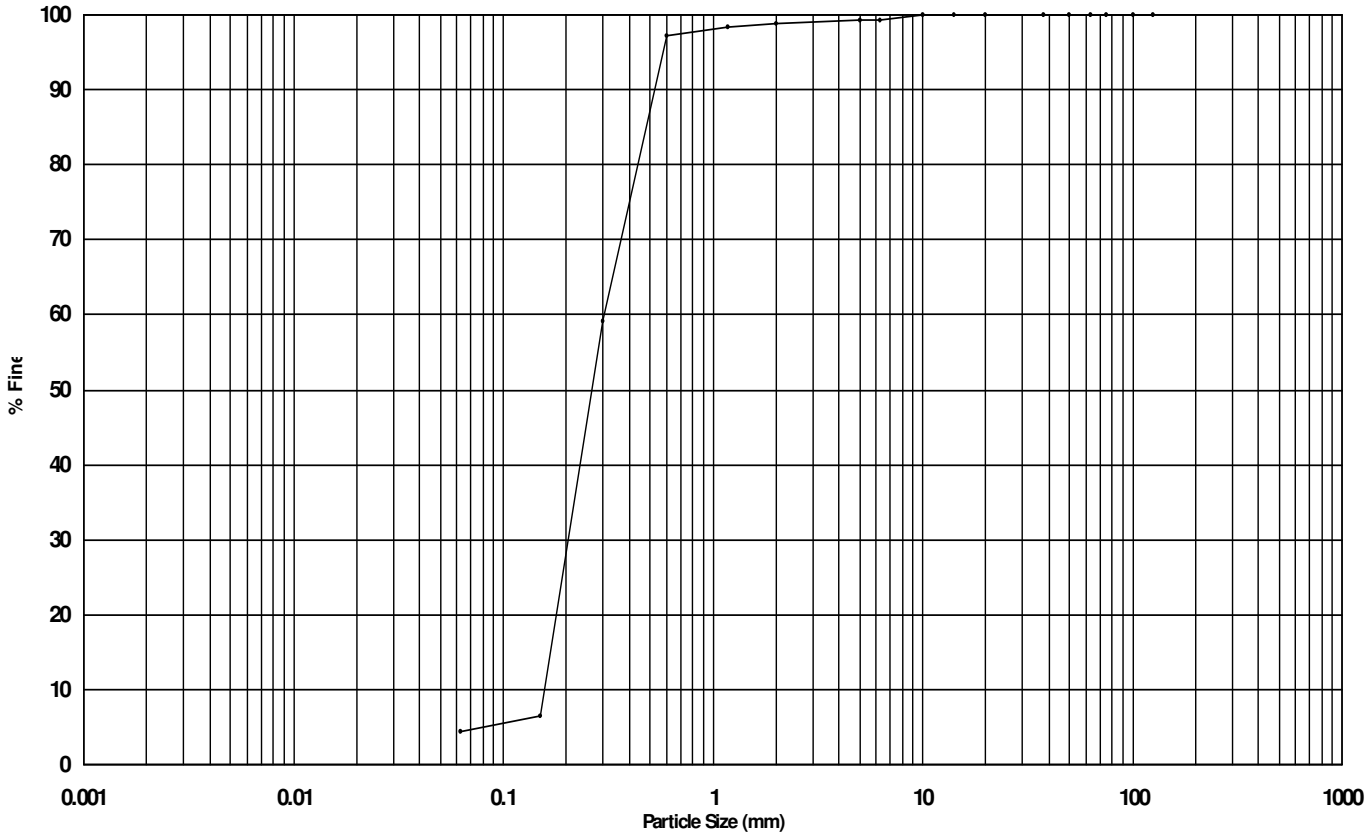
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH102
Sample Depth	6.00-6.45m
Sample Type	B
Sample Ref	N76024

Sample Description

Grey slightly gravelly slightly silty fine to coarse SAND.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	95
GRAVEL	1
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	99
5 mm	99
2 mm	99
1.18 mm	98
600 µm	97
300 µm	59
150 µm	6

Size	% Finer
63 µm	4

Uniformity Coefficient
1.94
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

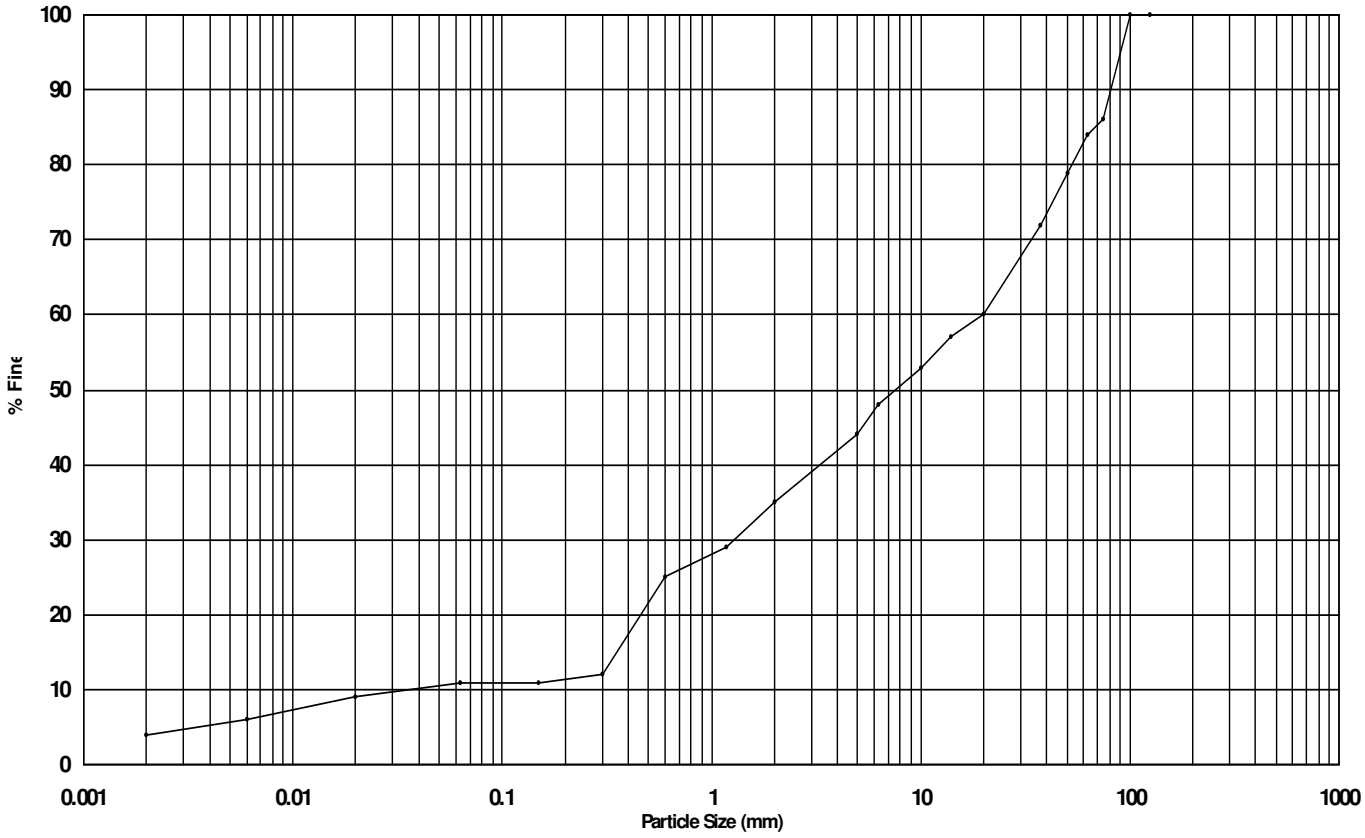
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH102
Sample Depth	13.00-13.50m
Sample Type	B
Sample Ref	N76027

Sample Description

Brownish grey very sandy clayey fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	4
SILT	7
SAND	24
GRAVEL	49
COBBLES	16
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	86
63 mm	84
50 mm	79
37.5 mm	72
20 mm	60
14 mm	57
10 mm	53
6.3 mm	48
5 mm	44
2 mm	35
1.18 mm	29
600 µm	25
300 µm	12
150 µm	11

Size	% Finer
63 µm	11
20 µm	9
6 µm	6
2 µm	4

Uniformity Coefficient
567.74

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.62
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

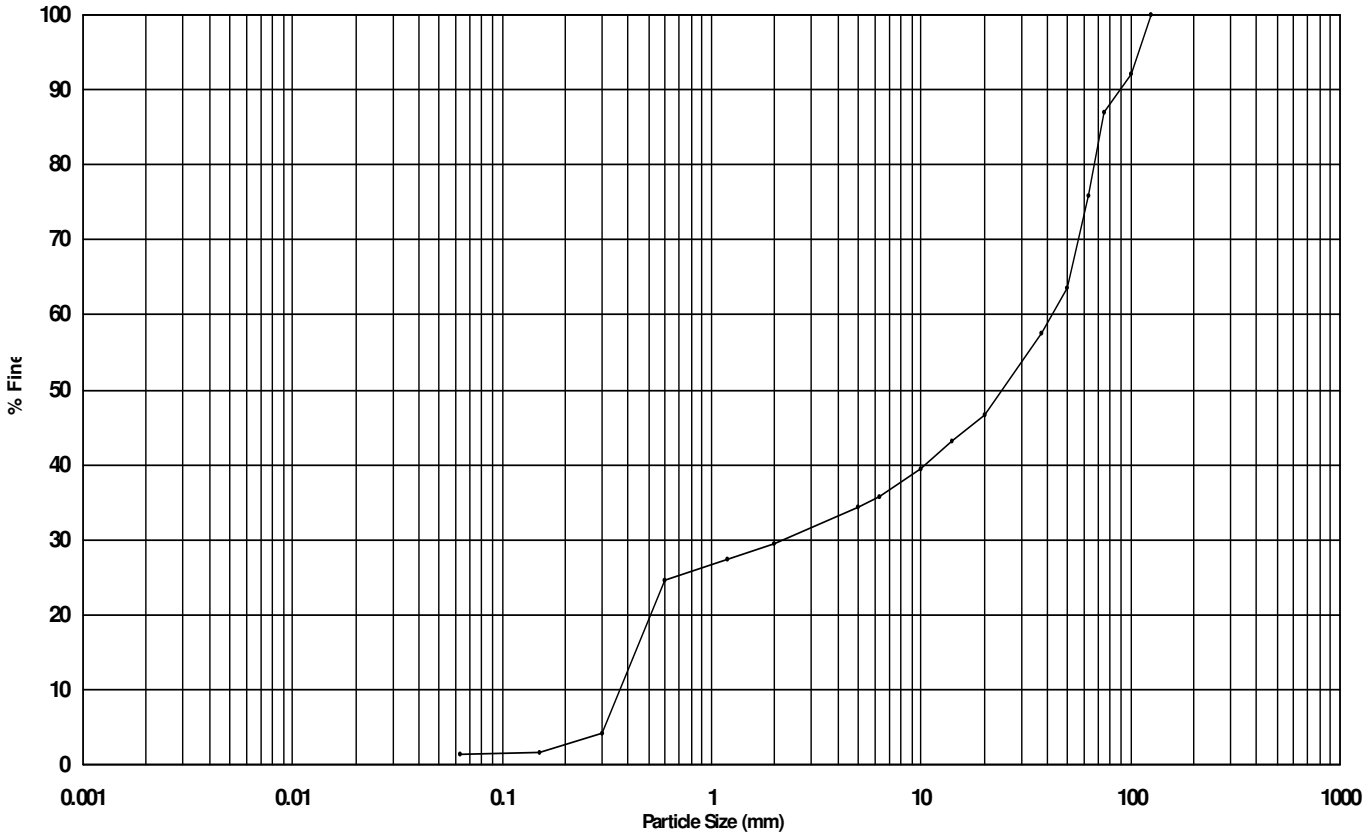
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH104
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76178

Sample Description

Grey very sandy slightly silty fine to coarse GRAVEL with a high cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	29
GRAVEL	46
COBBLES	24
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	92
75 mm	87
63 mm	76
50 mm	64
37.5 mm	58
20 mm	47
14 mm	43
10 mm	39
6.3 mm	36
5 mm	34
2 mm	30
1.18 mm	27
600 µm	25
300 µm	4
150 µm	2

Size	% Finer
63 µm	1

Uniformity Coefficient
115.42
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

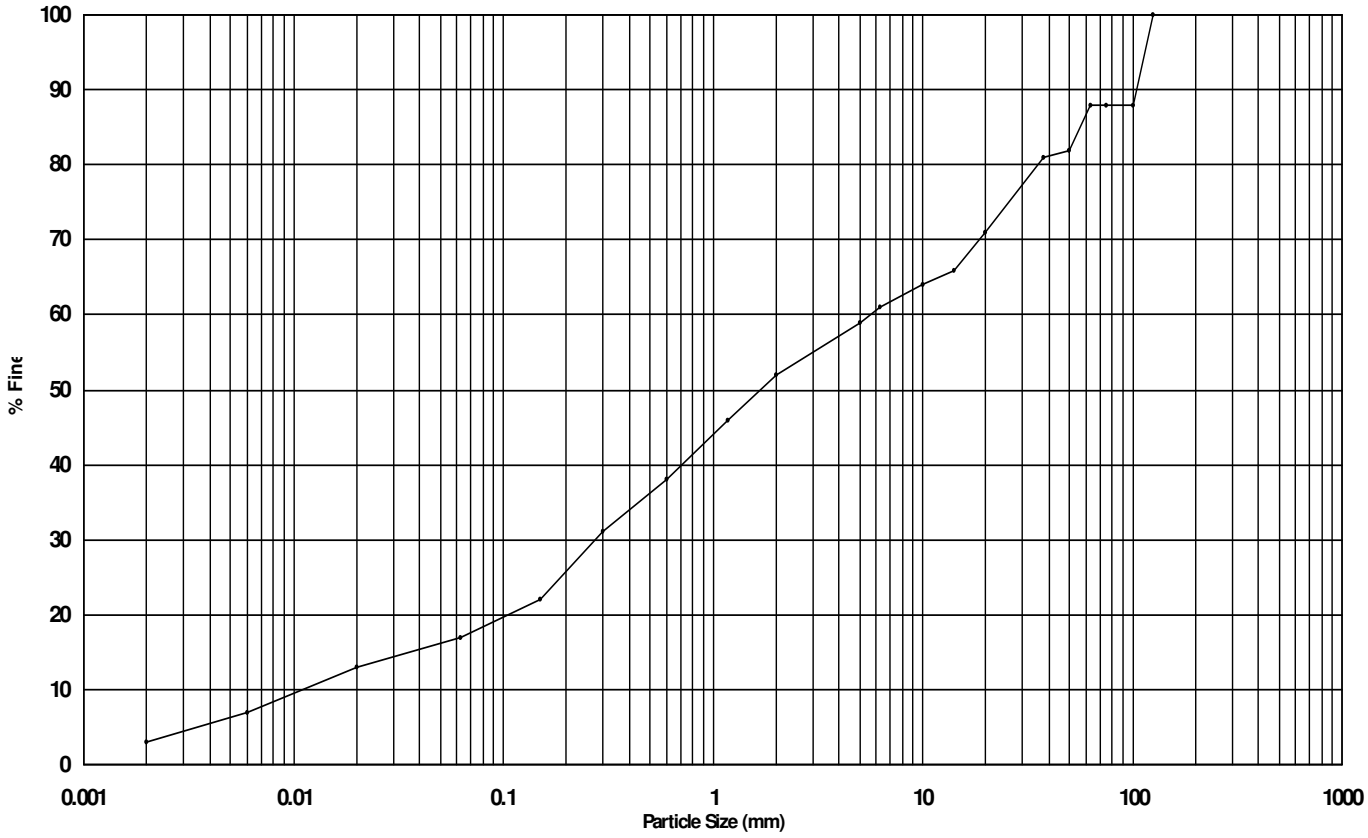
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	1.00-1.20m
Sample Type	B
Sample Ref	N76474

Sample Description

Brown clayey SAND and GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	14
SAND	35
GRAVEL	36
COBBLES	12
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	88
75 mm	88
63 mm	88
50 mm	82
37.5 mm	81
20 mm	71
14 mm	66
10 mm	64
6.3 mm	61
5 mm	59
2 mm	52
1.18 mm	46
600 µm	38
300 µm	31
150 µm	22

Size	% Finer
63 µm	17
20 µm	13
6 µm	7
2 µm	3

Uniformity Coefficient
540.05

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

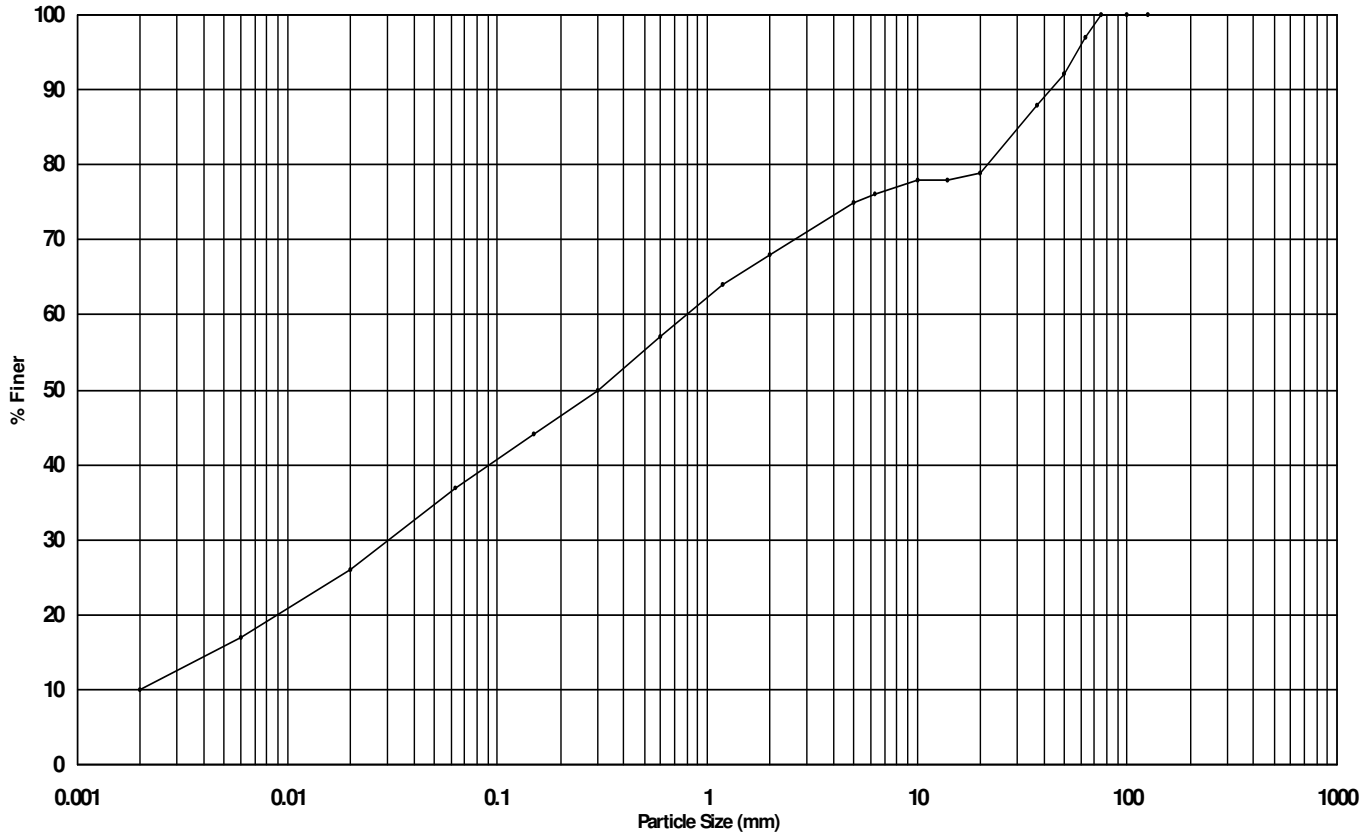
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76475

Sample Description

Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.



Classification												
	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	10
SILT	27
SAND	31
GRAVEL	29
COBBLES	3
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	97
50 mm	92
37.5 mm	88
20 mm	79
14 mm	78
10 mm	78
6.3 mm	76
5 mm	75
2 mm	68
1.18 mm	64
600 µm	57
300 µm	50
150 µm	44

Size	% Finer
63 µm	37
20 µm	26
6 µm	17
2 µm	10

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

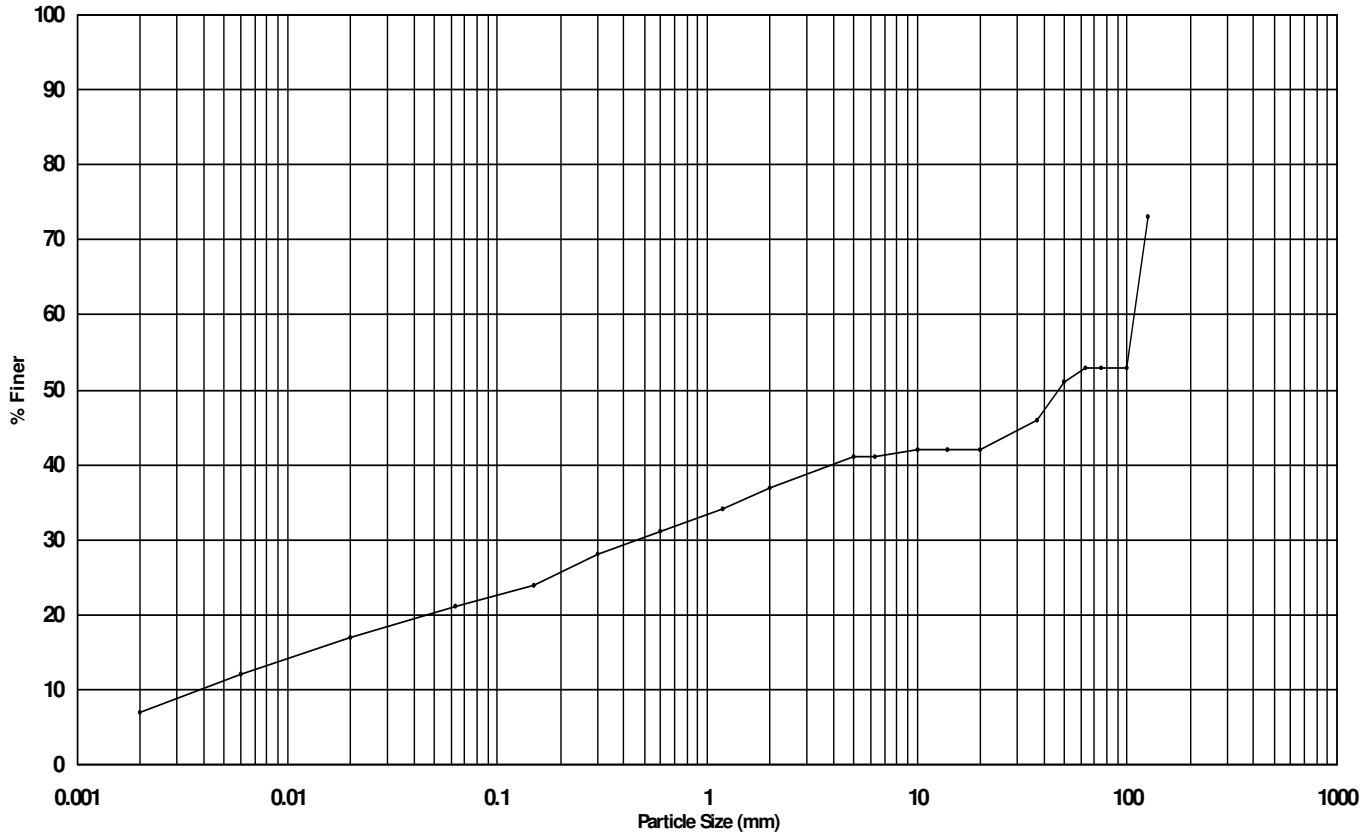
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N76477

Sample Description

Stiff brown slightly sandy slightly gravelly CLAY with a high cobble content.



Classification												
	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	14
SAND	16
GRAVEL	16
COBBLES	47
BOULDERS	0

Size	% Finer
125 mm	73
100 mm	53
75 mm	53
63 mm	53
50 mm	51
37.5 mm	46
20 mm	42
14 mm	42
10 mm	42
6.3 mm	41
5 mm	41
2 mm	37
1.18 mm	34
600 µm	31
300 µm	28
150 µm	24

Size	% Finer
63 µm	21
20 µm	17
6 µm	12
2 µm	7

Uniformity Coefficient
30752.02

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

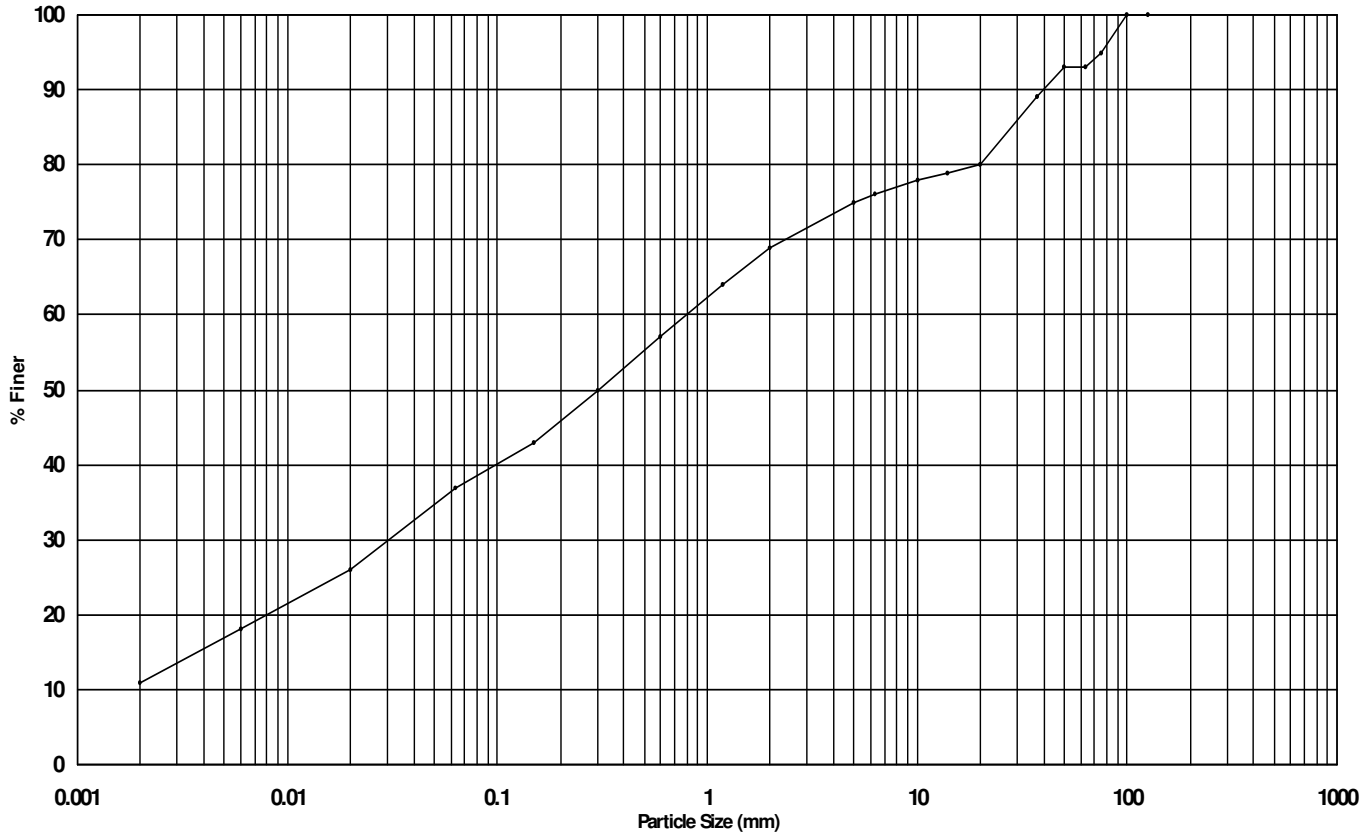
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	6.00-6.45m
Sample Type	B
Sample Ref	N76478

Sample Description

Stiff grey slightly sandy slightly gravelly CLAY with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	26
SAND	32
GRAVEL	24
COBBLES	7
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	95
63 mm	93
50 mm	93
37.5 mm	89
20 mm	80
14 mm	79
10 mm	78
6.3 mm	76
5 mm	75
2 mm	69
1.18 mm	64
600 µm	57
300 µm	50
150 µm	43

Size	% Finer
63 µm	37
20 µm	26
6 µm	18
2 µm	11

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

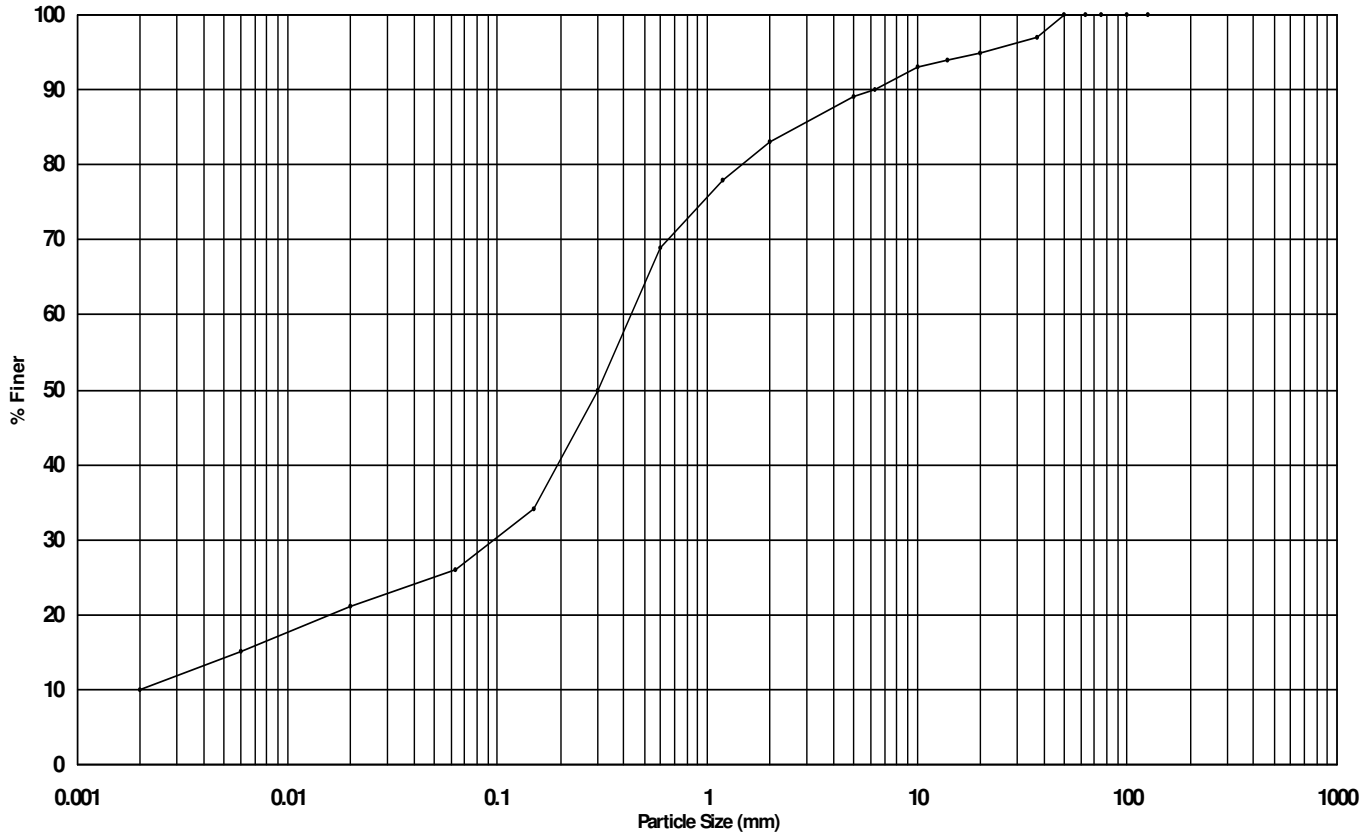
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	10.50-10.95m
Sample Type	B
Sample Ref	N76480

Sample Description

Firm brown slightly gravelly sandy CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	10
SILT	16
SAND	57
GRAVEL	17
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	95
14 mm	94
10 mm	93
6.3 mm	90
5 mm	89
2 mm	83
1.18 mm	78
600 µm	69
300 µm	50
150 µm	34

Size	% Finer
63 µm	26
20 µm	21
6 µm	15
2 µm	10

Uniformity Coefficient
208.52

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

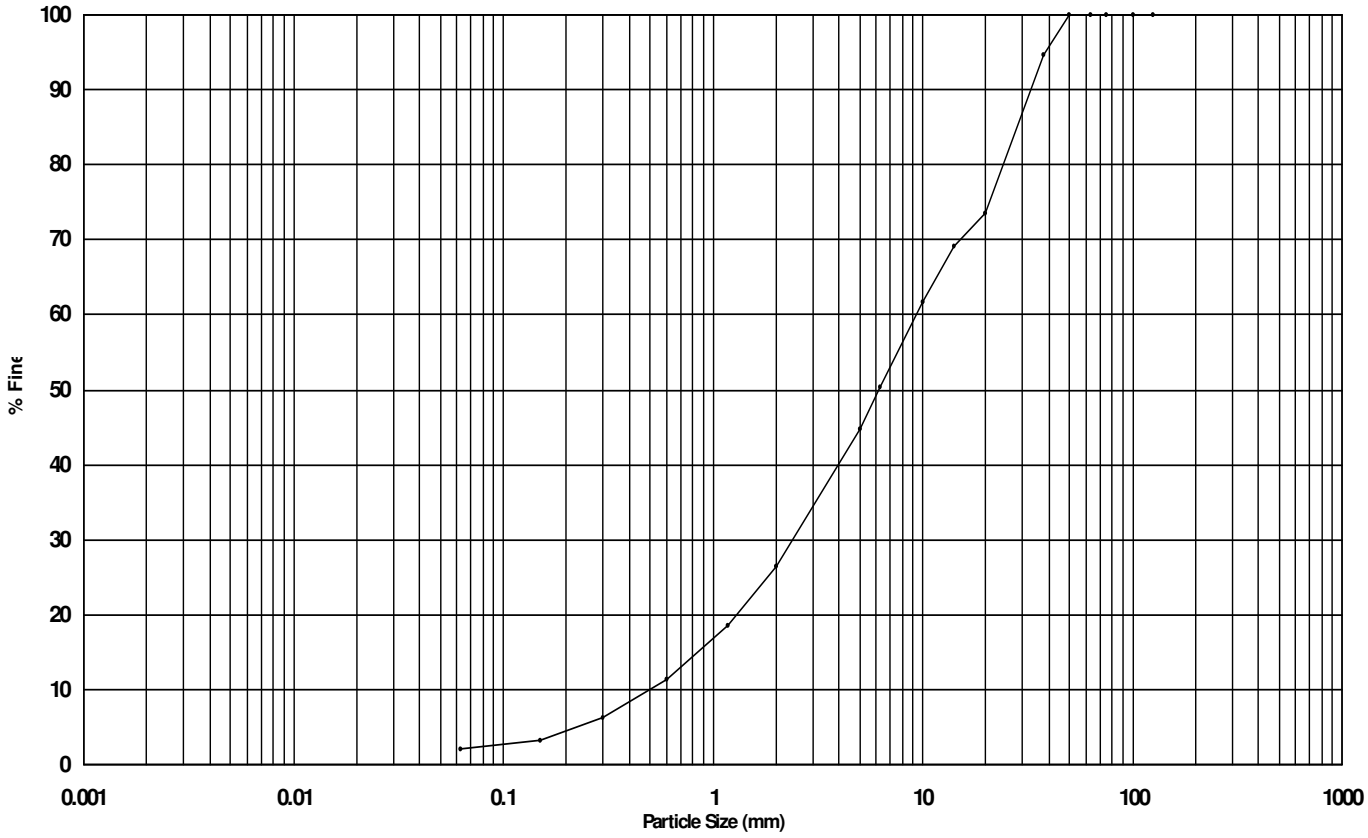
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH106
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76439

Sample Description

MADE GROUND: Grey very sandy slightly clayey fine to coarse gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	24
GRAVEL	74
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	95
20 mm	73
14 mm	69
10 mm	62
6.3 mm	50
5 mm	45
2 mm	26
1.18 mm	18
600 µm	11
300 µm	6
150 µm	3

Size	% Finer
63 µm	2

Uniformity Coefficient
18.72
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

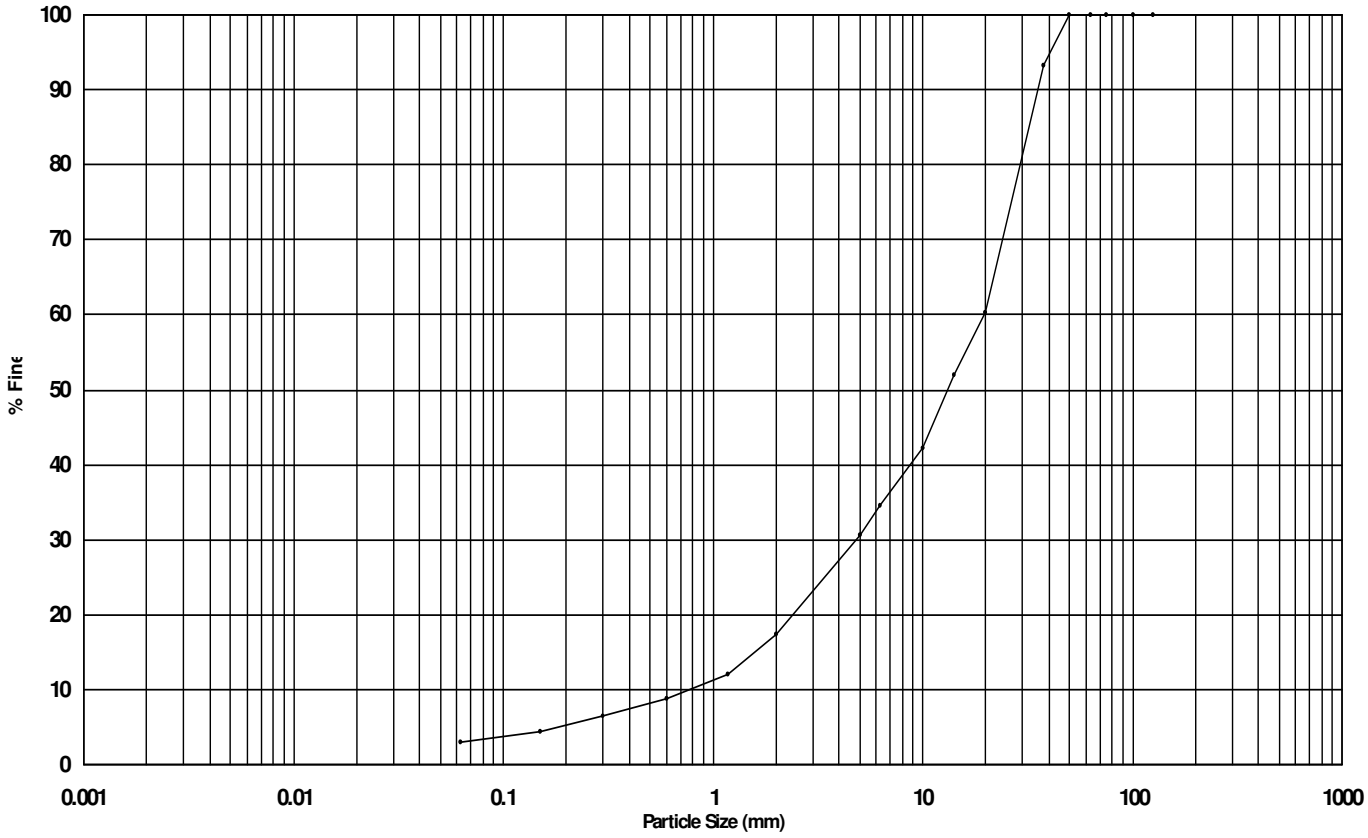
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH106
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N76440

Sample Description

Brown sandy slightly clayey fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	3
SAND	14
GRAVEL	83
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	93
20 mm	60
14 mm	52
10 mm	42
6.3 mm	34
5 mm	31
2 mm	17
1.18 mm	12
600 µm	9
300 µm	6
150 µm	4

Size	% Finer
63 µm	3

Uniformity Coefficient
26.17
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

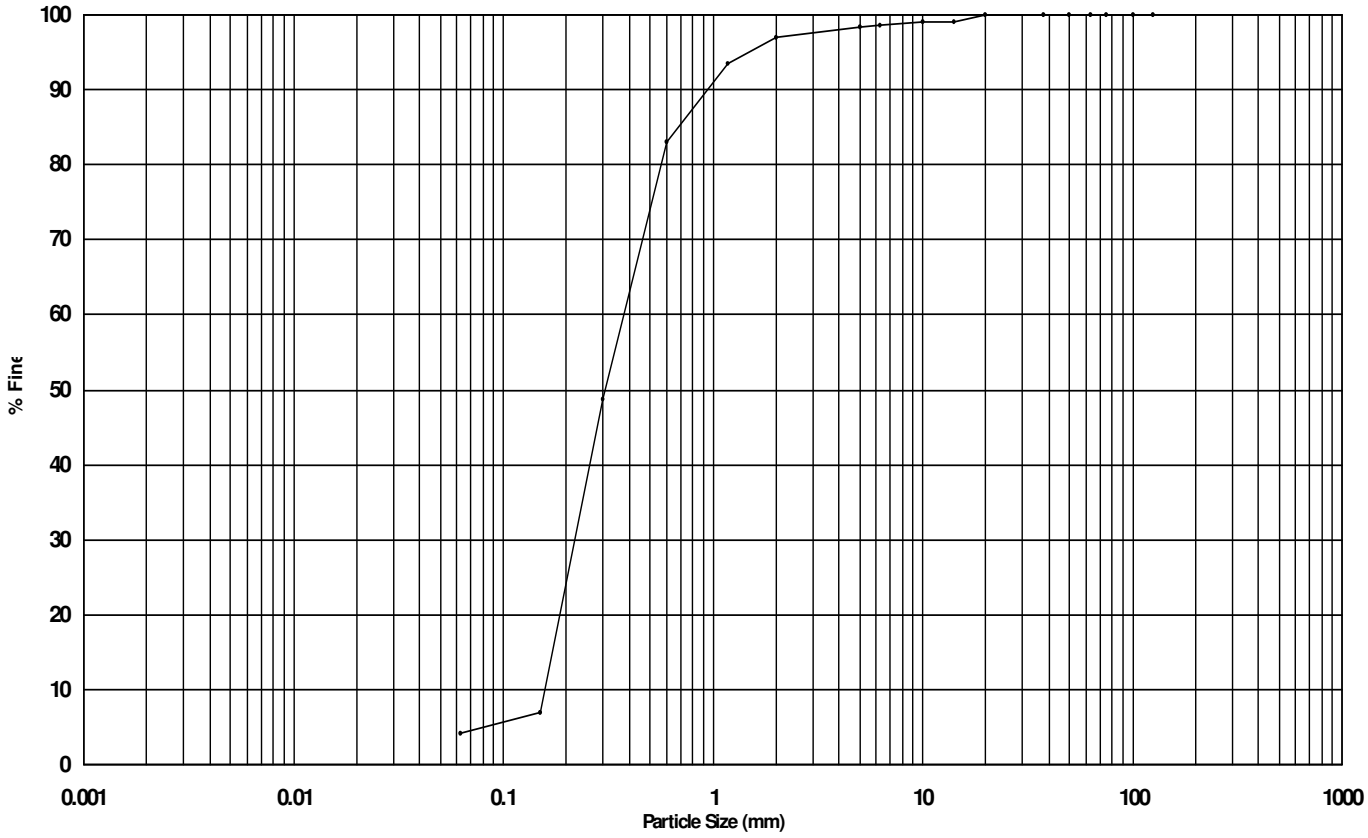
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH106
Sample Depth	9.50-9.95m
Sample Type	B
Sample Ref	N76442

Sample Description

Grey slightly gravelly slightly silty fine to coarse SAND.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	93
GRAVEL	3
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	99
10 mm	99
6.3 mm	99
5 mm	98
2 mm	97
1.18 mm	93
600 µm	83
300 µm	49
150 µm	7

Size	% Finer
63 µm	4

Uniformity Coefficient
2.38
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

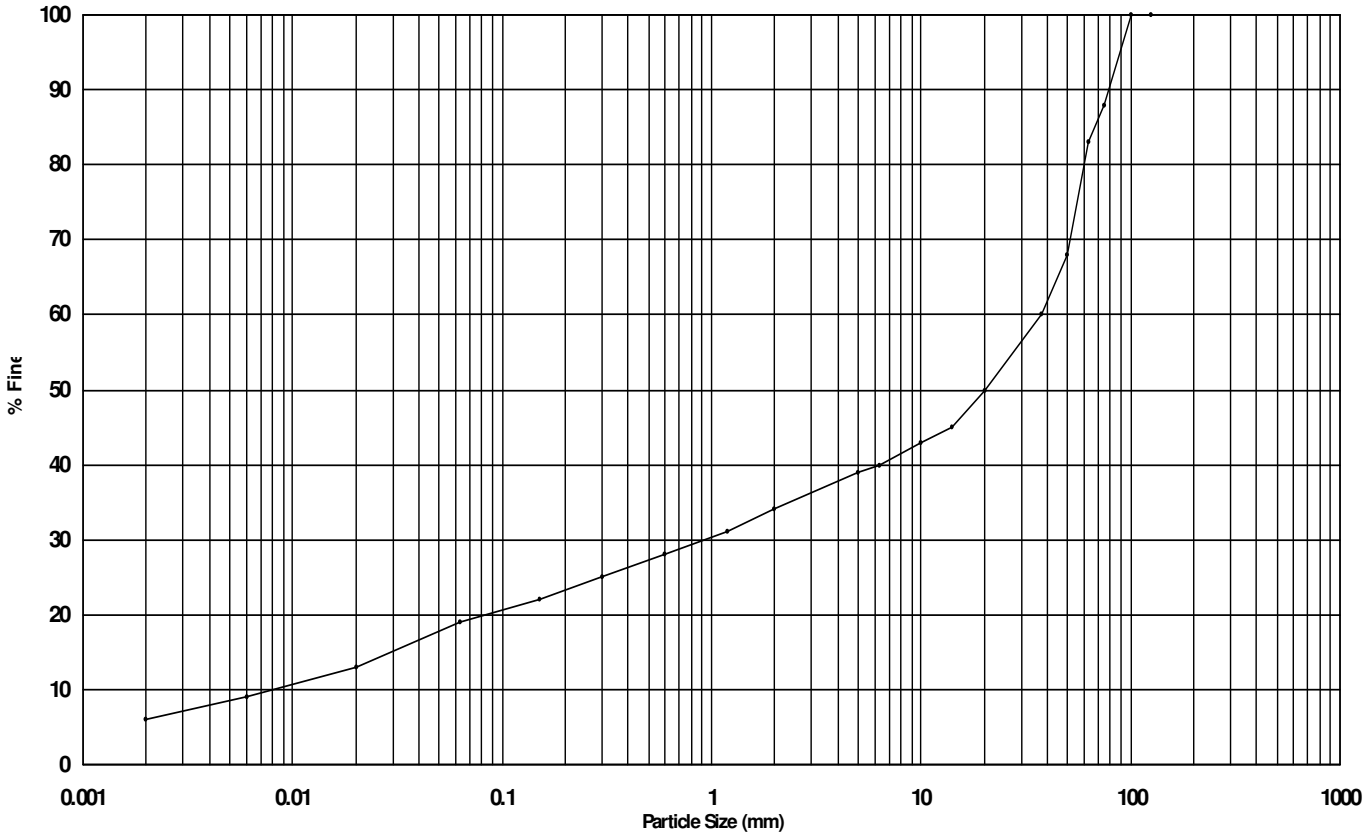
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH107A
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76280

Sample Description

Soft brown slightly sandy gravelly CLAY with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	13
SAND	15
GRAVEL	49
COBBLES	17
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	88
63 mm	83
50 mm	68
37.5 mm	60
20 mm	50
14 mm	45
10 mm	43
6.3 mm	40
5 mm	39
2 mm	34
1.18 mm	31
600 µm	28
300 µm	25
150 µm	22

Size	% Finer
63 µm	19
20 µm	13
6 µm	9
2 µm	6

Uniformity Coefficient
4924.50

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.59
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

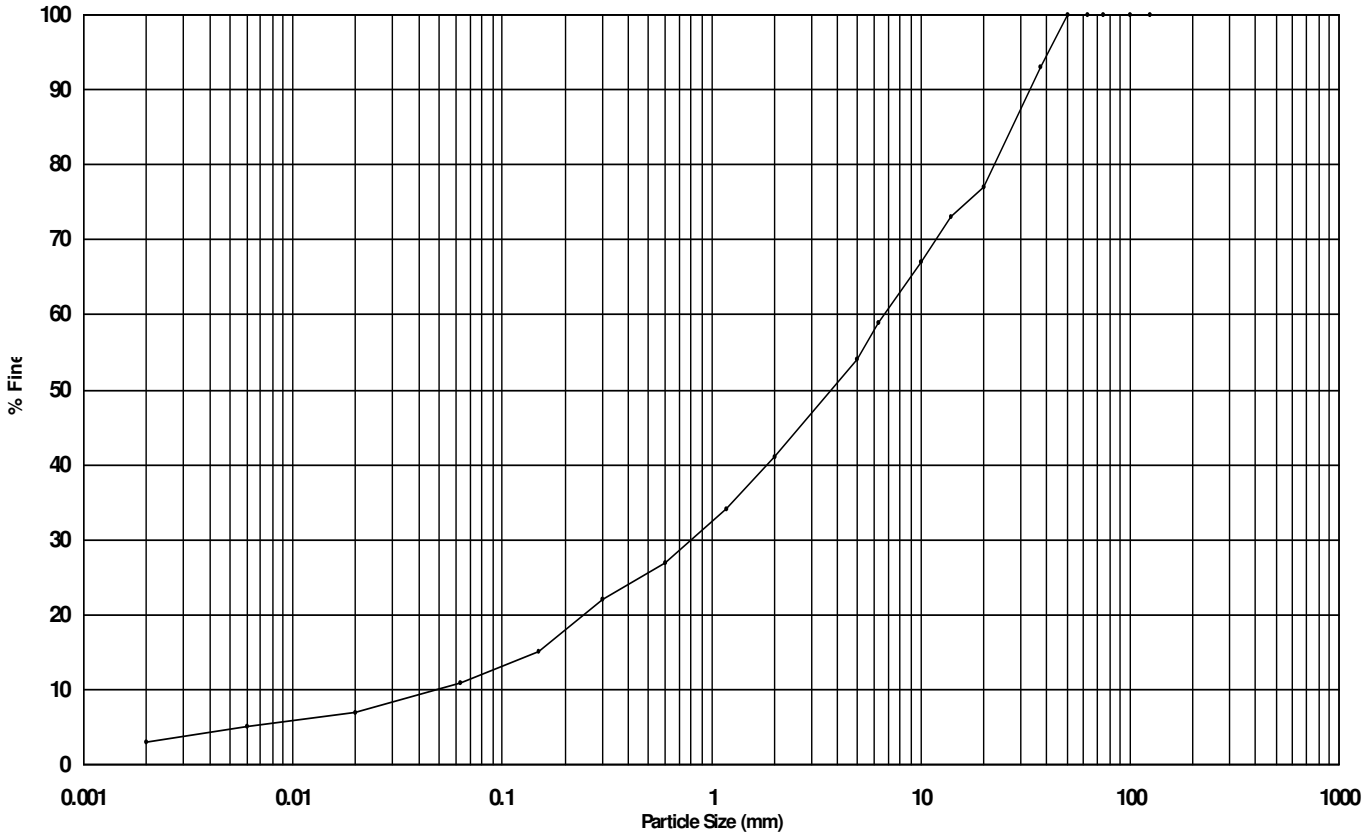
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH108
Sample Depth	0.30-1.20m
Sample Type	B
Sample Ref	N76445

Sample Description

MADE GROUND: Greyish brown very sandy clayey fine to coarse gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	8
SAND	30
GRAVEL	59
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	93
20 mm	77
14 mm	73
10 mm	67
6.3 mm	59
5 mm	54
2 mm	41
1.18 mm	34
600 µm	27
300 µm	22
150 µm	15

Size	% Finer
63 µm	11
20 µm	7
6 µm	5
2 µm	3

Uniformity Coefficient
143.84

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.05
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

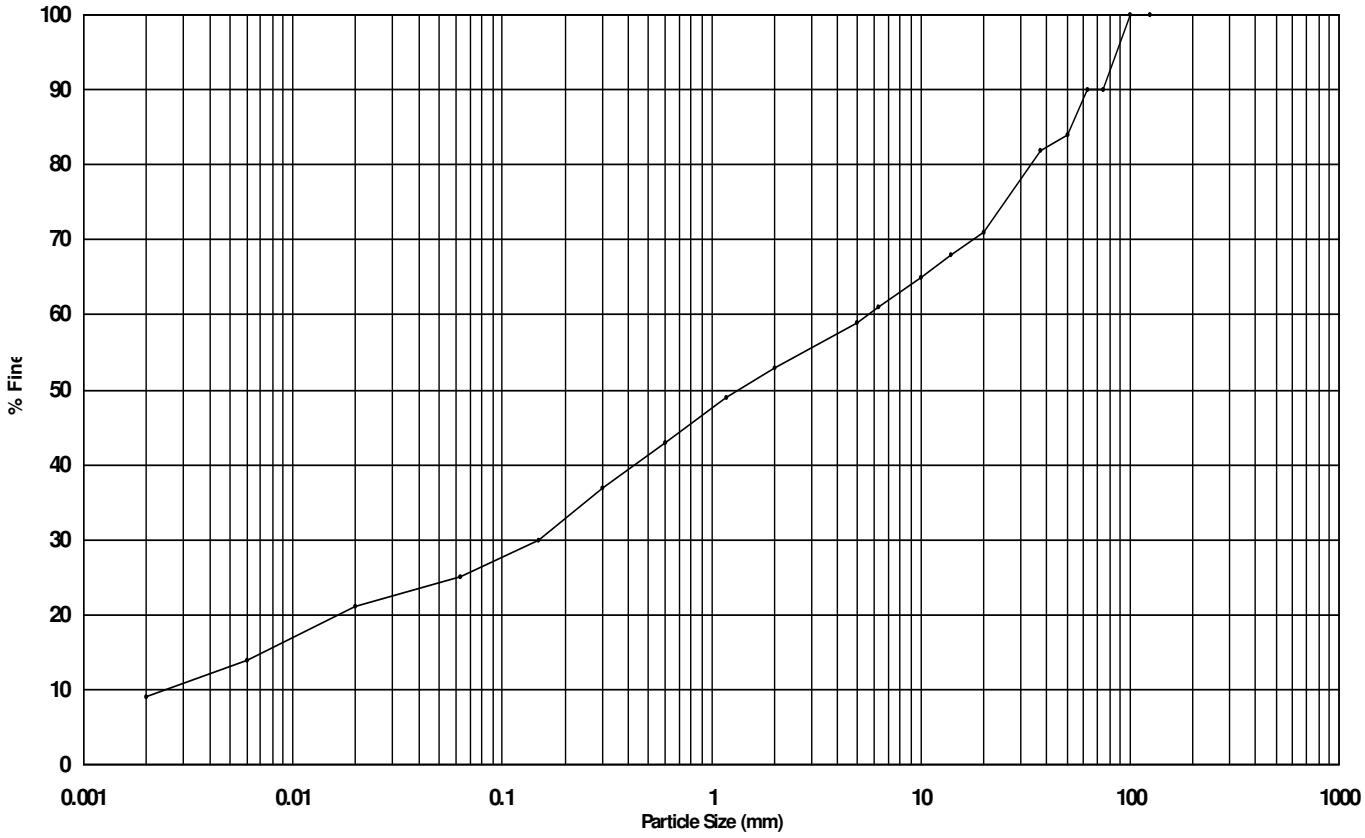
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH108
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76446

Sample Description

MADE GROUND: Greyish brown very sandy very clayey fine to coarse gravel with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	16
SAND	28
GRAVEL	37
COBBLES	10
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	90
63 mm	90
50 mm	84
37.5 mm	82
20 mm	71
14 mm	68
10 mm	65
6.3 mm	61
5 mm	59
2 mm	53
1.18 mm	49
600 µm	43
300 µm	37
150 µm	30

Size	% Finer
63 µm	25
20 µm	21
6 µm	14
2 µm	9

Uniformity Coefficient
2086.06

Sieving Method
Wet sieve

Fine Particle Analysis

Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.42
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

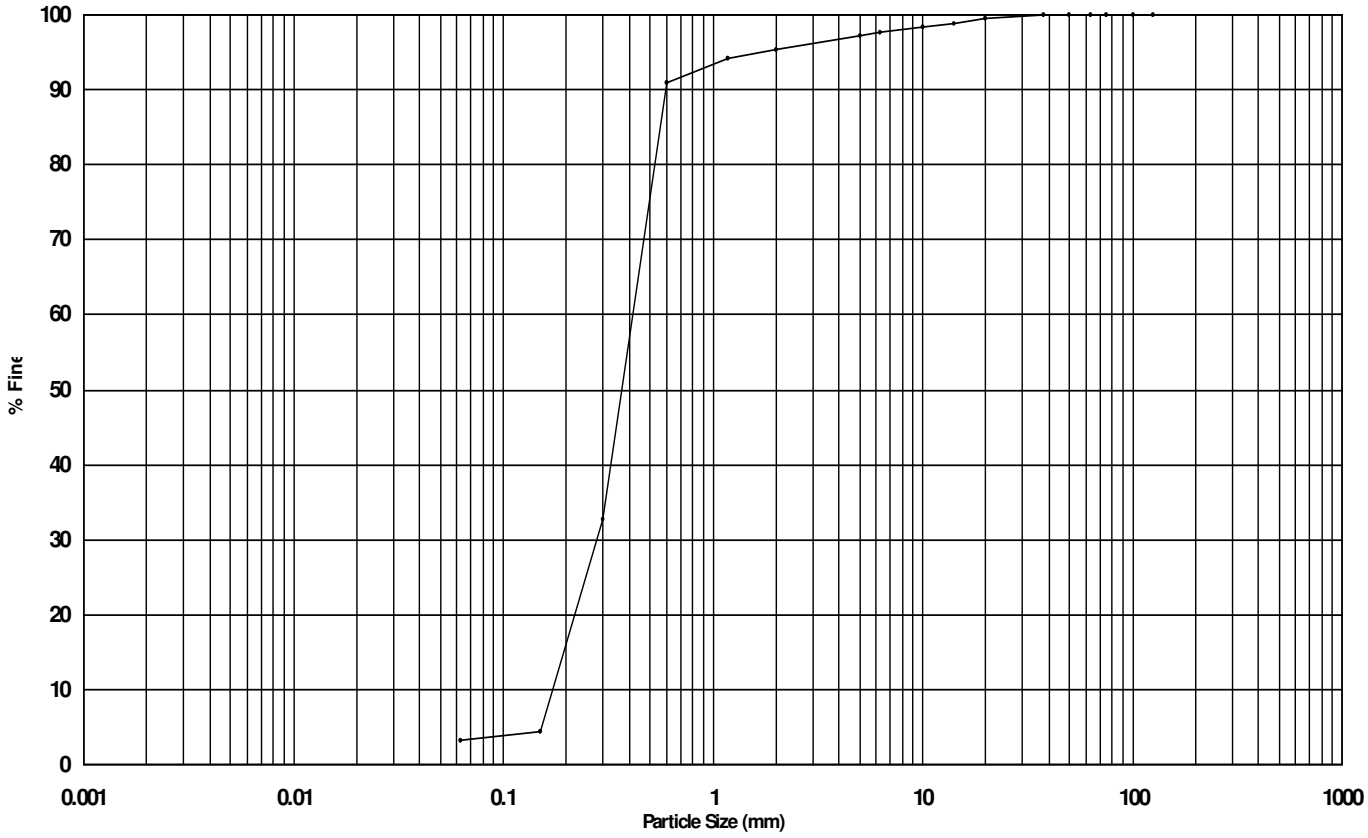
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH109
Sample Depth	7.50-7.95m
Sample Type	B
Sample Ref	N76300

Sample Description

Grey gravelly silty fine to coarse SAND.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	3
SAND	92
GRAVEL	5
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	99
10 mm	98
6.3 mm	98
5 mm	97
2 mm	95
1.18 mm	94
600 µm	91
300 µm	33
150 µm	4

Size	% Finer
63 µm	3

Uniformity Coefficient
2.41
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

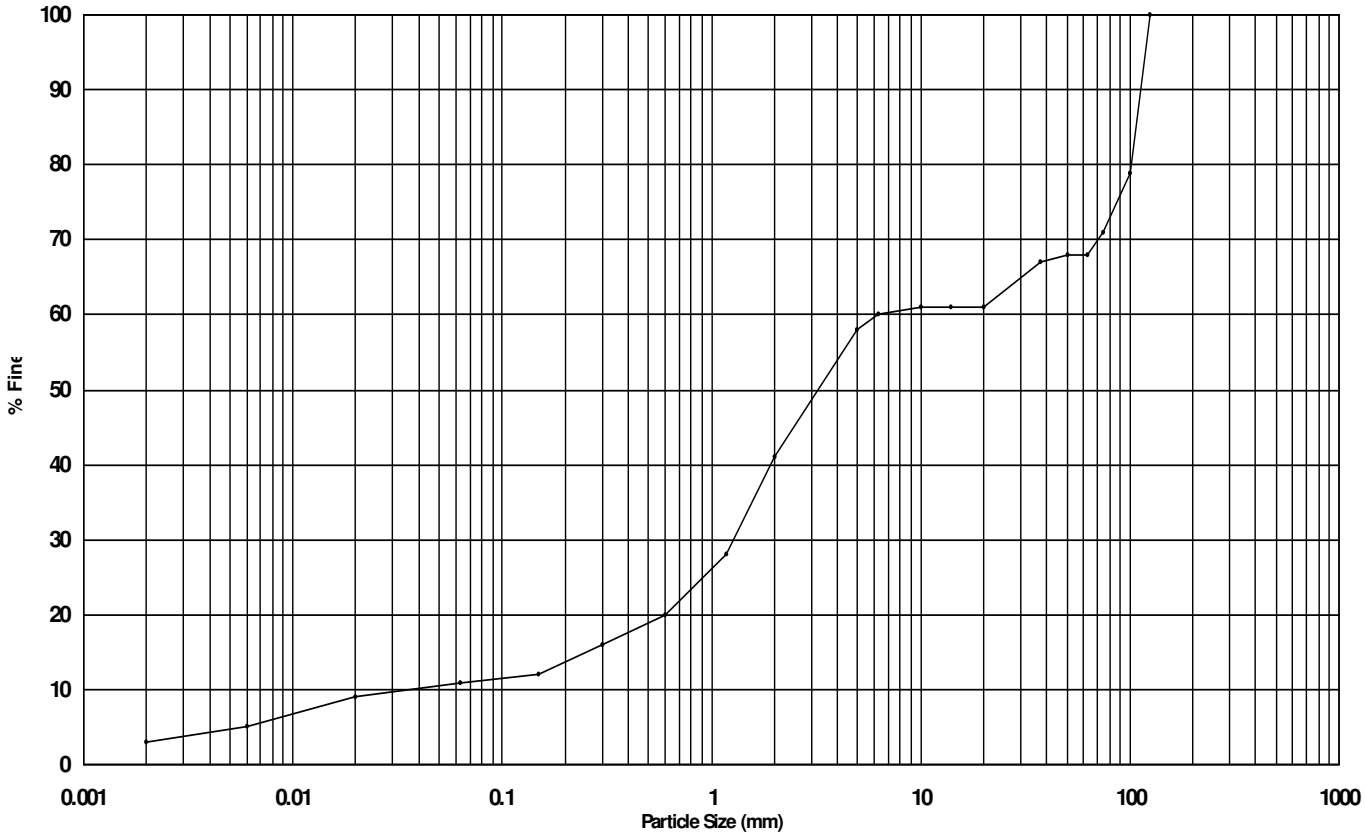
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH109
Sample Depth	13.60-14.03m
Sample Type	B
Sample Ref	N76305

Sample Description

Brown clayey SAND and GRAVEL with a high cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	8
SAND	30
GRAVEL	27
COBBLES	32
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	79
75 mm	71
63 mm	68
50 mm	68
37.5 mm	67
20 mm	61
14 mm	61
10 mm	61
6.3 mm	60
5 mm	58
2 mm	41
1.18 mm	28
600 µm	20
300 µm	16
150 µm	12

Size	% Finer
63 µm	11
20 µm	9
6 µm	5
2 µm	3

Uniformity Coefficient
146.29

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.65
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

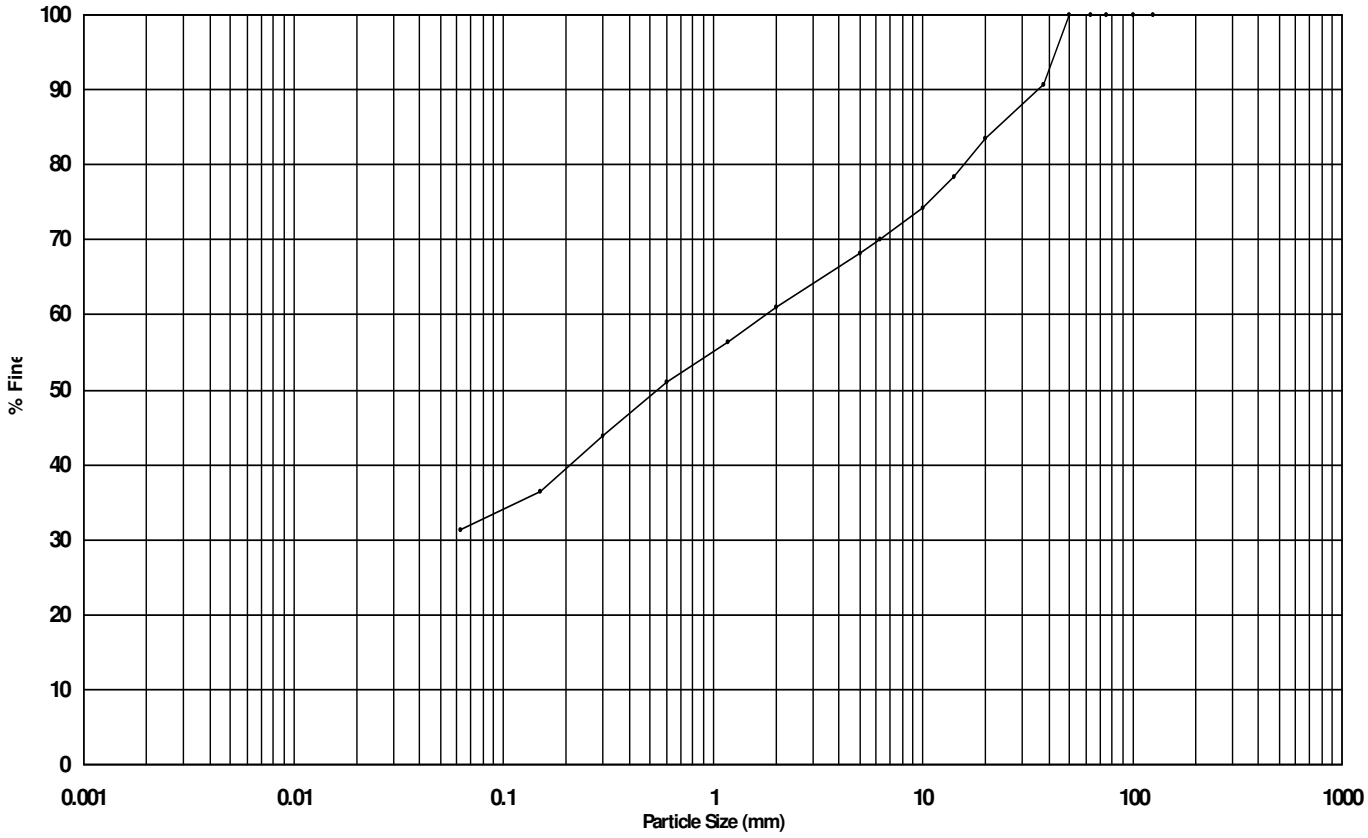
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH111
Sample Depth	0.20-1.20m
Sample Type	B
Sample Ref	N76286

Sample Description

MADE GROUND: Brown very sandy very clayey fine to coarse gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	31
SAND	30
GRAVEL	39
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	91
20 mm	84
14 mm	78
10 mm	74
6.3 mm	70
5 mm	68
2 mm	61
1.18 mm	56
600 µm	51
300 µm	44
150 µm	37

Size	% Finer
63 µm	31

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

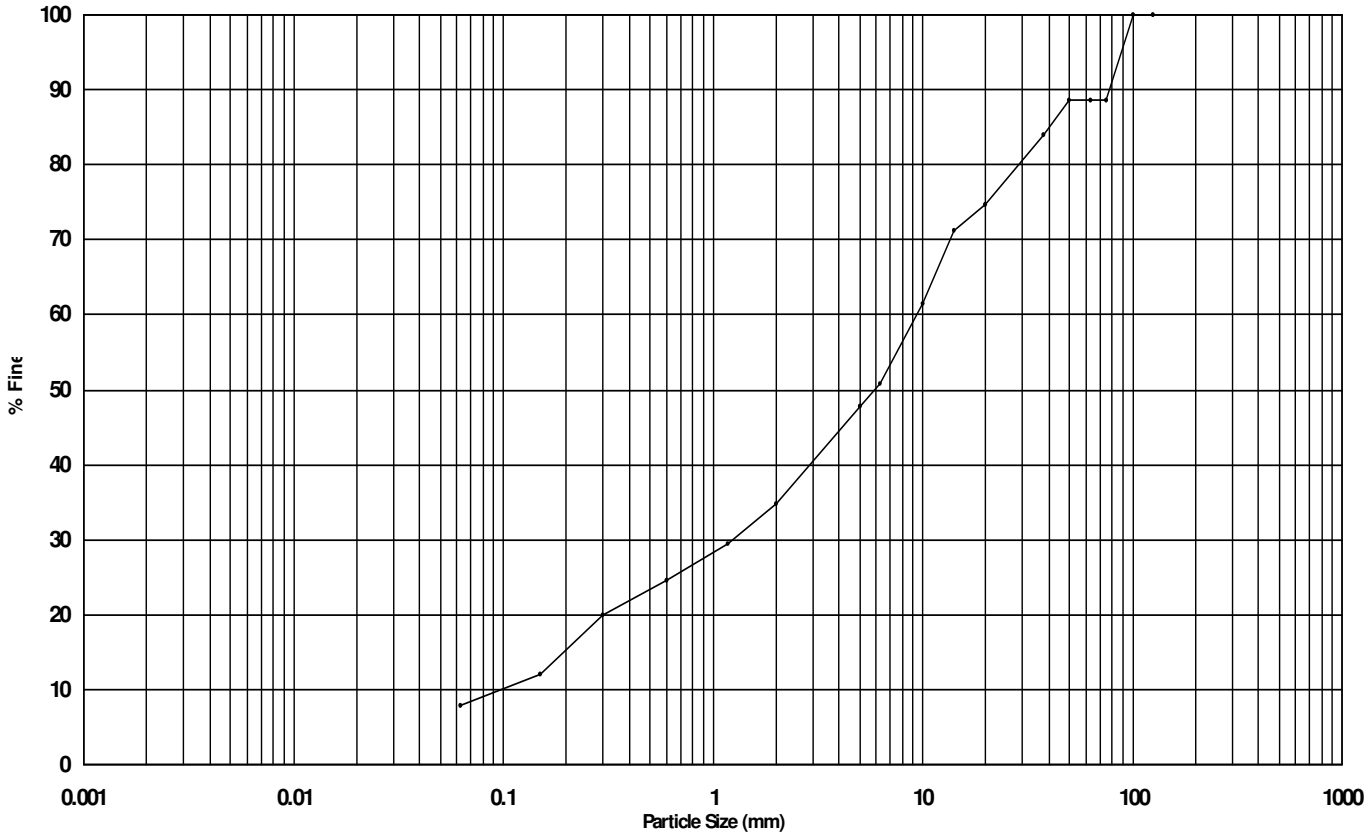
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH114
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76288

Sample Description

MADE GROUND: Greyish brown very sandy clayey fine to coarse gravel with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	8
SAND	27
GRAVEL	54
COBBLES	11
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	89
63 mm	89
50 mm	89
37.5 mm	84
20 mm	75
14 mm	71
10 mm	62
6.3 mm	51
5 mm	48
2 mm	35
1.18 mm	29
600 µm	25
300 µm	20
150 µm	12

Size	% Finer
63 µm	8

Uniformity Coefficient
94.13
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

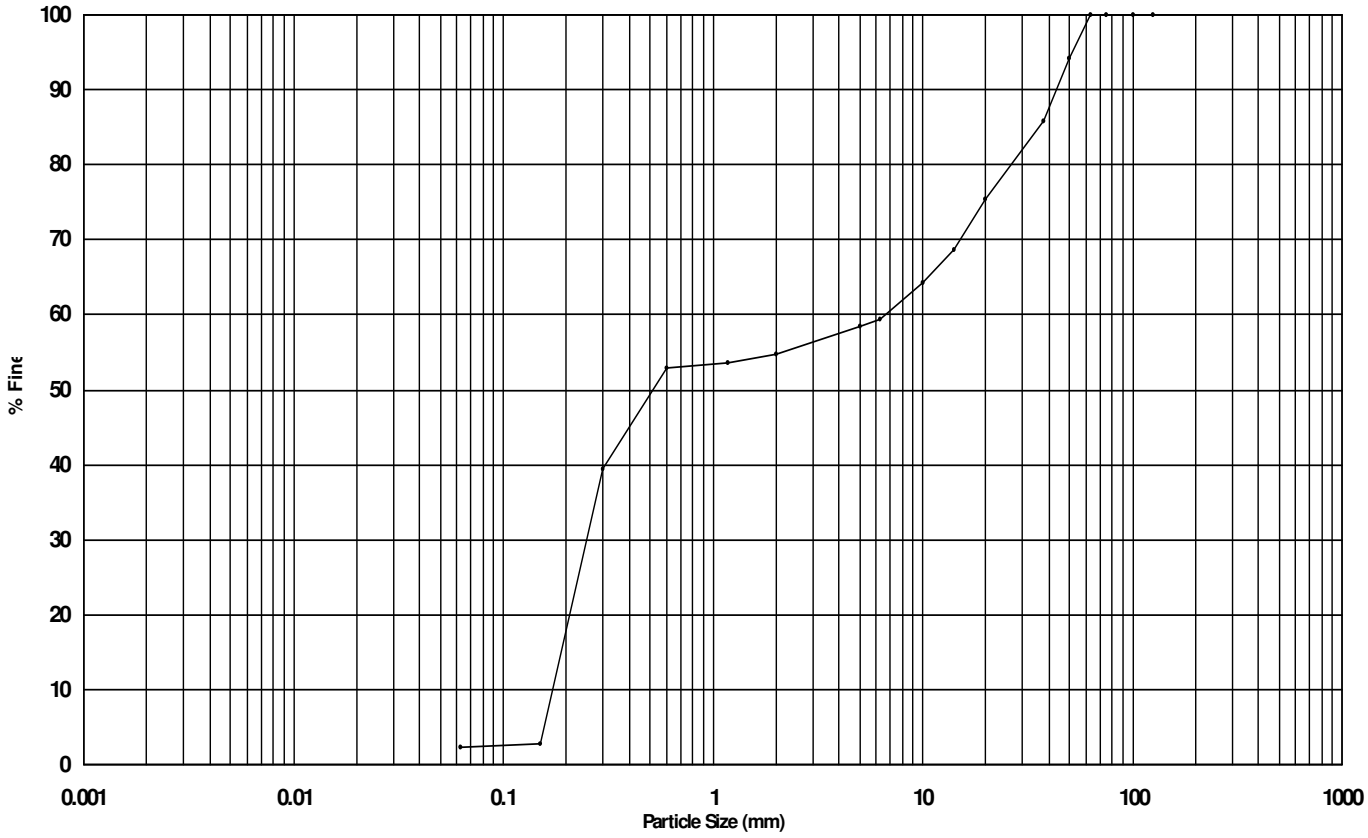
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH114
Sample Depth	5.00-5.45m
Sample Type	B
Sample Ref	N76290

Sample Description

Grey very gravelly slightly silty fine to coarse SAND.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	53
GRAVEL	45
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	94
37.5 mm	86
20 mm	75
14 mm	69
10 mm	64
6.3 mm	59
5 mm	58
2 mm	55
1.18 mm	54
600 µm	53
300 µm	39
150 µm	3

Size	% Finer
63 µm	2

Uniformity Coefficient
38.52
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

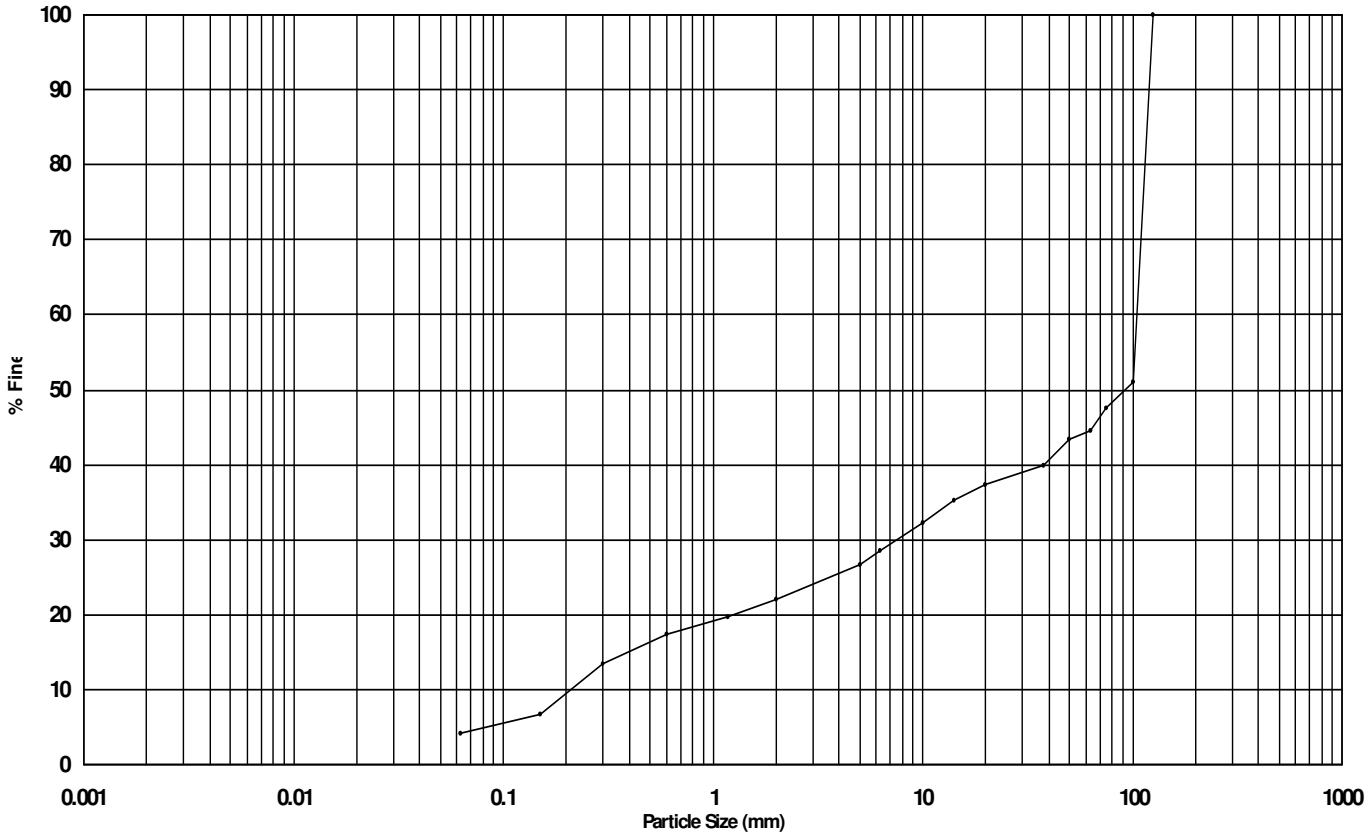
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH114A
Sample Depth	1.00-1.20m
Sample Type	B
Sample Ref	N76308

Sample Description

MADE GROUND: Cobbles of concrete and brick with much grey clayey sand and gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	18
GRAVEL	22
COBBLES	56
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	51
75 mm	48
63 mm	44
50 mm	43
37.5 mm	40
20 mm	37
14 mm	35
10 mm	32
6.3 mm	29
5 mm	27
2 mm	22
1.18 mm	20
600 µm	17
300 µm	13
150 µm	7

Size	% Finer
63 µm	4

Uniformity Coefficient
493.85
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed as "Non Standard" due to sample mass not being in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

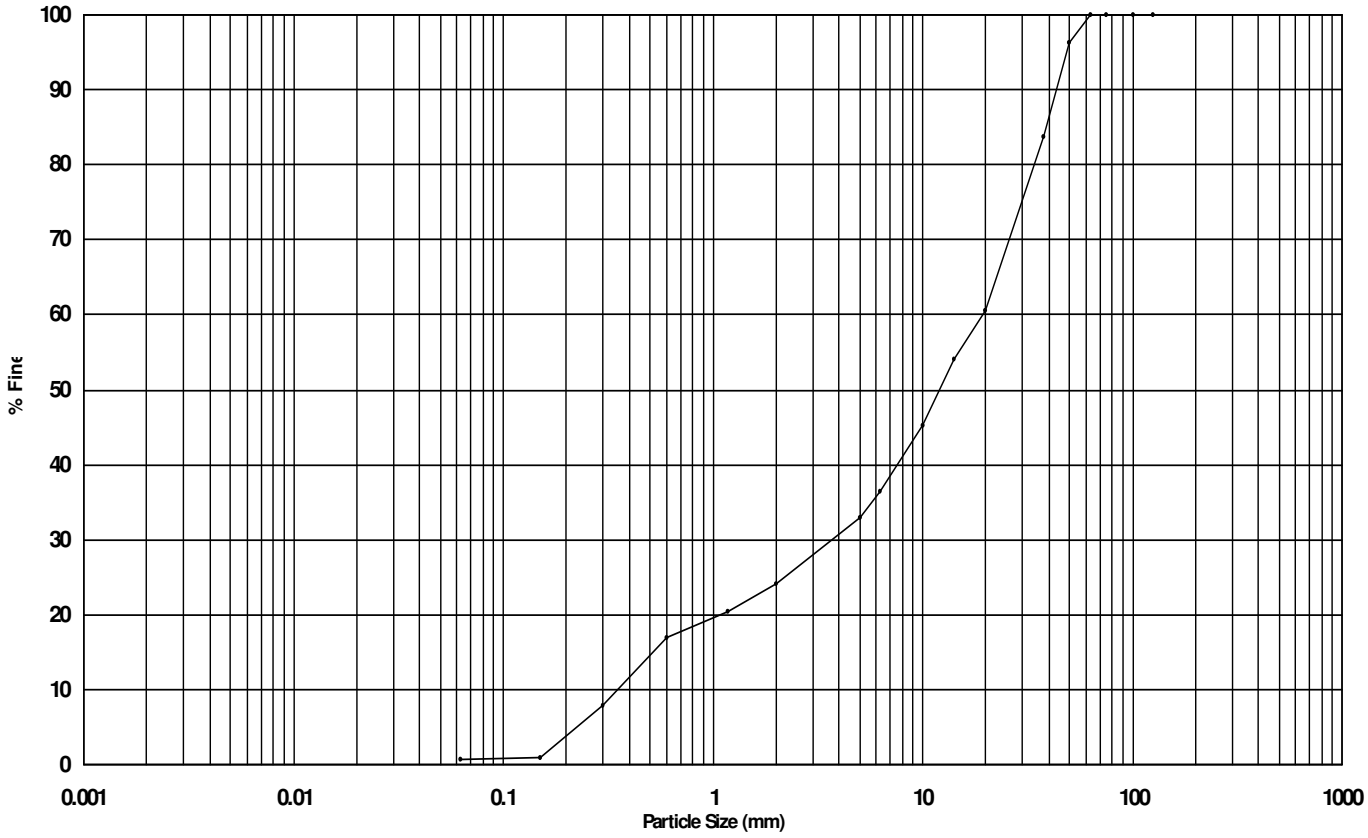
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH114A
Sample Depth	4.00-5.00m
Sample Type	B
Sample Ref	N76311

Sample Description

Brown very sandy fine to coarse GRAVEL.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	23
GRAVEL	76
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	84
20 mm	61
14 mm	54
10 mm	45
6.3 mm	36
5 mm	33
2 mm	24
1.18 mm	20
600 µm	17
300 µm	8
150 µm	1

Size	% Finer
63 µm	1

Uniformity Coefficient
54.82
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

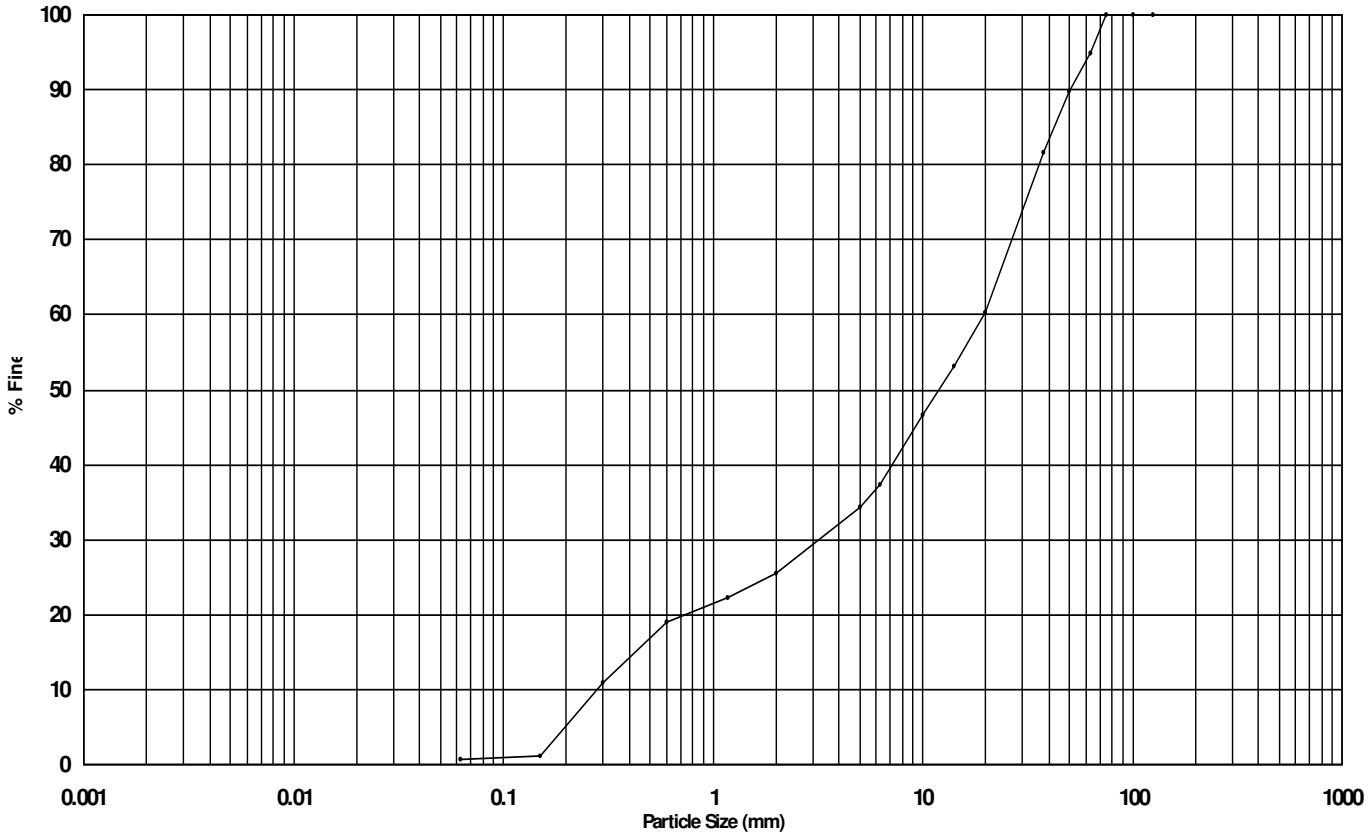
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH114A
Sample Depth	5.00-6.00m
Sample Type	B
Sample Ref	N76312

Sample Description

Brown very sandy fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	25
GRAVEL	69
COBBLES	5
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	95
50 mm	90
37.5 mm	82
20 mm	60
14 mm	53
10 mm	47
6.3 mm	37
5 mm	34
2 mm	26
1.18 mm	22
600 µm	19
300 µm	11
150 µm	1

Size	% Finer
63 µm	1

Uniformity Coefficient
69.72

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

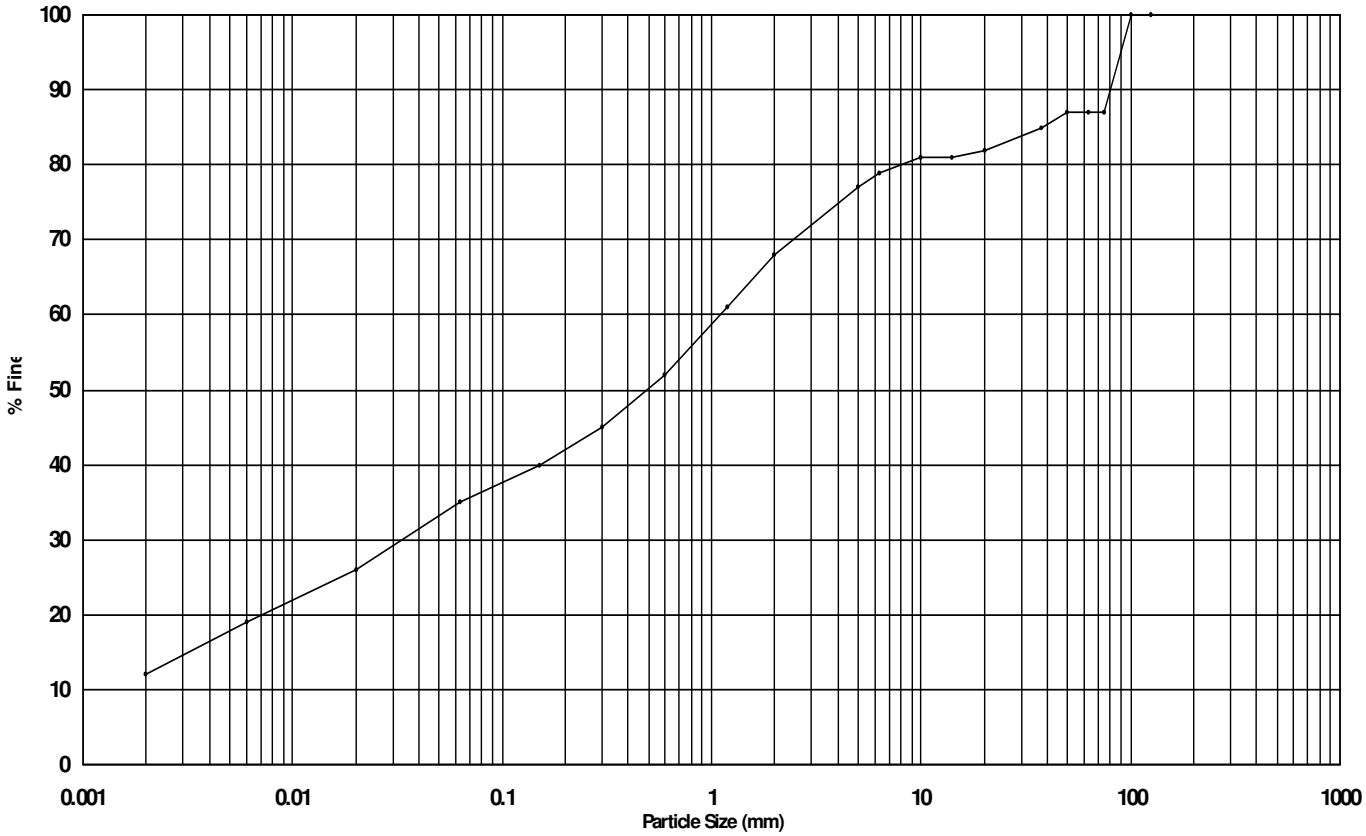
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH201
Sample Depth	0.70-1.20m
Sample Type	B
Sample Ref	N76315

Sample Description

MADE GROUND: Firm brown slightly gravelly sandy clay with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	23
SAND	33
GRAVEL	19
COBBLES	13
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	87
63 mm	87
50 mm	87
37.5 mm	85
20 mm	82
14 mm	81
10 mm	81
6.3 mm	79
5 mm	77
2 mm	68
1.18 mm	61
600 µm	52
300 µm	45
150 µm	40

Size	% Finer
63 µm	35
20 µm	26
6 µm	19
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.27
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

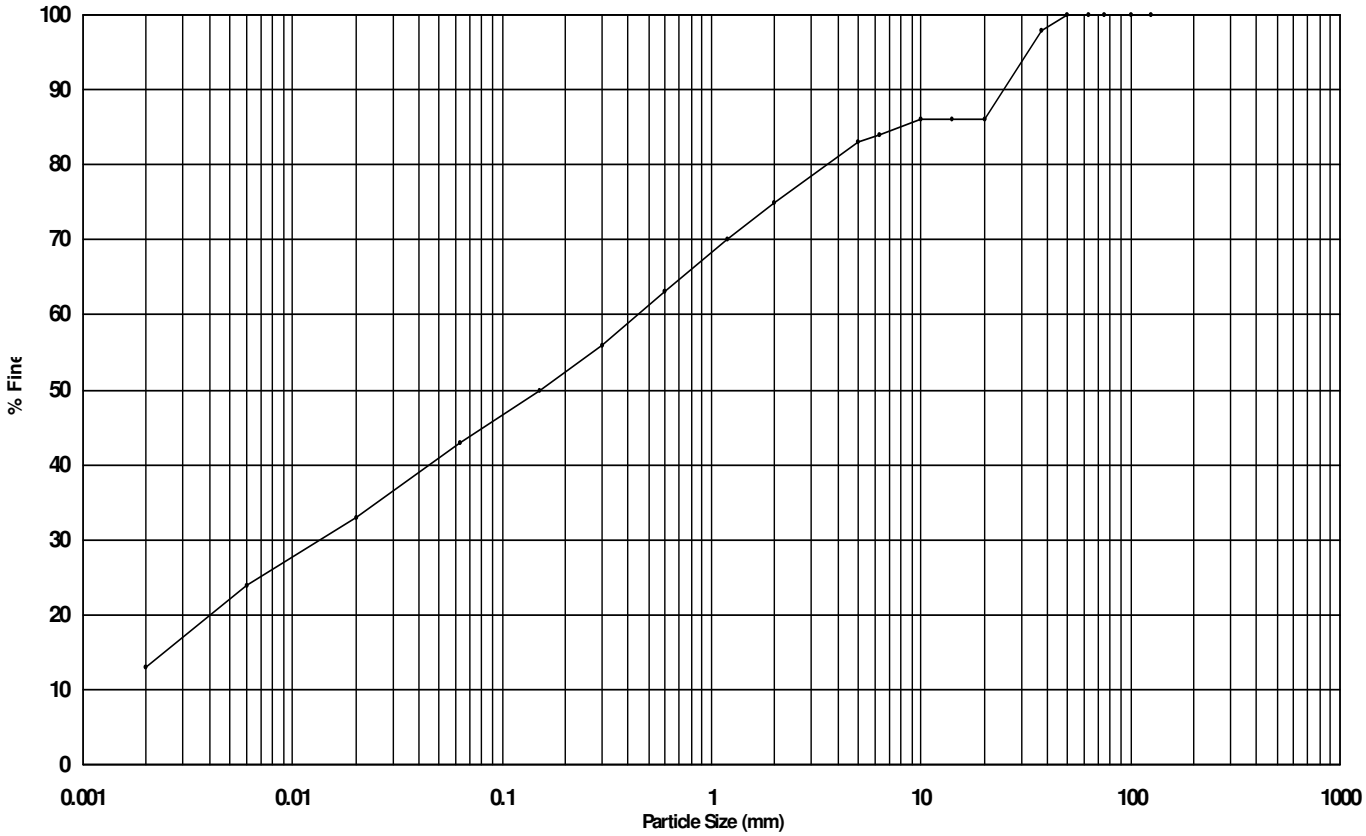
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH201
Sample Depth	3.00-3.11m
Sample Type	B
Sample Ref	N76319

Sample Description

Firm to stiff grey slightly sandy slightly gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	13
SILT	30
SAND	32
GRAVEL	25
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	86
14 mm	86
10 mm	86
6.3 mm	84
5 mm	83
2 mm	75
1.18 mm	70
600 µm	63
300 µm	56
150 µm	50

Size	% Finer
63 µm	43
20 µm	33
6 µm	24
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.25
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

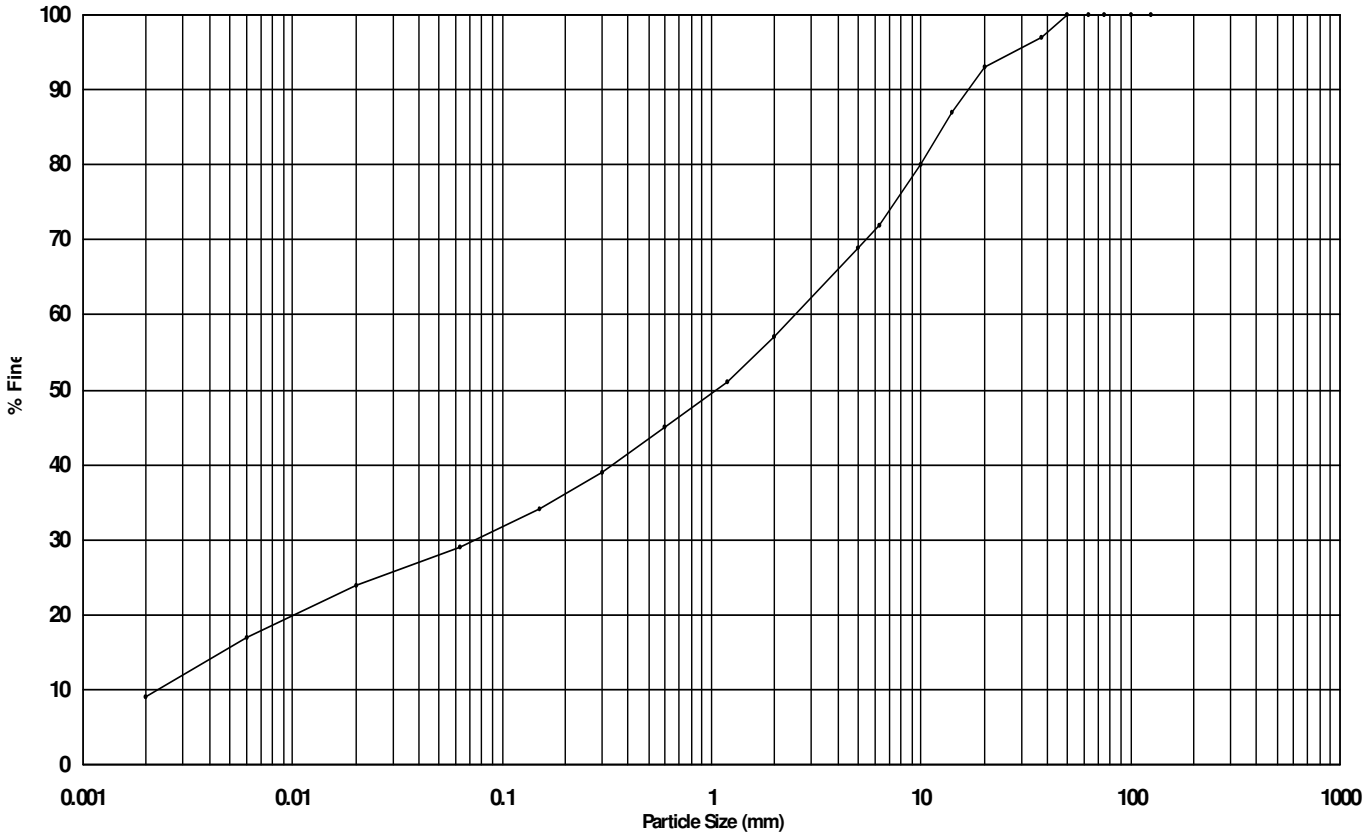
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH202
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76320

Sample Description

Firm medium strength grey slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	20
SAND	28
GRAVEL	43
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	93
14 mm	87
10 mm	80
6.3 mm	72
5 mm	69
2 mm	57
1.18 mm	51
600 µm	45
300 µm	39
150 µm	34

Size	% Finer
63 µm	29
20 µm	24
6 µm	17
2 µm	9

Uniformity Coefficient
1191.89

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.24
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

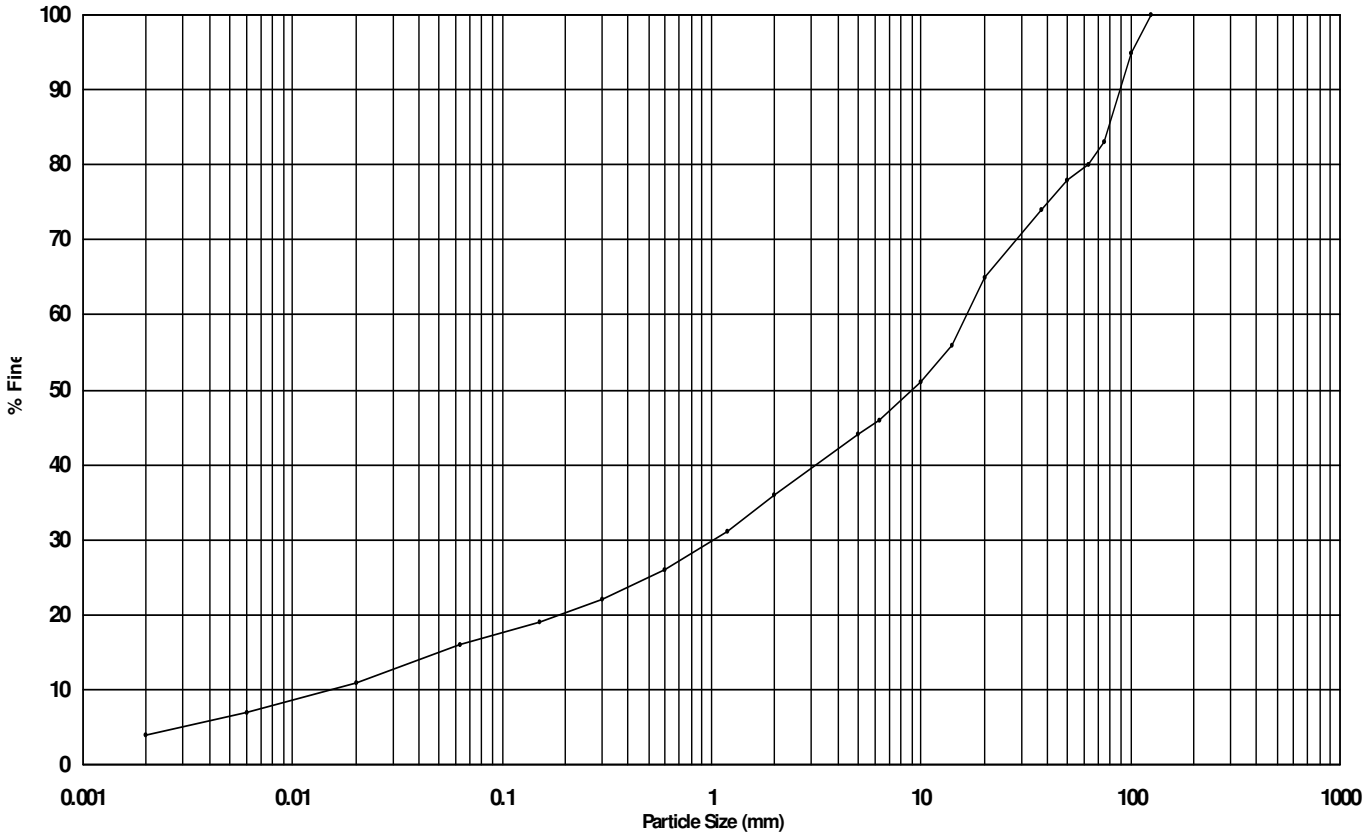
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH203
Sample Depth	0.50-1.20m
Sample Type	B
Sample Ref	N75935

Sample Description

Brown gravelly silty fine to coarse SAND with stiff greyish brown slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	4
SILT	12
SAND	20
GRAVEL	44
COBBLES	20
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	95
75 mm	83
63 mm	80
50 mm	78
37.5 mm	74
20 mm	65
14 mm	56
10 mm	51
6.3 mm	46
5 mm	44
2 mm	36
1.18 mm	31
600 µm	26
300 µm	22
150 µm	19

Size	% Finer
63 µm	16
20 µm	11
6 µm	7
2 µm	4

Uniformity Coefficient
1069.69

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.46
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

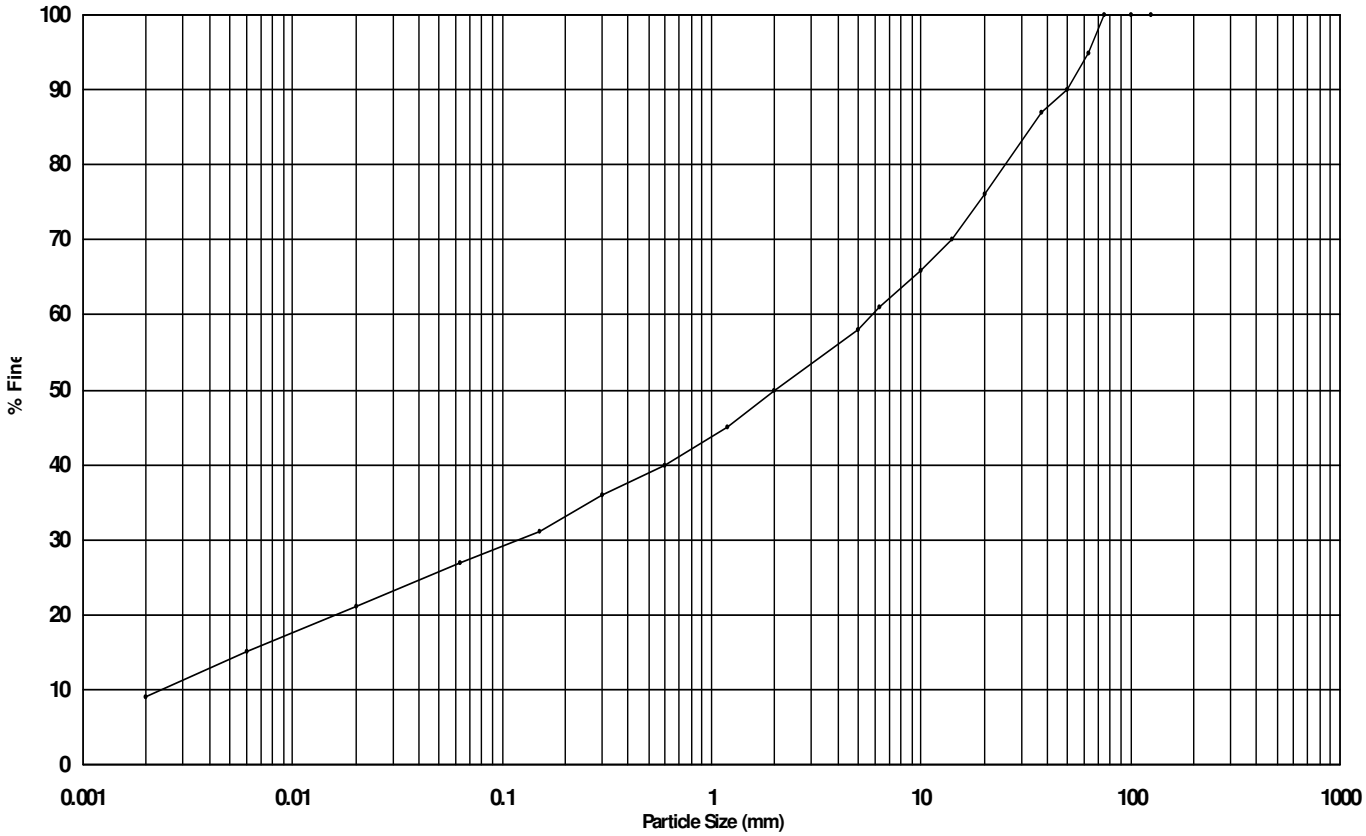
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH203
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N75936

Sample Description

Stiff greyish brown slightly sandy gravelly CLAY with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	18
SAND	23
GRAVEL	45
COBBLES	5
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	95
50 mm	90
37.5 mm	87
20 mm	76
14 mm	70
10 mm	66
6.3 mm	61
5 mm	58
2 mm	50
1.18 mm	45
600 µm	40
300 µm	36
150 µm	31

Size	% Finer
63 µm	27
20 µm	21
6 µm	15
2 µm	9

Uniformity Coefficient
2539.56

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.12
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

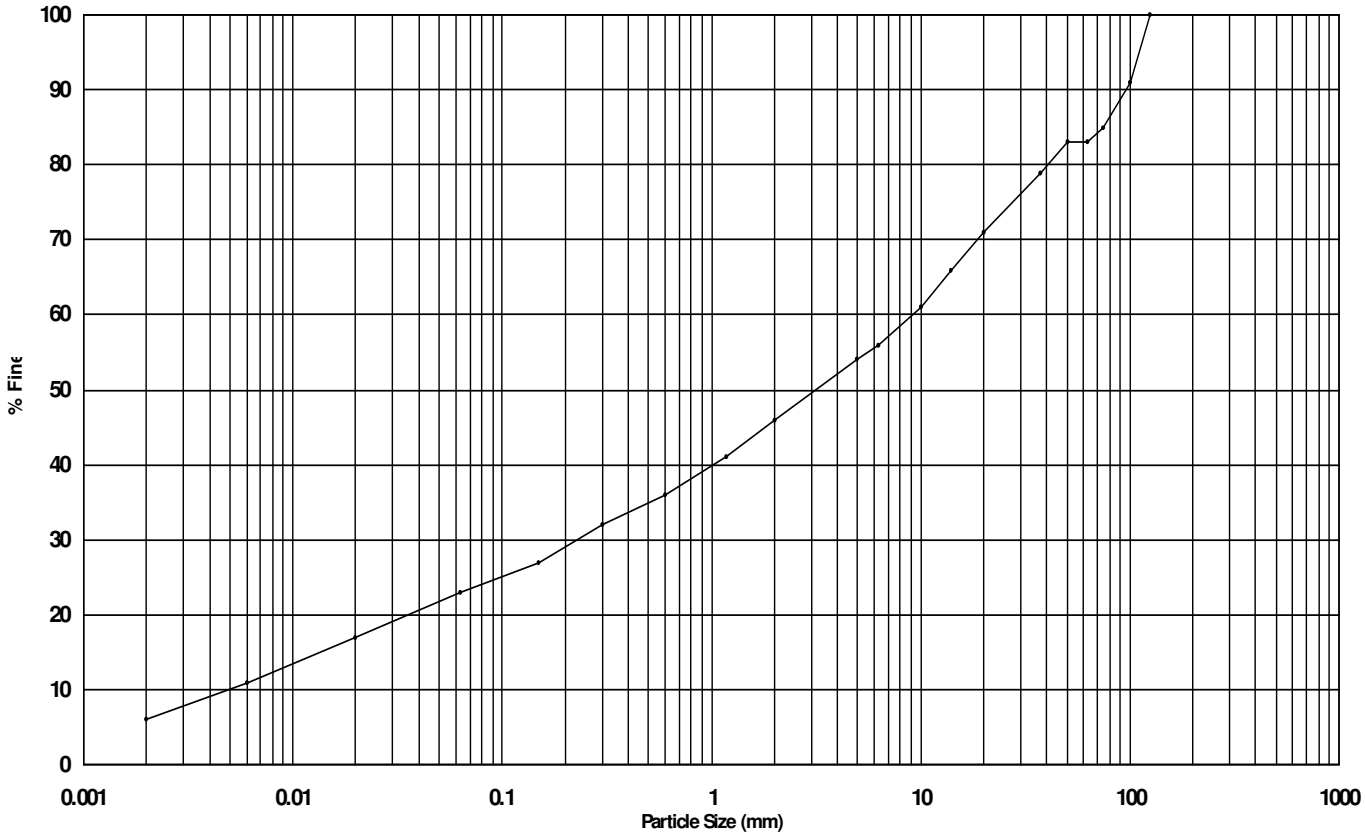
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH204A
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N75990

Sample Description

Firm to stiff yellowish brown slightly sandy gravelly CLAY with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	17
SAND	23
GRAVEL	37
COBBLES	17
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	91
75 mm	85
63 mm	83
50 mm	83
37.5 mm	79
20 mm	71
14 mm	66
10 mm	61
6.3 mm	56
5 mm	54
2 mm	46
1.18 mm	41
600 µm	36
300 µm	32
150 µm	27

Size	% Finer
63 µm	23
20 µm	17
6 µm	11
2 µm	6

Uniformity Coefficient
2095.88

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

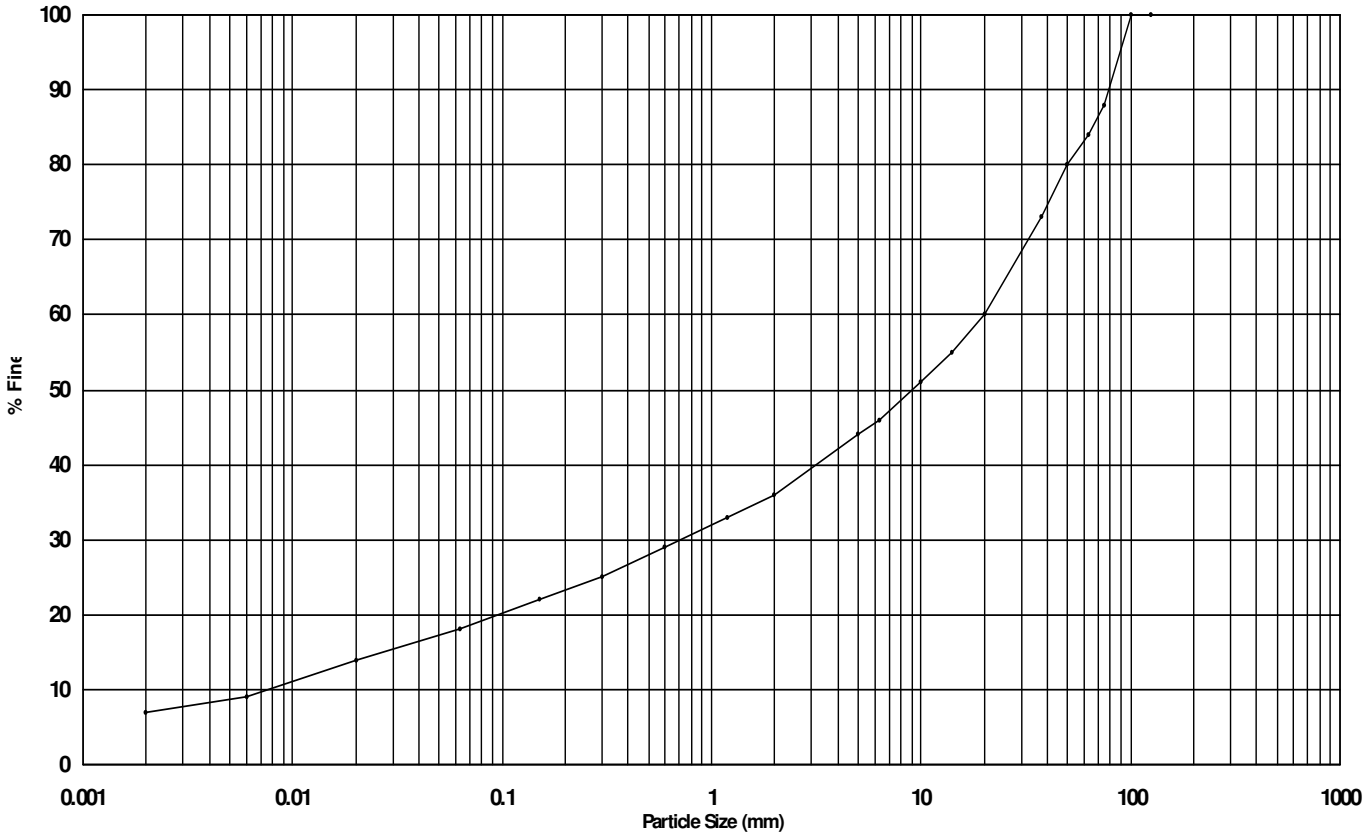
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH204A
Sample Depth	5.00-5.45m
Sample Type	B
Sample Ref	N75991

Sample Description

Firm to stiff yellowish brown slightly sandy gravelly CLAY with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	11
SAND	18
GRAVEL	48
COBBLES	16
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	88
63 mm	84
50 mm	80
37.5 mm	73
20 mm	60
14 mm	55
10 mm	51
6.3 mm	46
5 mm	44
2 mm	36
1.18 mm	33
600 µm	29
300 µm	25
150 µm	22

Size	% Finer
63 µm	18
20 µm	14
6 µm	9
2 µm	7

Uniformity Coefficient
2837.89

Sieving Method
Wet sieve

Fine Particle Analysis

Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

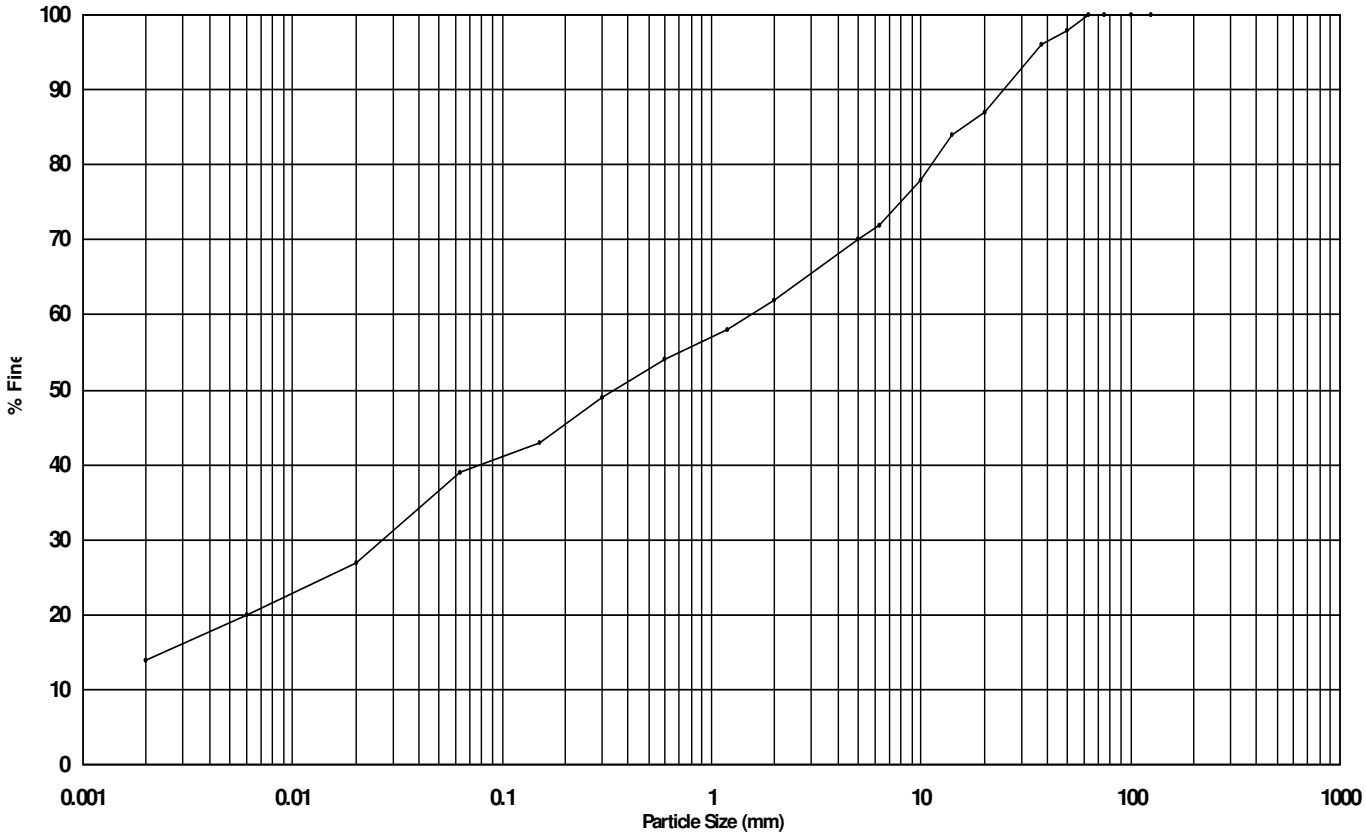
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH205C
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76028

Sample Description

MADE GROUND: Stiff to very stiff brownish grey slightly sandy gravelly clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	14
SILT	25
SAND	23
GRAVEL	38
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	96
20 mm	87
14 mm	84
10 mm	78
6.3 mm	72
5 mm	70
2 mm	62
1.18 mm	58
600 µm	54
300 µm	49
150 µm	43

Size	% Finer
63 µm	39
20 µm	27
6 µm	20
2 µm	14

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

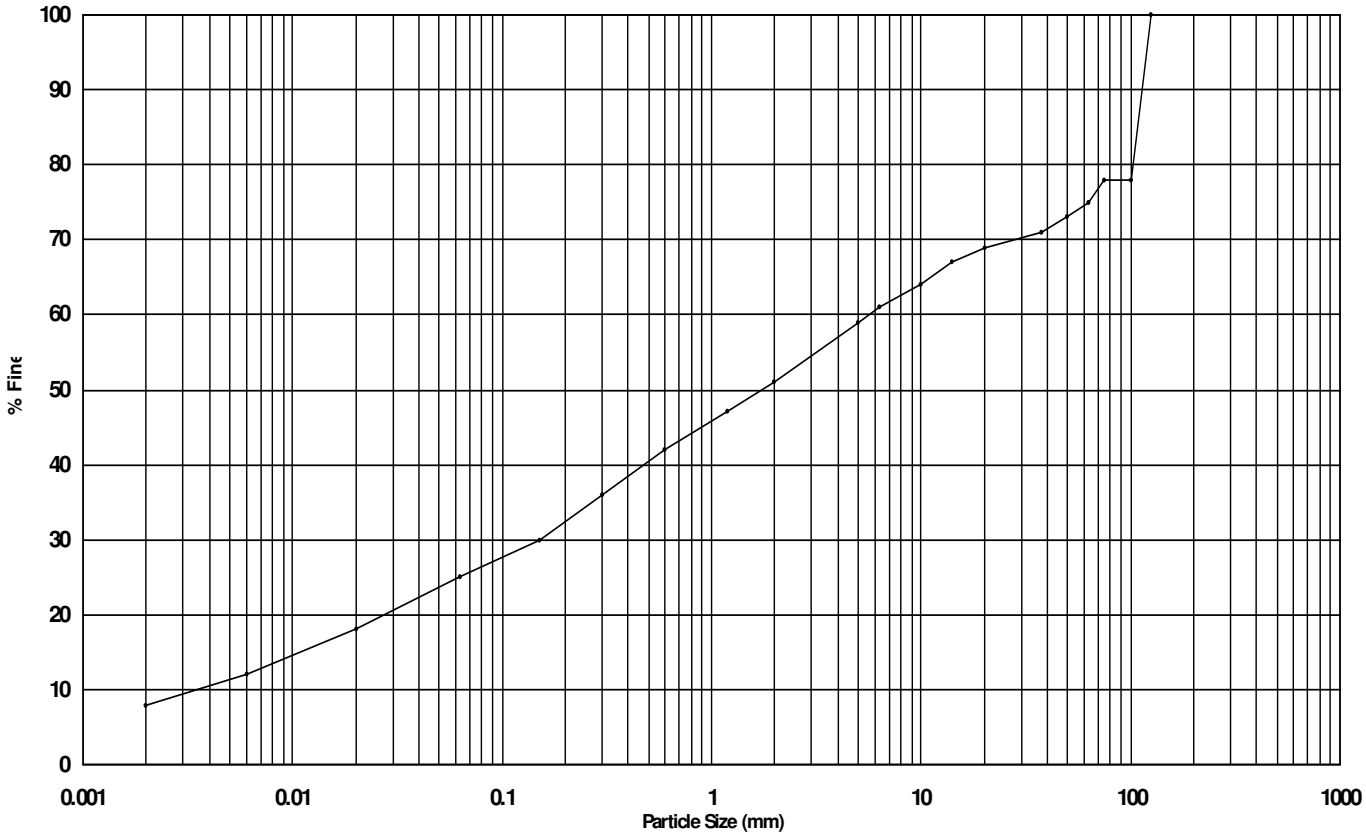
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH207
Sample Depth	1.20-1.61m
Sample Type	B
Sample Ref	N76033

Sample Description

Stiff brownish orange slightly gravelly sandy CLAY with a high cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	8
SILT	17
SAND	26
GRAVEL	24
COBBLES	25
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	78
75 mm	78
63 mm	75
50 mm	73
37.5 mm	71
20 mm	69
14 mm	67
10 mm	64
6.3 mm	61
5 mm	59
2 mm	51
1.18 mm	47
600 µm	42
300 µm	36
150 µm	30

Size	% Finer
63 µm	25
20 µm	18
6 µm	12
2 µm	8

Uniformity Coefficient
1712.87

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.42
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

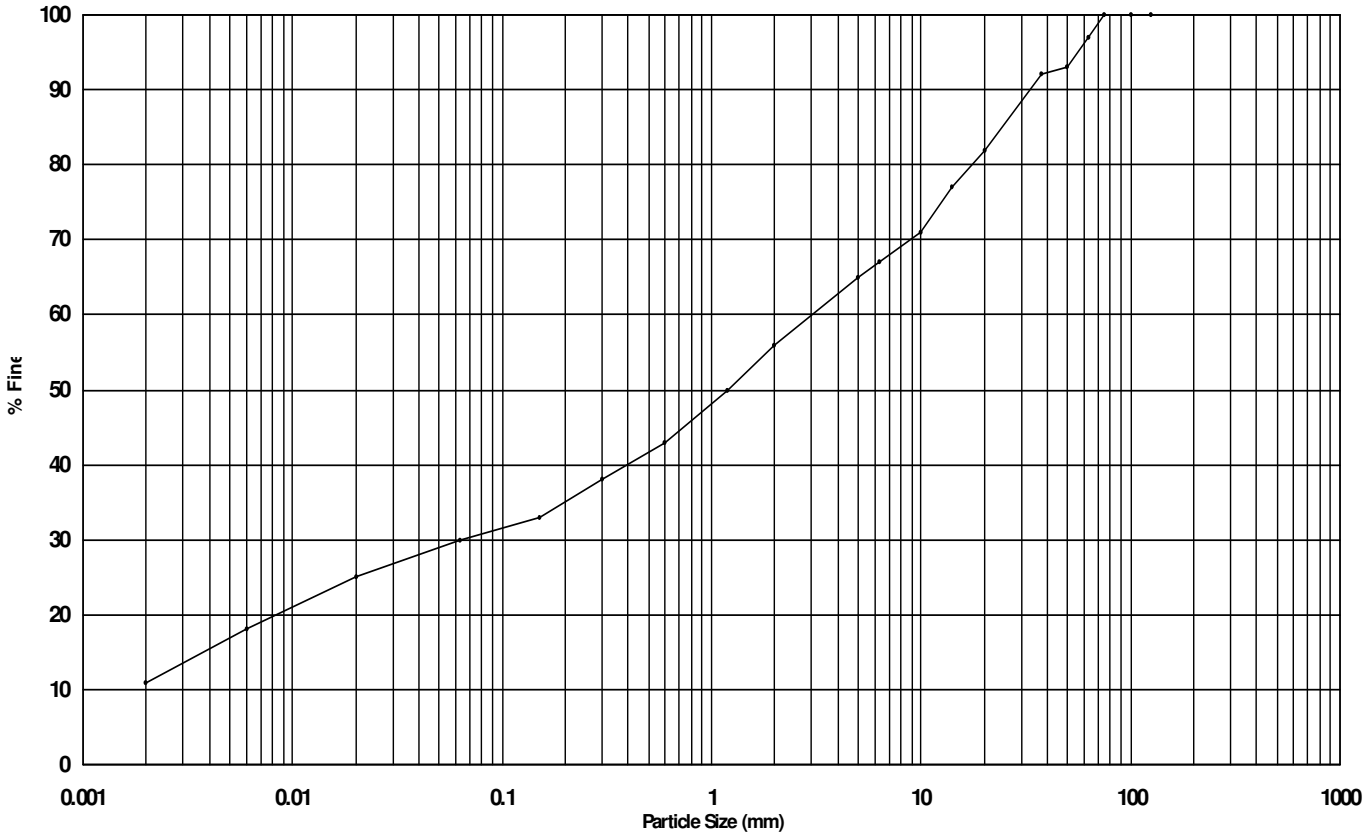
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH208
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76291

Sample Description

Stiff brown slightly sandy gravelly CLAY with a low cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	19
SAND	26
GRAVEL	41
COBBLES	3
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	97
50 mm	93
37.5 mm	92
20 mm	82
14 mm	77
10 mm	71
6.3 mm	67
5 mm	65
2 mm	56
1.18 mm	50
600 µm	43
300 µm	38
150 µm	33

Size	% Finer
63 µm	30
20 µm	25
6 µm	18
2 µm	11

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.86
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

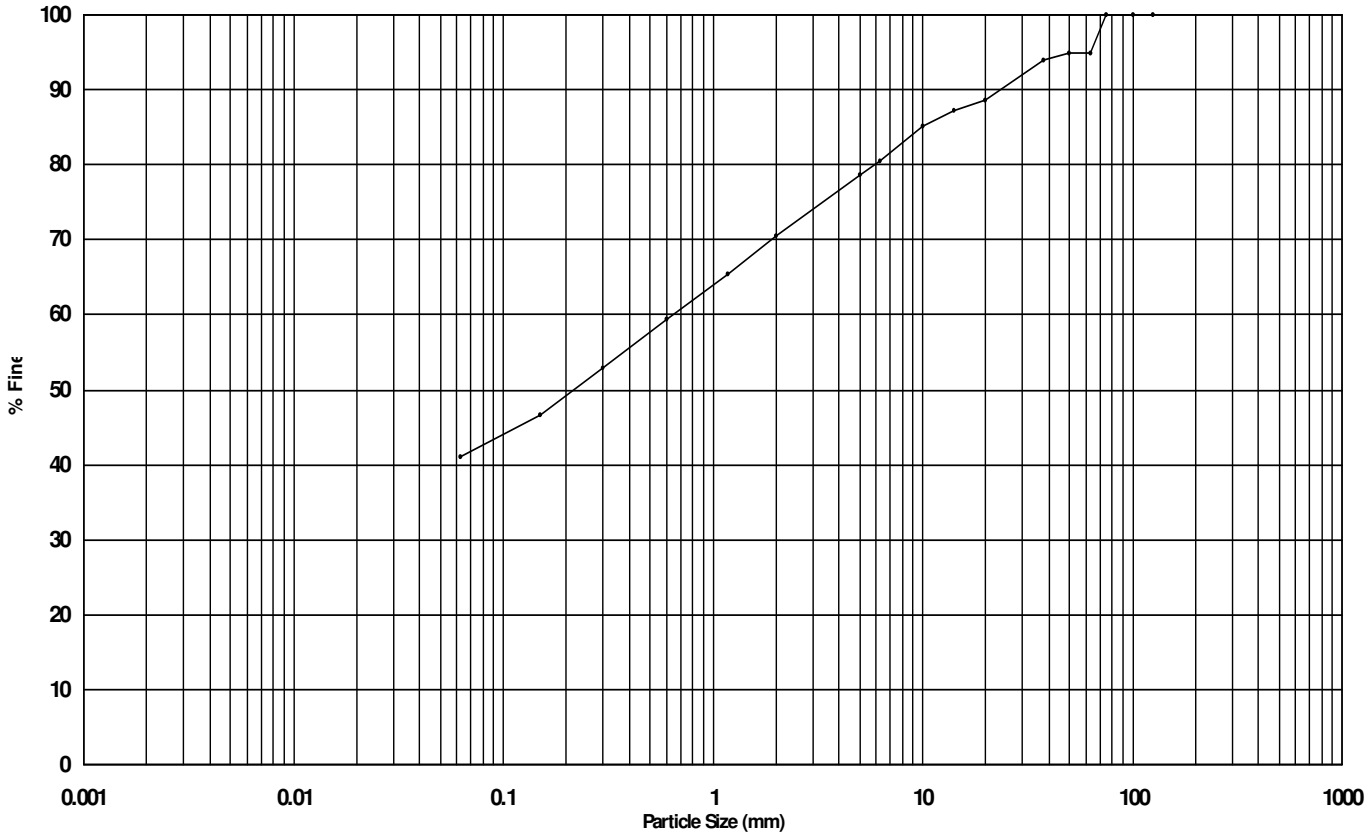
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH209
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76183

Sample Description

MADE GROUND: Soft orange mottled bluish grey slightly sandy slightly gravelly clay with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	41
SAND	30
GRAVEL	24
COBBLES	5
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	95
50 mm	95
37.5 mm	94
20 mm	89
14 mm	87
10 mm	85
6.3 mm	81
5 mm	79
2 mm	71
1.18 mm	66
600 µm	59
300 µm	53
150 µm	47

Size	% Finer
63 µm	41

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

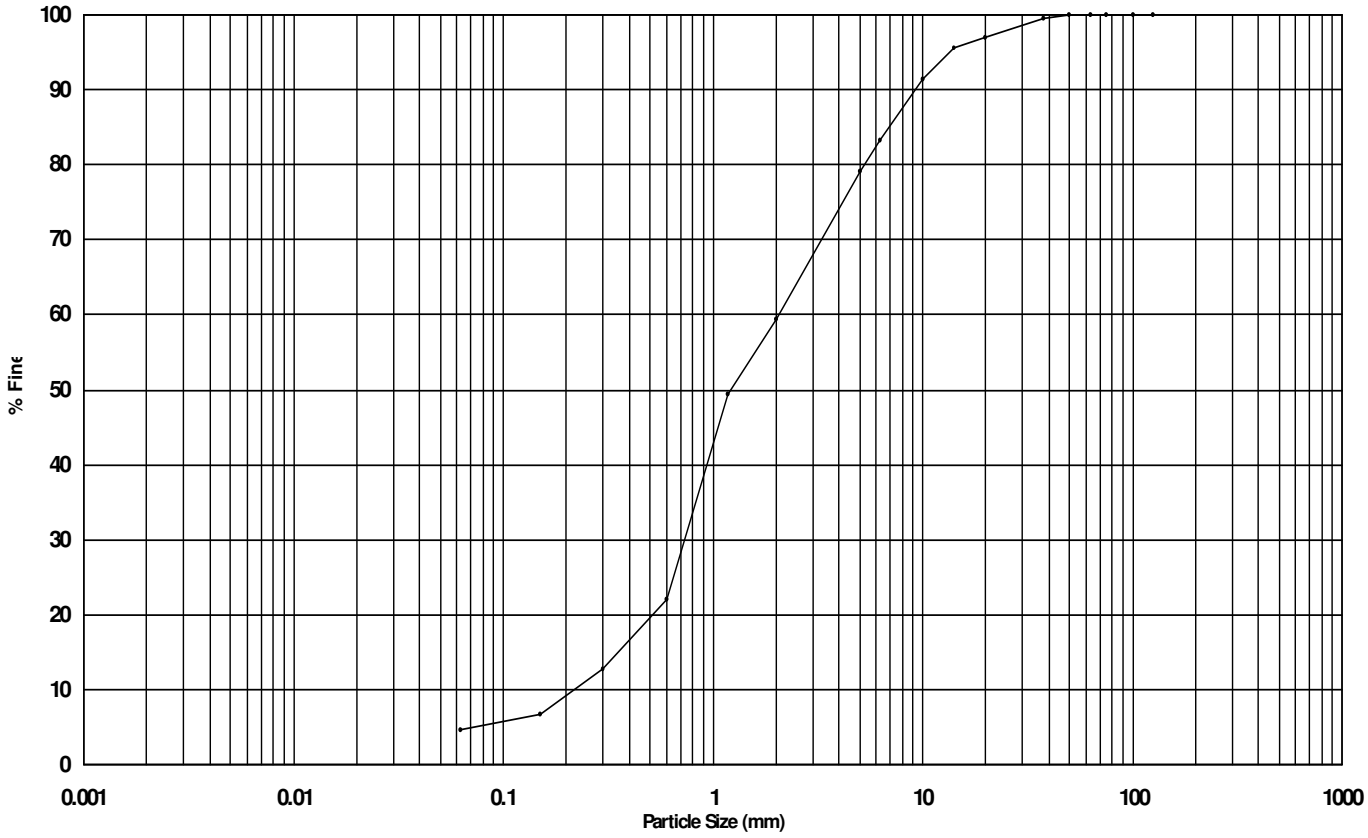
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

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Hole	BH210
Sample Depth	8.00-8.45m
Sample Type	B
Sample Ref	N76191

Sample Description

Grey very gravelly silty fine to coarse SAND.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	5
SAND	54
GRAVEL	41
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	97
14 mm	96
10 mm	91
6.3 mm	83
5 mm	79
2 mm	59
1.18 mm	49
600 µm	22
300 µm	13
150 µm	7

Size	% Finer
63 µm	5

Uniformity Coefficient
9.45
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

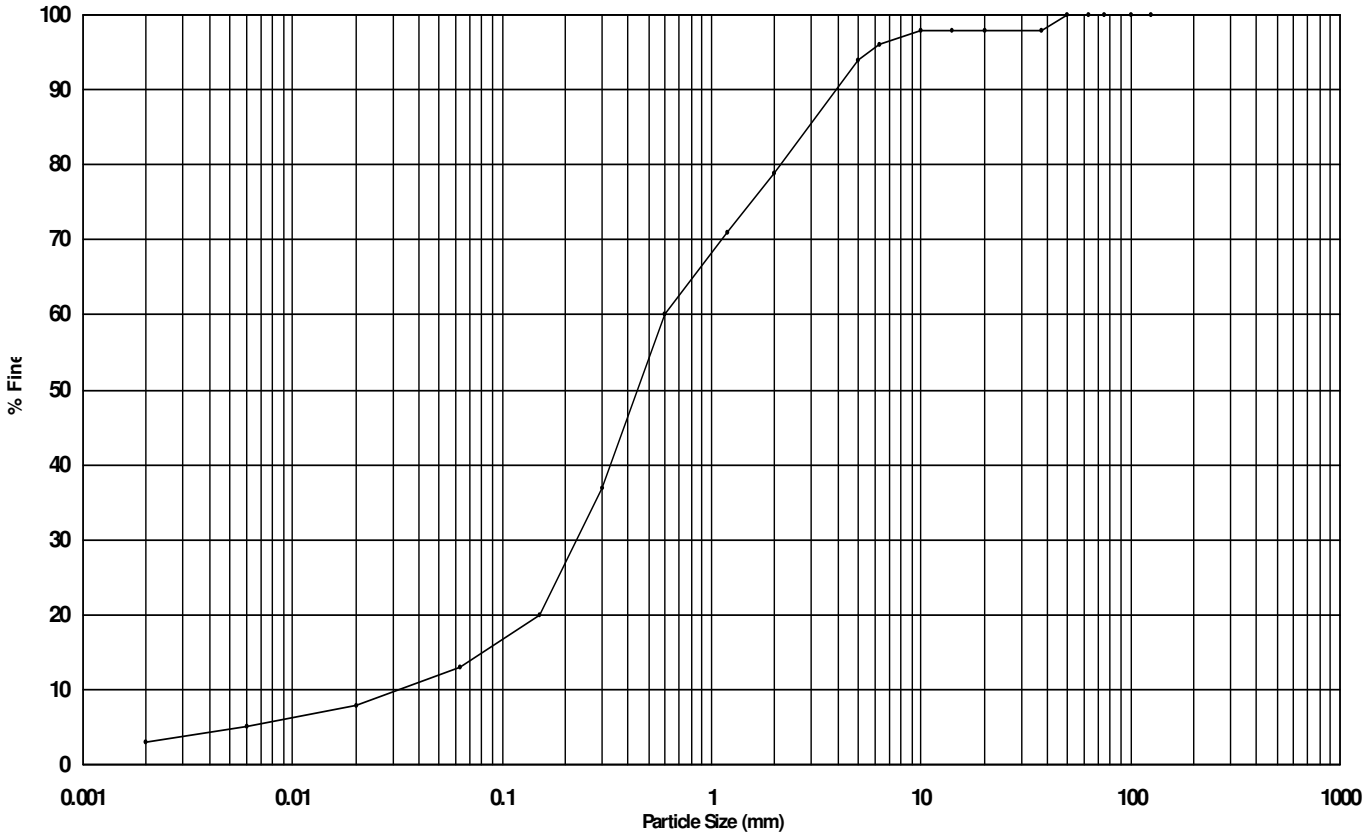
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH210
Sample Depth	9.50-9.95m
Sample Type	B
Sample Ref	N76192

Sample Description

Grey very gravelly silty fine to coarse SAND with pockets of clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	10
SAND	66
GRAVEL	21
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	98
14 mm	98
10 mm	98
6.3 mm	96
5 mm	94
2 mm	79
1.18 mm	71
600 µm	60
300 µm	37
150 µm	20

Size	% Finer
63 µm	13
20 µm	8
6 µm	5
2 µm	3

Uniformity Coefficient
19.84

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

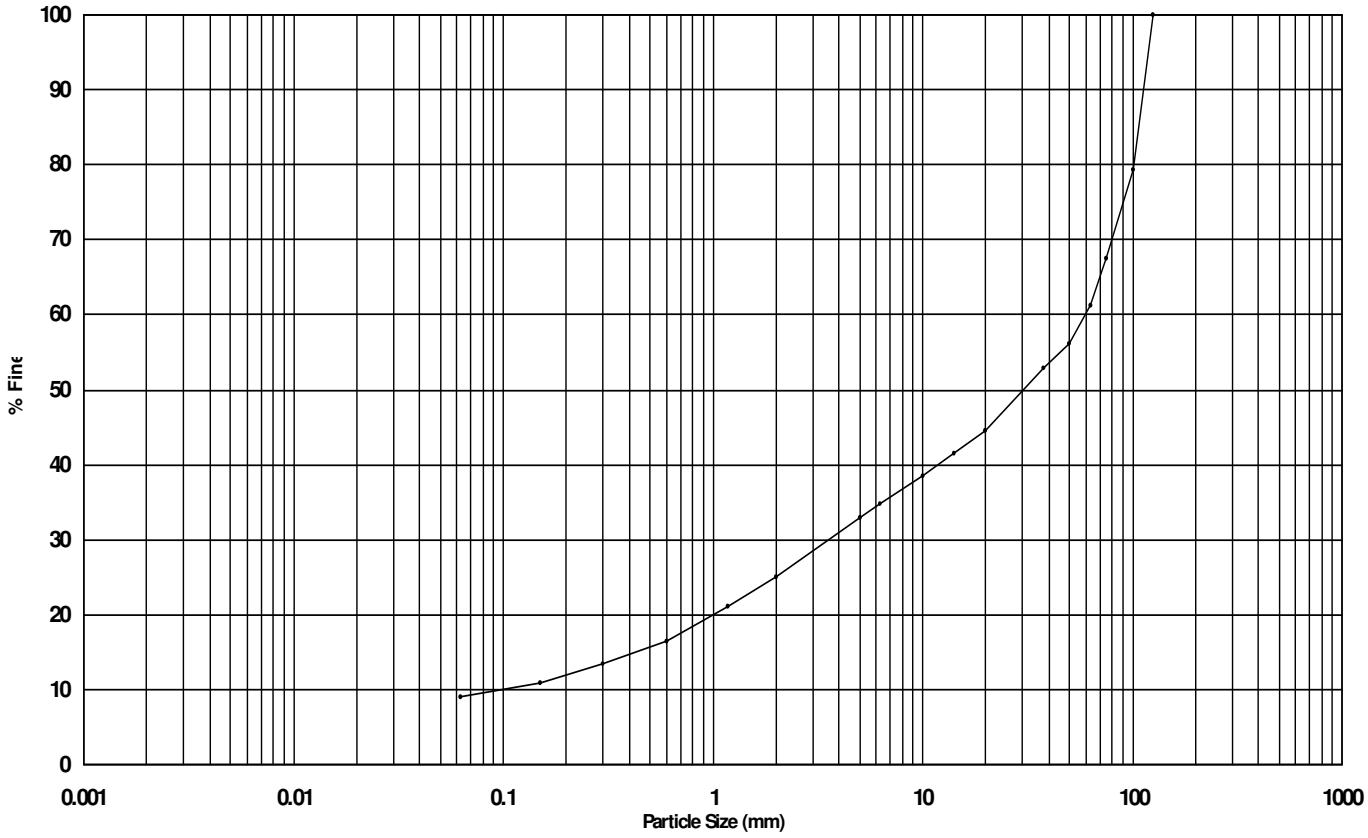
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH212
Sample Depth	6.00-6.45m
Sample Type	B
Sample Ref	N76557

Sample Description

Brown very sandy silty fine to coarse GRAVEL with a high cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	9
SAND	16
GRAVEL	36
COBBLES	39
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	79
75 mm	67
63 mm	61
50 mm	56
37.5 mm	53
20 mm	44
14 mm	41
10 mm	39
6.3 mm	35
5 mm	33
2 mm	25
1.18 mm	21
600 µm	17
300 µm	13
150 µm	11

Size	% Finer
63 µm	9

Uniformity Coefficient
586.39
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

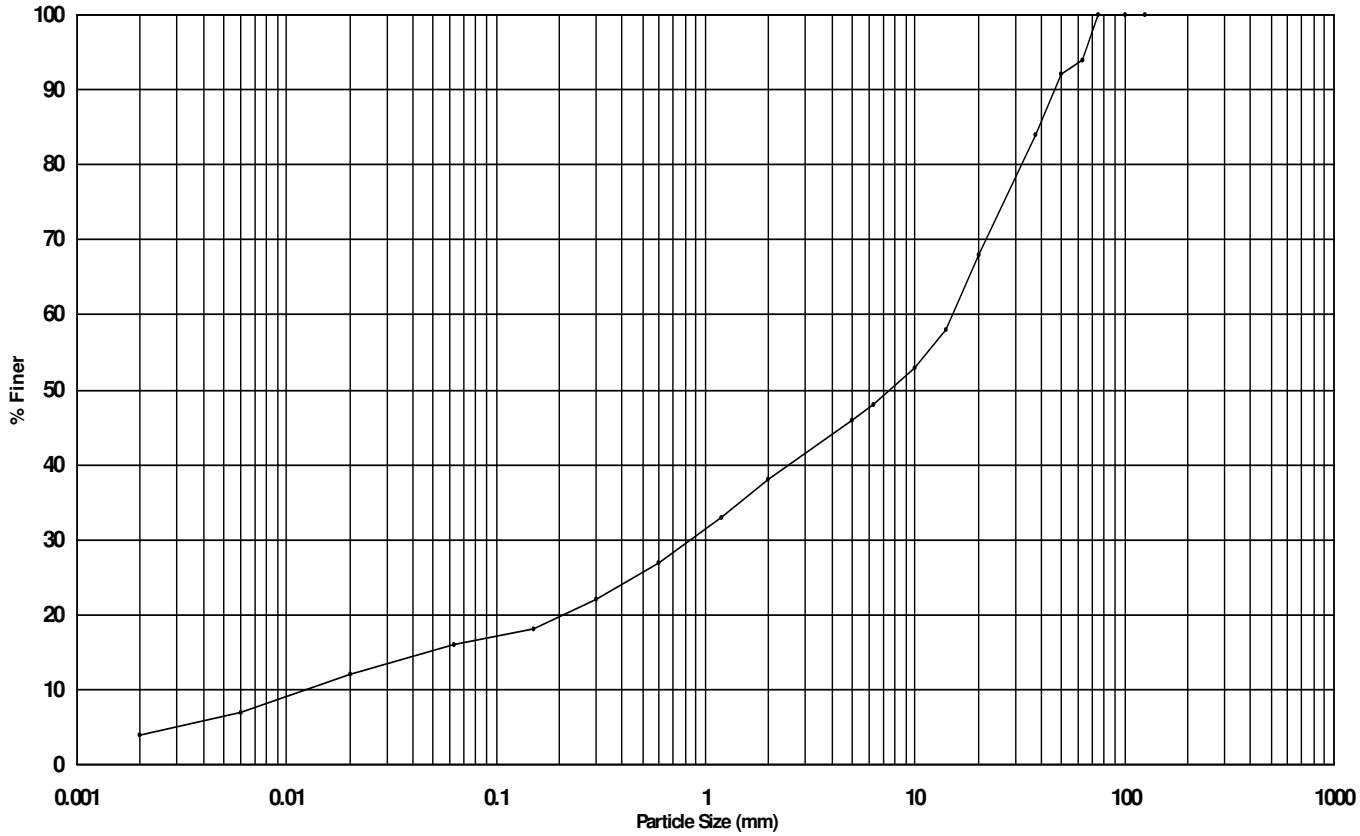
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH212
Sample Depth	7.80-8.25m
Sample Type	B
Sample Ref	N76558

Sample Description

Brown very sandy silty fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	4
SILT	12
SAND	22
GRAVEL	56
COBBLES	6
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	94
50 mm	92
37.5 mm	84
20 mm	68
14 mm	58
10 mm	53
6.3 mm	48
5 mm	46
2 mm	38
1.18 mm	33
600 µm	27
300 µm	22
150 µm	18

Size	% Finer
63 µm	16
20 µm	12
6 µm	7
2 µm	4

Uniformity Coefficient
1321.66

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

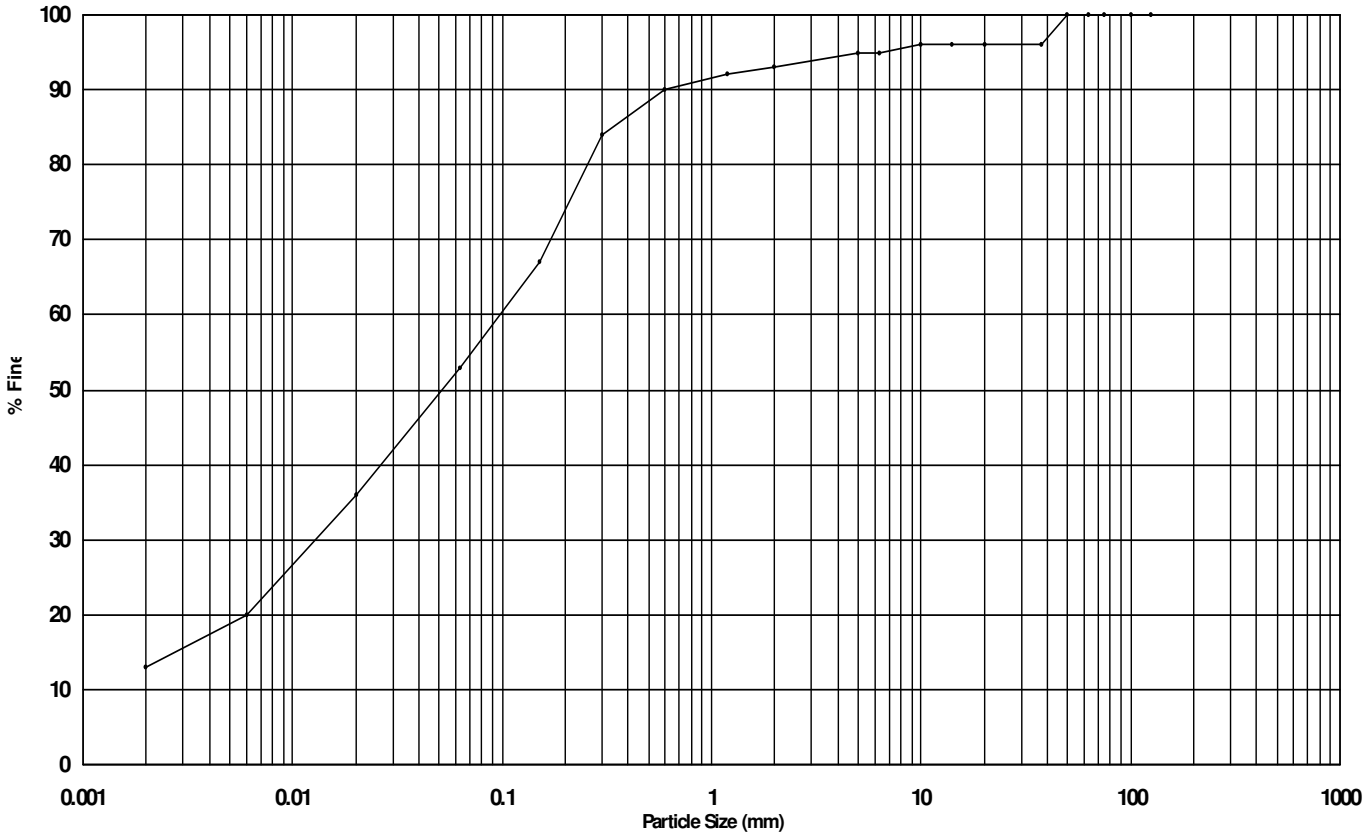
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH213
Sample Depth	0.70-1.20m
Sample Type	B
Sample Ref	N76036

Sample Description

Reddish brown slightly gravelly very sandy SILT.



Classification	CLAY	SILT			SAND			Gravel			Cobbles	Boulders
		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		

Classification	% of each
CLAY	13
SILT	40
SAND	40
GRAVEL	7
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	96
20 mm	96
14 mm	96
10 mm	96
6.3 mm	95
5 mm	95
2 mm	93
1.18 mm	92
600 µm	90
300 µm	84
150 µm	67

Size	% Finer
63 µm	53
20 µm	36
6 µm	20
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.60
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

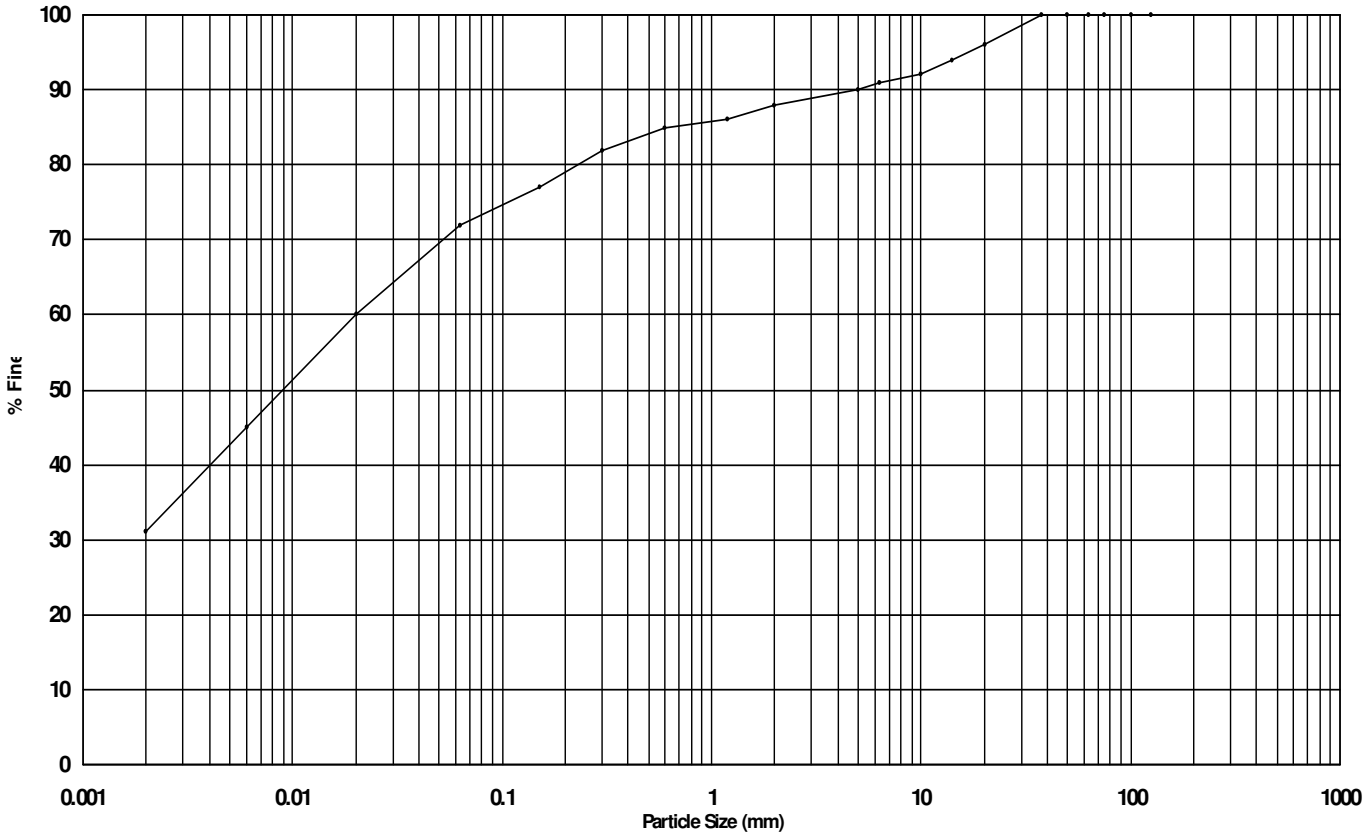
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH213
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76039

Sample Description

Stiff brown slightly sandy slightly gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	31
SILT	41
SAND	16
GRAVEL	12
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	96
14 mm	94
10 mm	92
6.3 mm	91
5 mm	90
2 mm	88
1.18 mm	86
600 µm	85
300 µm	82
150 µm	77

Size	% Finer
63 µm	72
20 µm	60
6 µm	45
2 µm	31

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.72
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

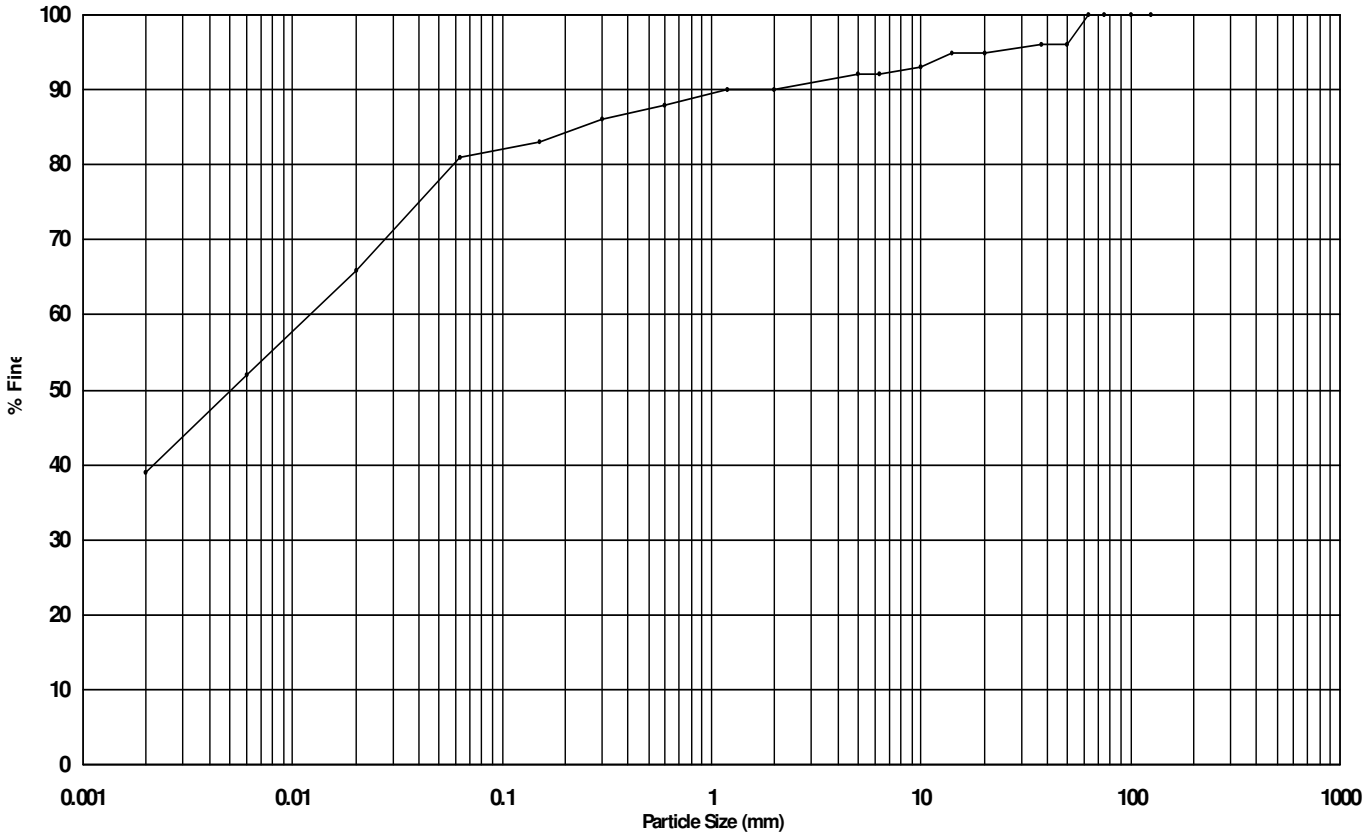
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH214
Sample Depth	0.70-1.20m
Sample Type	B
Sample Ref	N77204

Sample Description

Firm brown slightly sandy slightly gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	39
SILT	42
SAND	9
GRAVEL	10
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	96
20 mm	95
14 mm	95
10 mm	93
6.3 mm	92
5 mm	92
2 mm	90
1.18 mm	90
600 µm	88
300 µm	86
150 µm	83

Size	% Finer
63 µm	81
20 µm	66
6 µm	52
2 µm	39

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

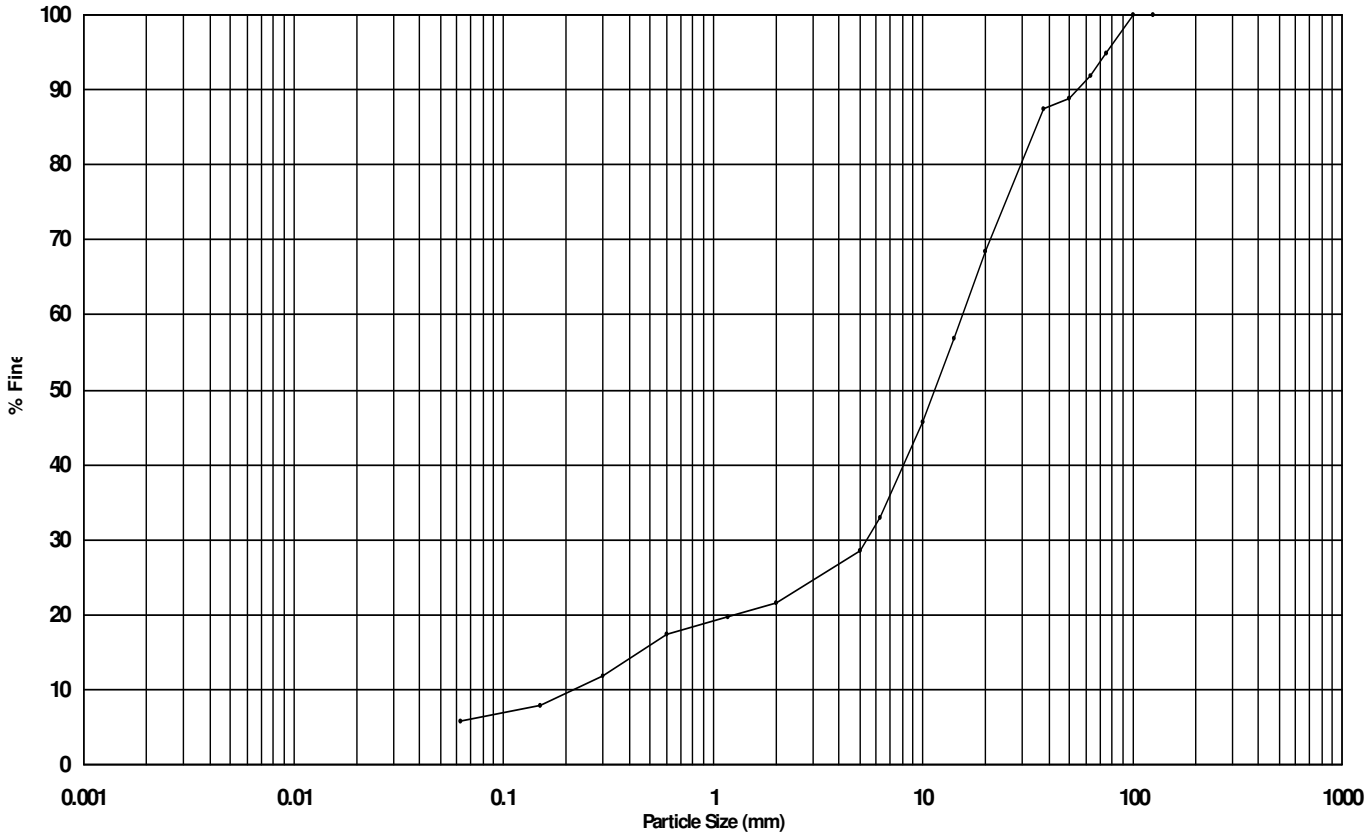
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N75940

Sample Description

Brown sandy silty fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	6
SAND	16
GRAVEL	70
COBBLES	8
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	95
63 mm	92
50 mm	89
37.5 mm	87
20 mm	69
14 mm	57
10 mm	46
6.3 mm	33
5 mm	29
2 mm	22
1.18 mm	20
600 µm	17
300 µm	12
150 µm	8

Size	% Finer
63 µm	6

Uniformity Coefficient
71.92
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

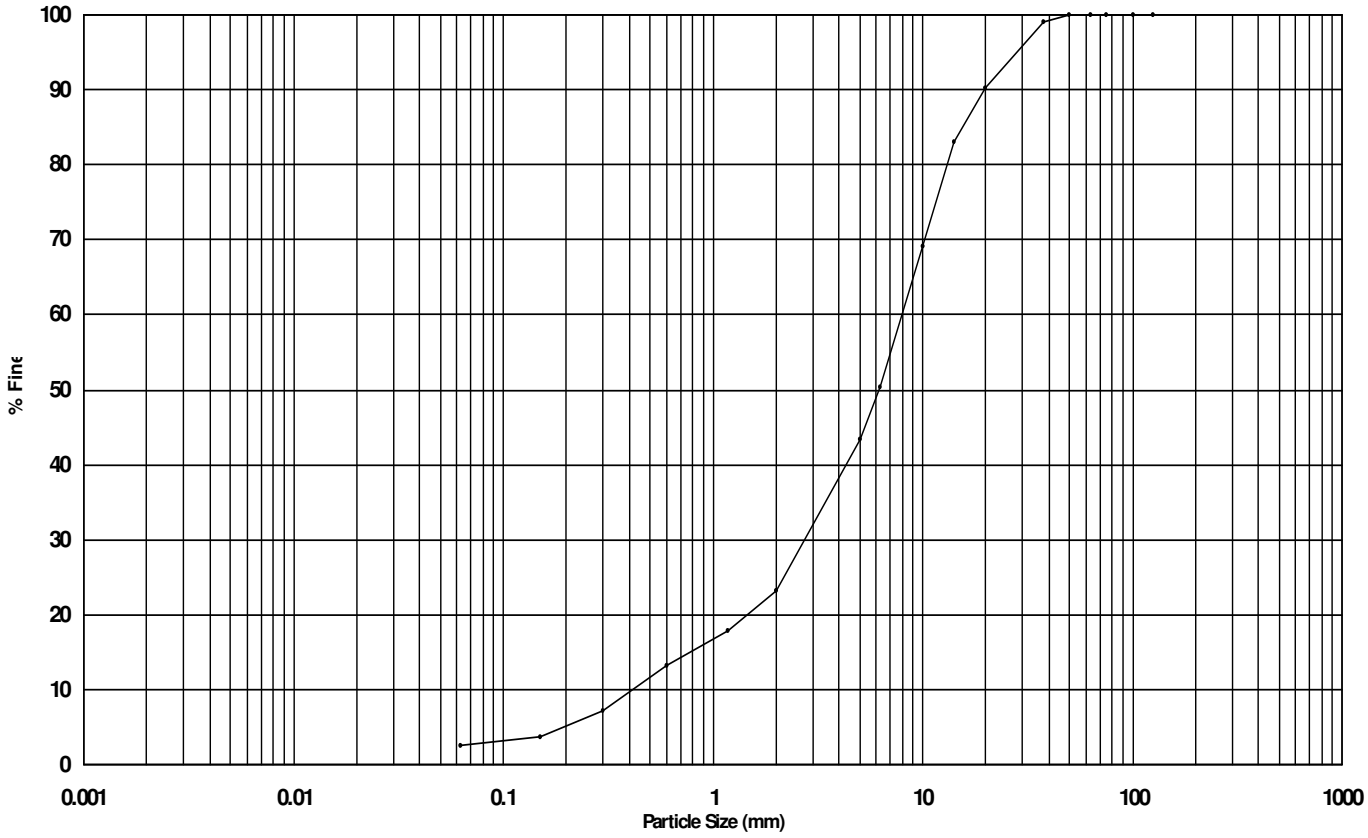
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N75941

Sample Description

Brown sandy slightly silty fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	21
GRAVEL	77
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	90
14 mm	83
10 mm	69
6.3 mm	50
5 mm	43
2 mm	23
1.18 mm	18
600 µm	13
300 µm	7
150 µm	4

Size	% Finer
63 µm	2

Uniformity Coefficient
19.30
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

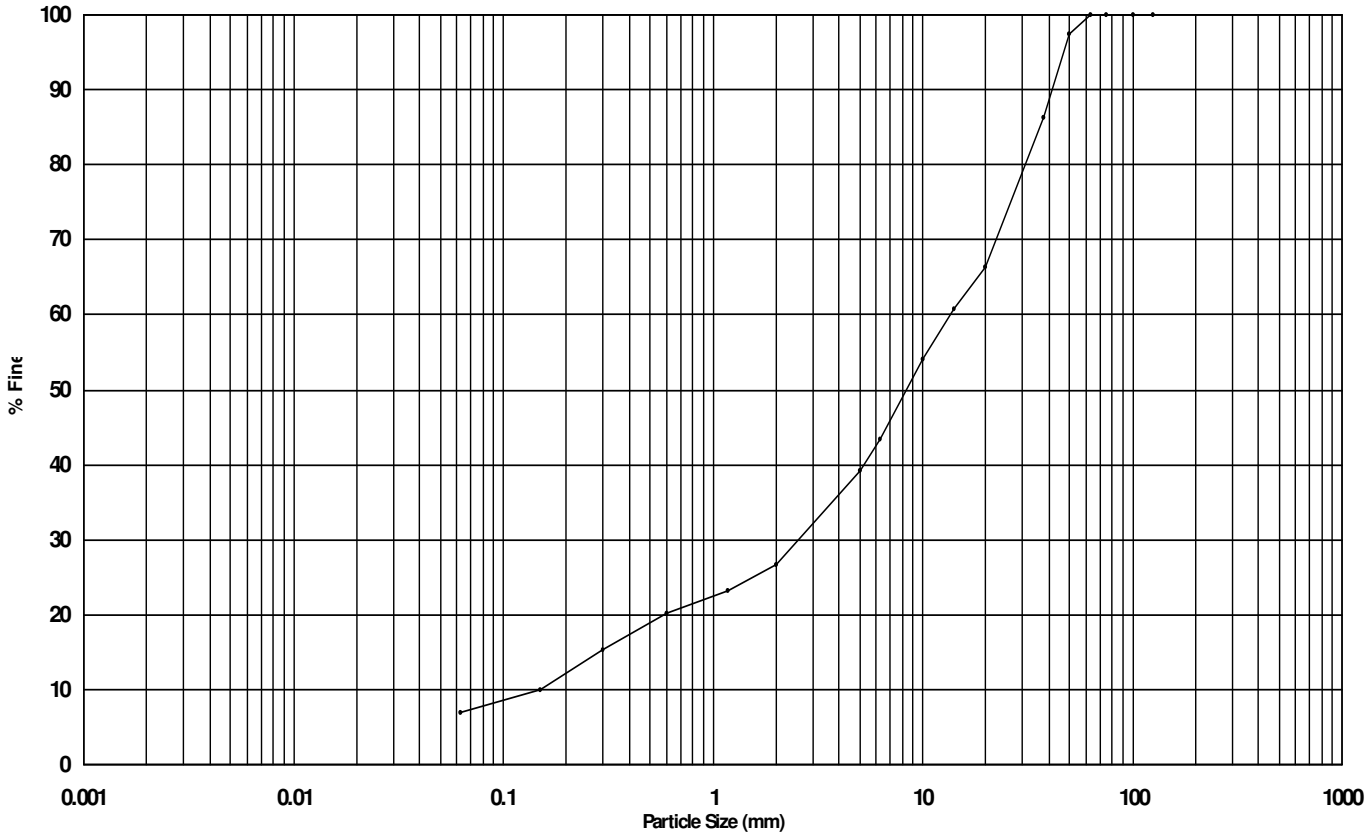
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N75942

Sample Description

Greyish brown sandy silty fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	20
GRAVEL	73
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	86
20 mm	66
14 mm	61
10 mm	54
6.3 mm	43
5 mm	39
2 mm	27
1.18 mm	23
600 µm	20
300 µm	15
150 µm	10

Size	% Finer
63 µm	7

Uniformity Coefficient
88.60
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

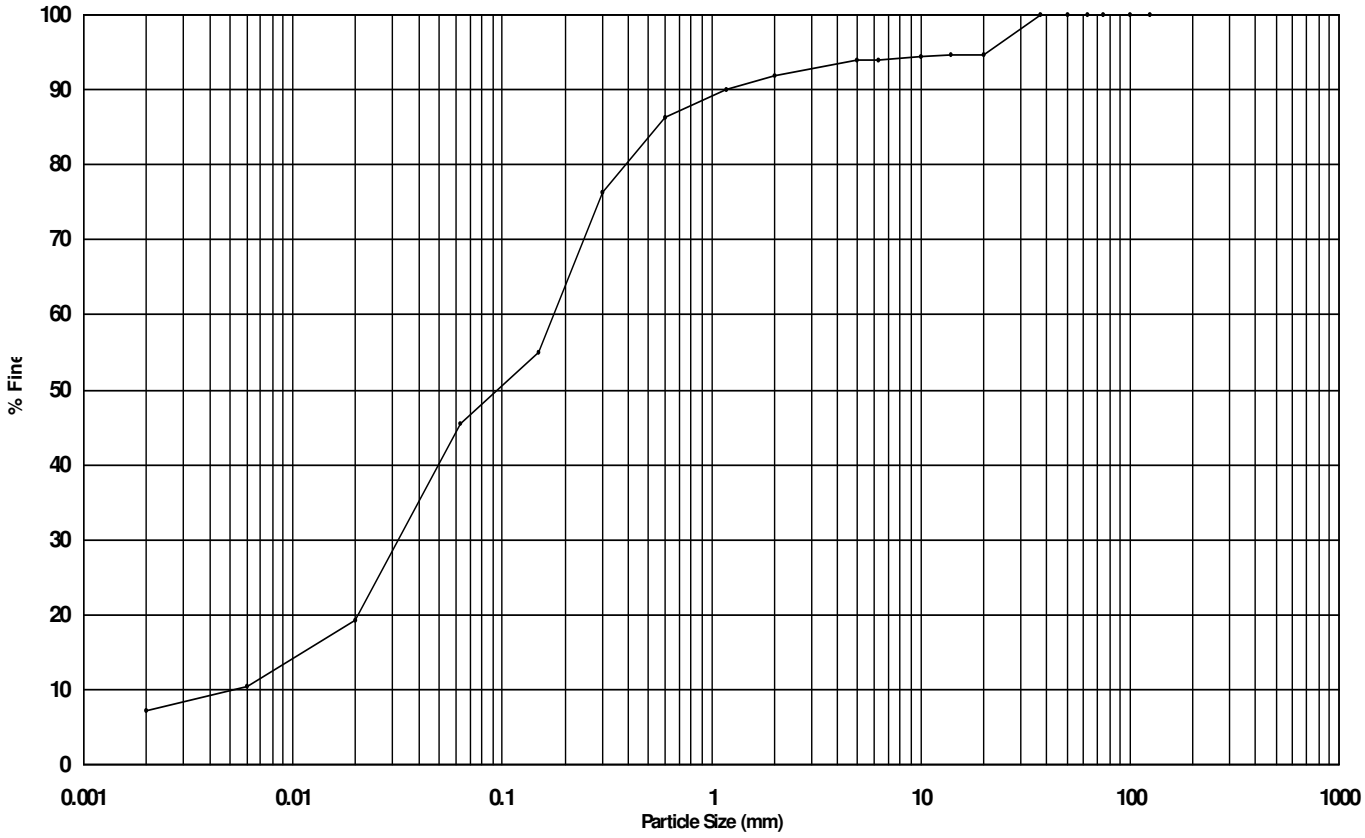
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216A
Sample Depth	1.00m
Sample Type	B
Sample Ref	N76152

Sample Description

Brown gravelly silty fine to coarse SAND with pockets of clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	38
SAND	47
GRAVEL	8
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	95
14 mm	95
10 mm	94
6.3 mm	94
5 mm	94
2 mm	92
1.18 mm	90
600 µm	86
300 µm	76
150 µm	55

Size	% Finer
63 µm	45
20 µm	19
6 µm	10
2 µm	7

Uniformity Coefficient
34.34

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.29
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

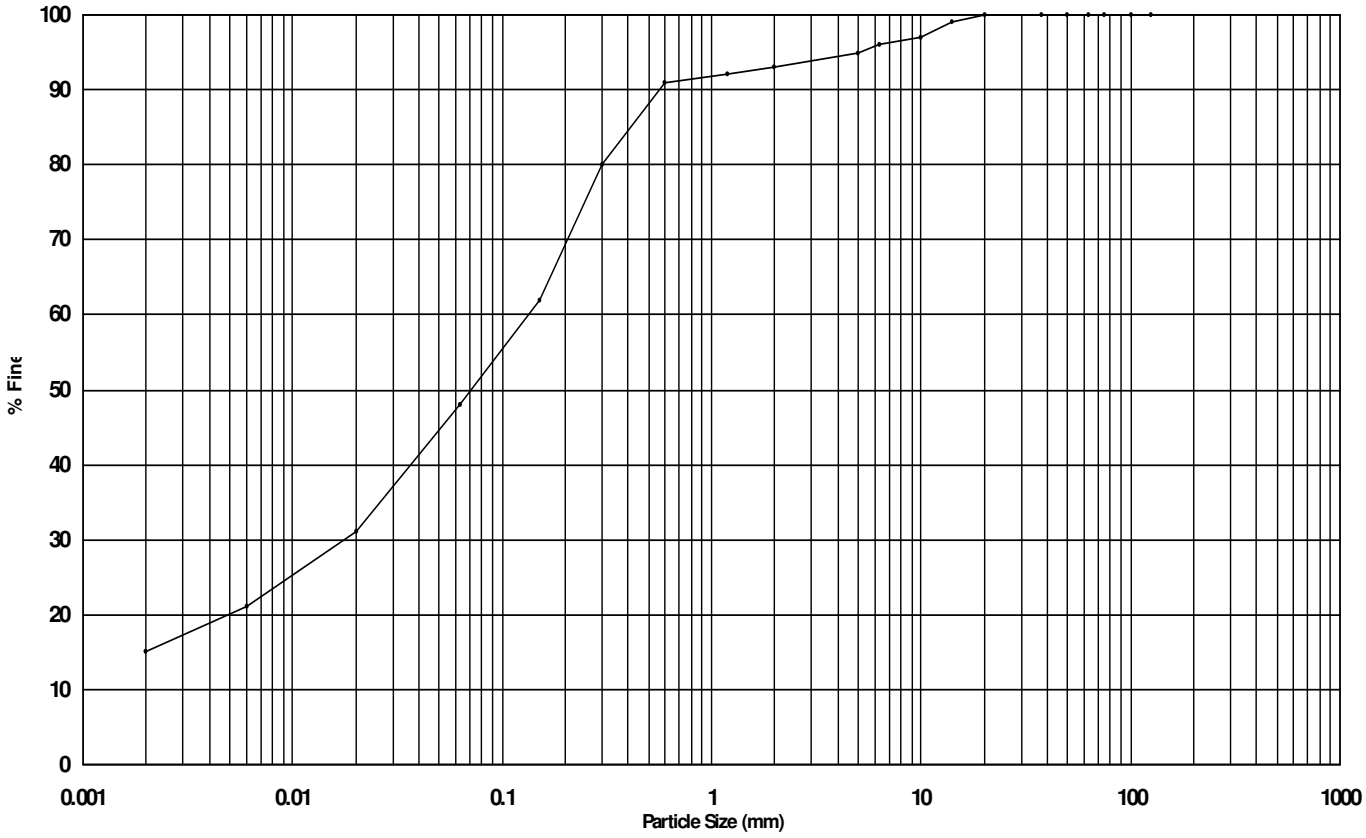
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216A
Sample Depth	3.00-3.60m
Sample Type	B
Sample Ref	N75943

Sample Description

Soft brown slightly gravelly sandy CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	15
SILT	33
SAND	45
GRAVEL	7
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	99
10 mm	97
6.3 mm	96
5 mm	95
2 mm	93
1.18 mm	92
600 µm	91
300 µm	80
150 µm	62

Size	% Finer
63 µm	48
20 µm	31
6 µm	21
2 µm	15

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis

Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.14
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

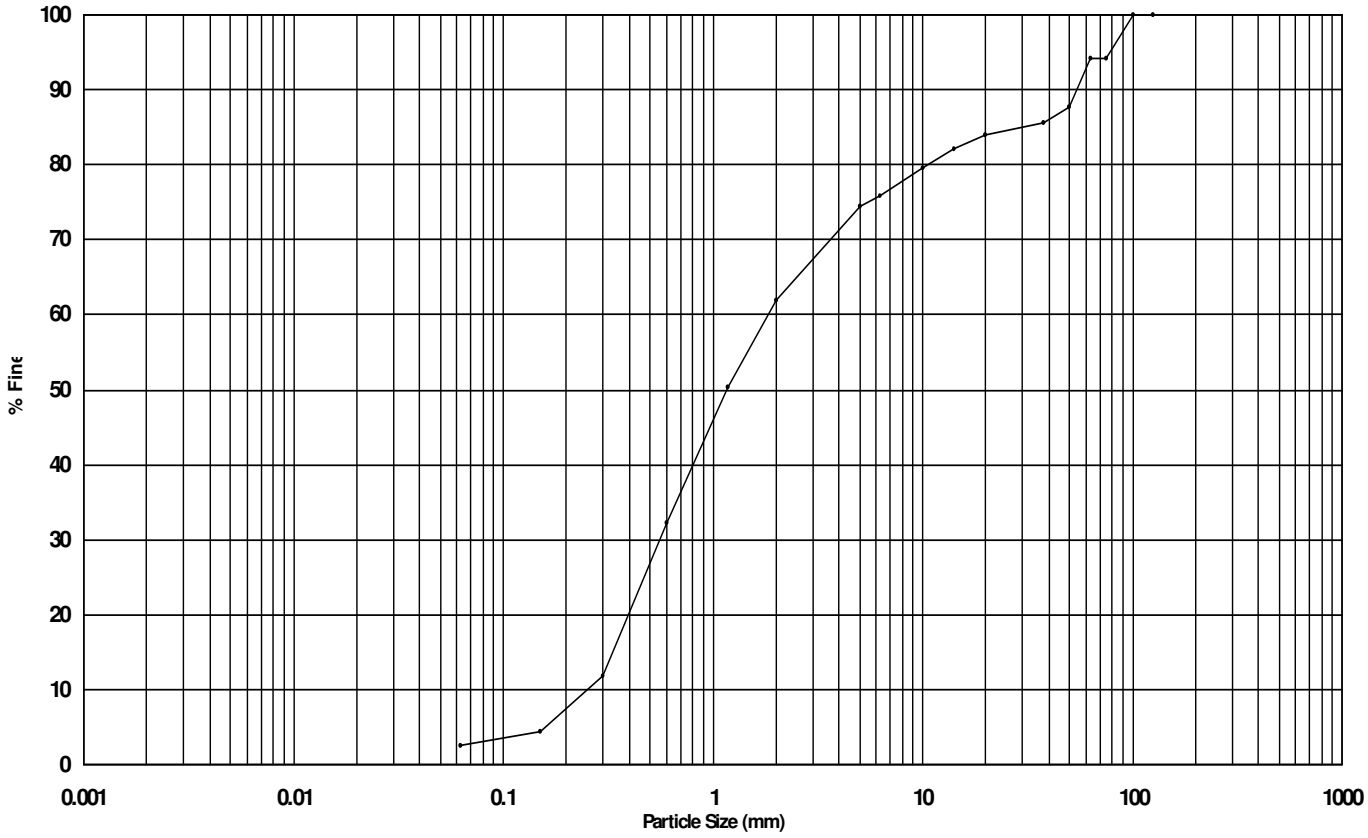
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH216A
Sample Depth	7.70-8.15m
Sample Type	B
Sample Ref	N75946

Sample Description

Grey very gravelly silty fine to coarse SAND with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	60
GRAVEL	32
COBBLES	6
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	94
63 mm	94
50 mm	88
37.5 mm	86
20 mm	84
14 mm	82
10 mm	80
6.3 mm	76
5 mm	74
2 mm	62
1.18 mm	50
600 µm	32
300 µm	12
150 µm	4

Size	% Finer
63 µm	2

Uniformity Coefficient
7.30
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

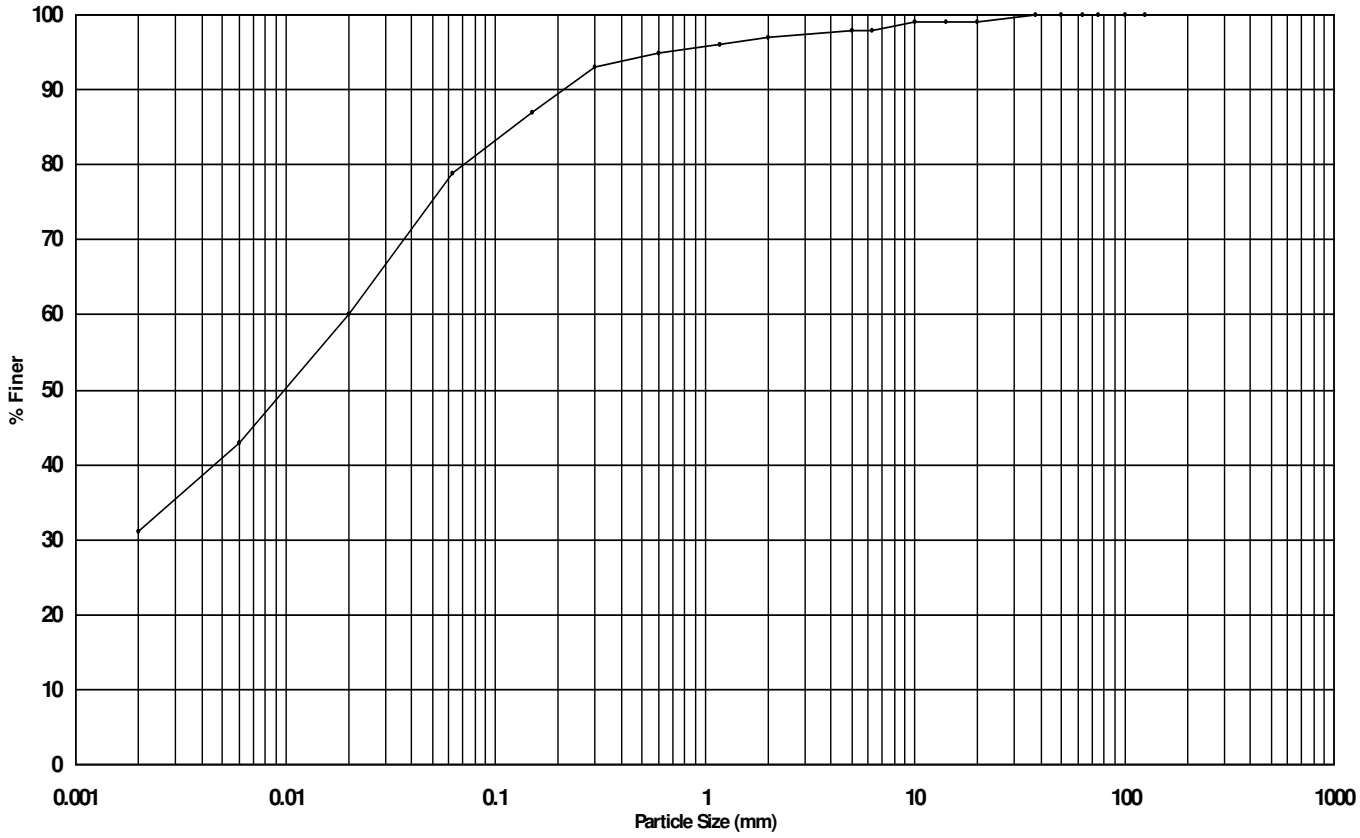
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH217
Sample Depth	2.20-2.65m
Sample Type	B
Sample Ref	N76561

Sample Description

Firm brown slightly sandy slightly gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	31
SILT	48
SAND	18
GRAVEL	3
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	99
14 mm	99
10 mm	99
6.3 mm	98
5 mm	98
2 mm	97
1.18 mm	96
600 µm	95
300 µm	93
150 µm	87

Size	% Finer
63 µm	79
20 µm	60
6 µm	43
2 µm	31

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.38
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

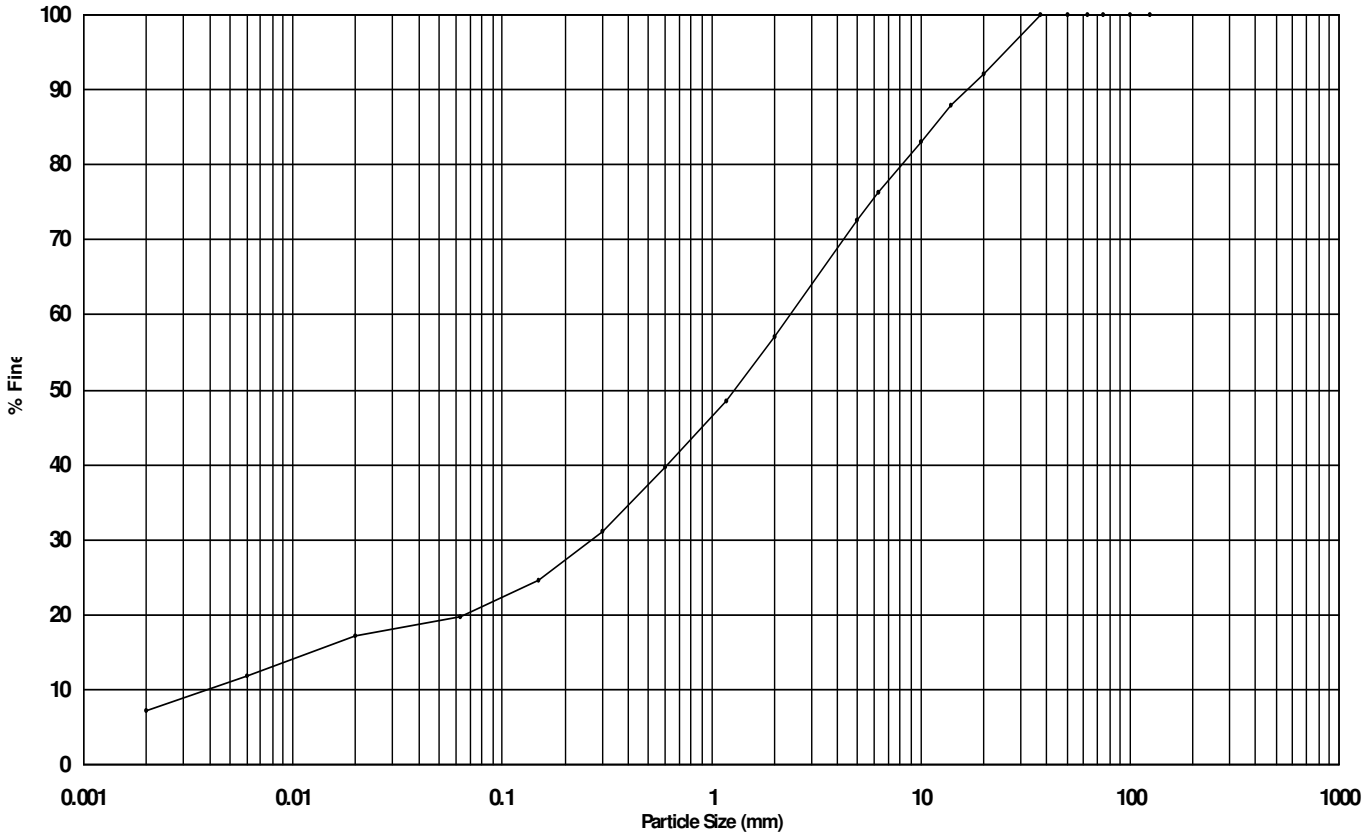
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH217
Sample Depth	5.00-5.45m
Sample Type	B
Sample Ref	N76563

Sample Description

Greyish brown very sandy clayey fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	13
SAND	37
GRAVEL	43
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	92
14 mm	88
10 mm	83
6.3 mm	76
5 mm	73
2 mm	57
1.18 mm	48
600 µm	40
300 µm	31
150 µm	25

Size	% Finer
63 µm	20
20 µm	17
6 µm	12
2 µm	7

Uniformity Coefficient
607.51

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

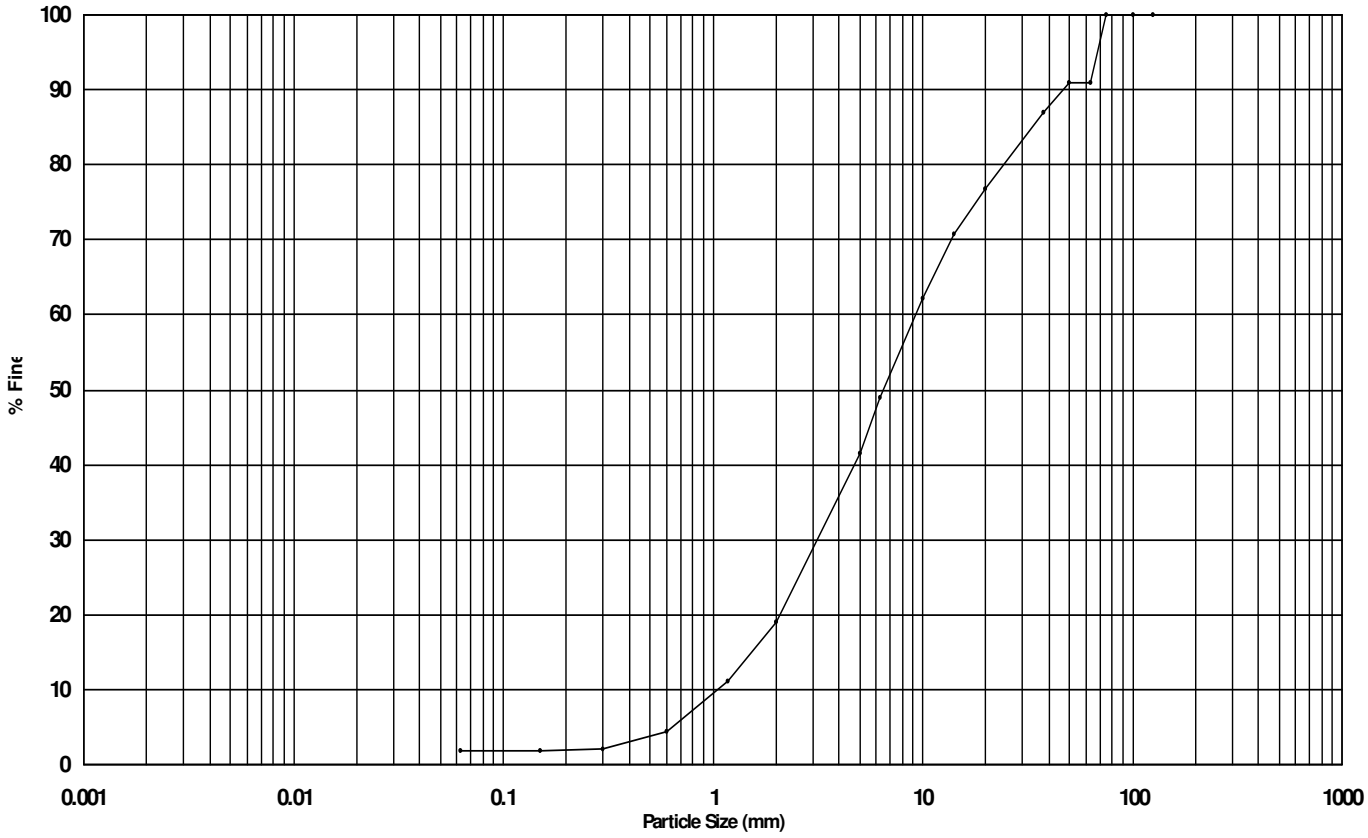
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH217
Sample Depth	6.50-6.95m
Sample Type	B
Sample Ref	N76564

Sample Description

Grey sandy slightly silty fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	17
GRAVEL	72
COBBLES	9
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	91
50 mm	91
37.5 mm	87
20 mm	77
14 mm	71
10 mm	62
6.3 mm	49
5 mm	41
2 mm	19
1.18 mm	11
600 µm	4
300 µm	2
150 µm	2

Size	% Finer
63 µm	2

Uniformity Coefficient
8.81
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

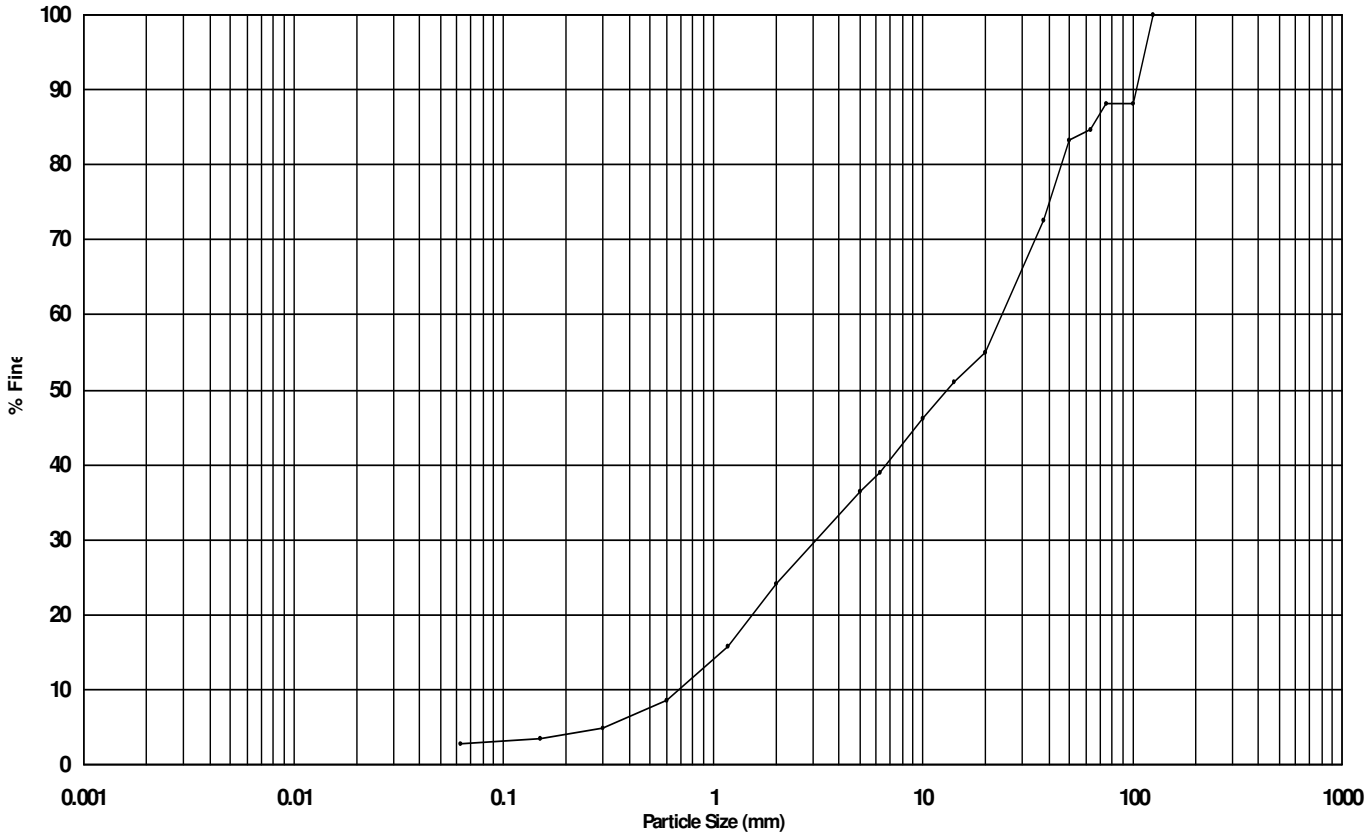
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH217
Sample Depth	10.40-10.65m
Sample Type	B
Sample Ref	N76567

Sample Description

Grey very sandy slightly clayey fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	3
SAND	21
GRAVEL	61
COBBLES	15
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	88
75 mm	88
63 mm	85
50 mm	83
37.5 mm	73
20 mm	55
14 mm	51
10 mm	46
6.3 mm	39
5 mm	36
2 mm	24
1.18 mm	16
600 µm	9
300 µm	5
150 µm	3

Size	% Finer
63 µm	3

Uniformity Coefficient
35.05
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

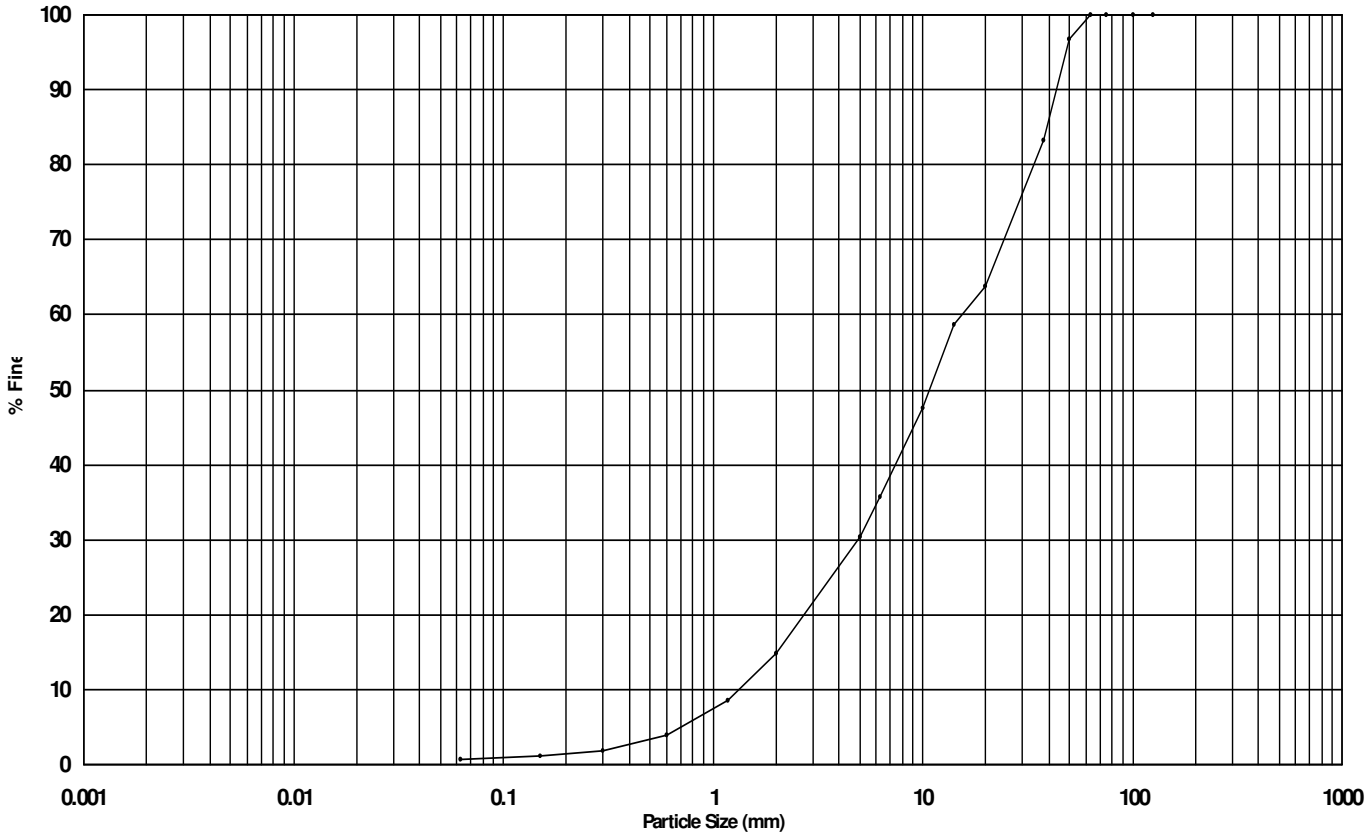
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH218
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N75993

Sample Description

Grey and brown sandy fine to coarse GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	14
GRAVEL	85
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	83
20 mm	64
14 mm	59
10 mm	48
6.3 mm	36
5 mm	30
2 mm	15
1.18 mm	8
600 µm	4
300 µm	2
150 µm	1

Size	% Finer
63 µm	1

Uniformity Coefficient
11.46
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

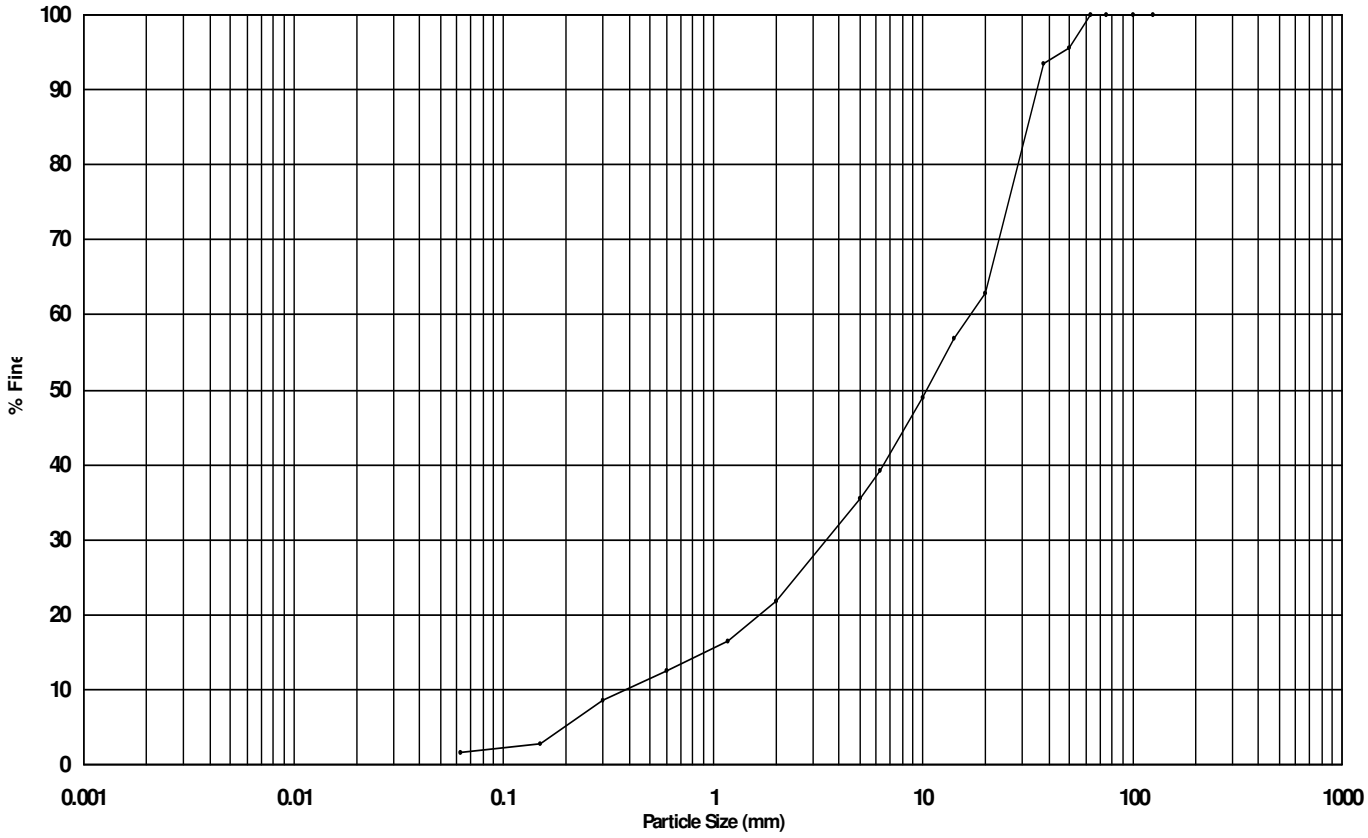
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH218
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N75994

Sample Description

Grey and brown sandy slightly silty fine to coarse GRAVEL.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	20
GRAVEL	78
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	93
20 mm	63
14 mm	57
10 mm	49
6.3 mm	39
5 mm	36
2 mm	22
1.18 mm	17
600 µm	13
300 µm	9
150 µm	3

Size	% Finer
63 µm	2

Uniformity Coefficient
44.63
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

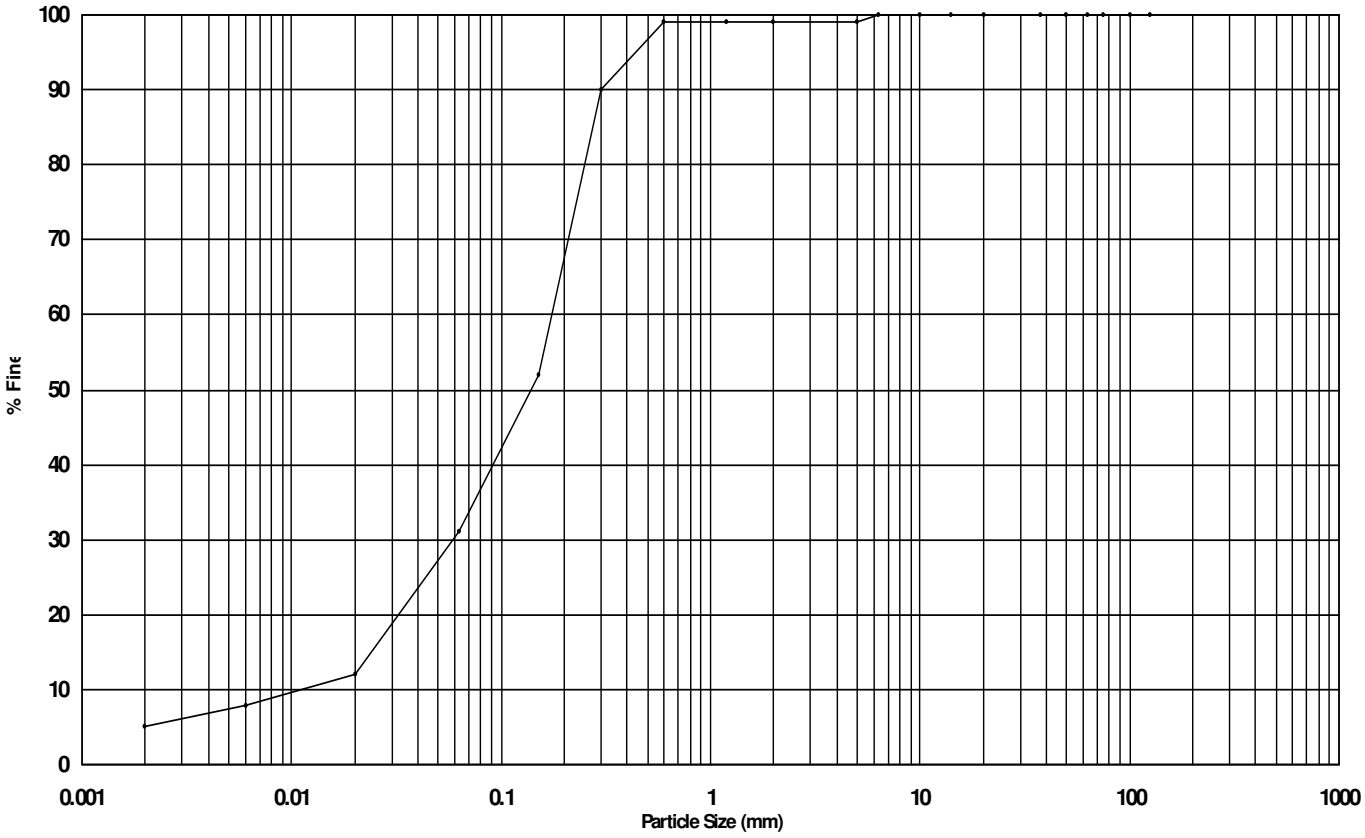
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH218
Sample Depth	6.00-6.45m
Sample Type	B
Sample Ref	N75995

Sample Description

Brown silty fine to medium SAND with occasional pockets of soft silty clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	5
SILT	26
SAND	68
GRAVEL	1
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	99
2 mm	99
1.18 mm	99
600 µm	99
300 µm	90
150 µm	52

Size	% Finer
63 µm	31
20 µm	12
6 µm	8
2 µm	5

Uniformity Coefficient
13.96

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.10
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

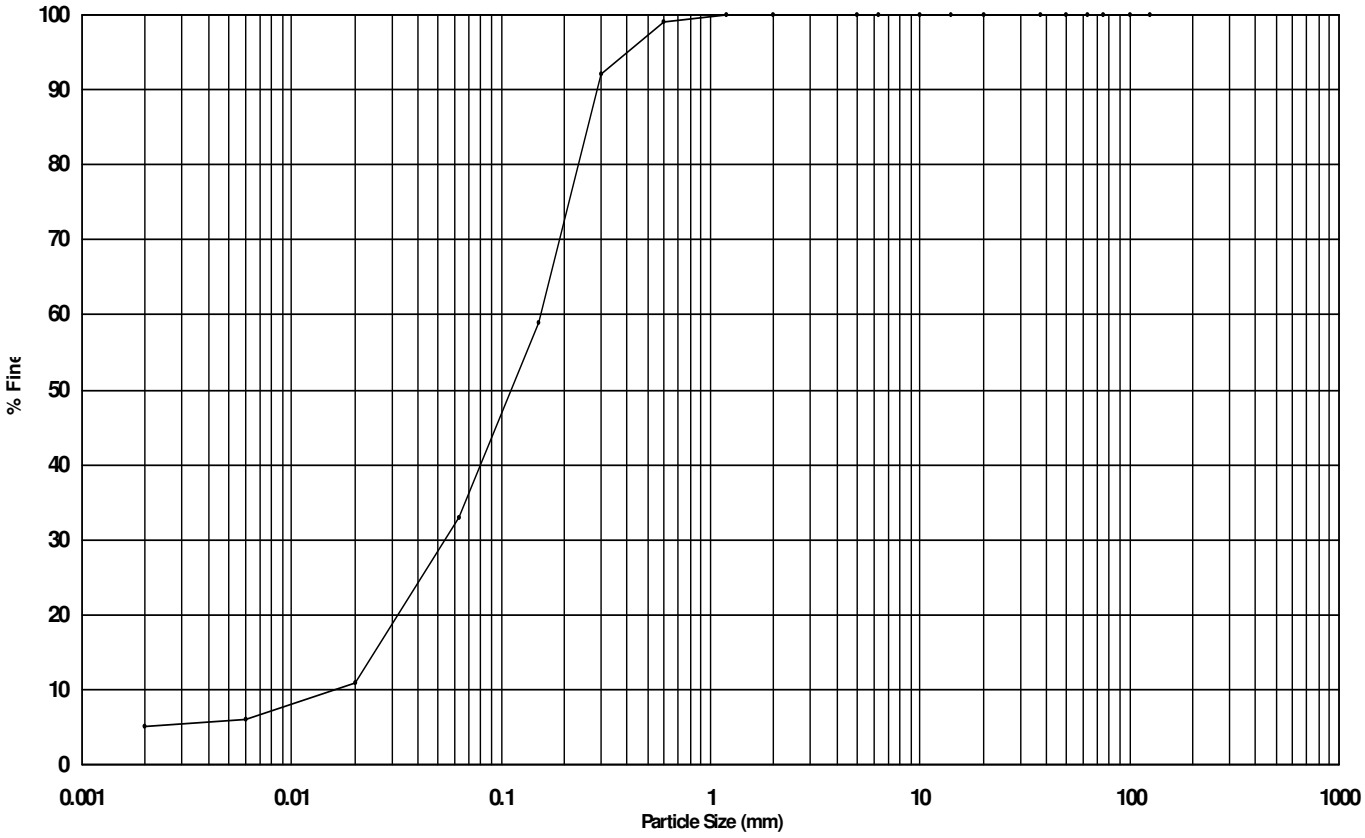
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH218
Sample Depth	7.50-7.95m
Sample Type	B
Sample Ref	N75996

Sample Description

Brown silty fine to medium SAND with occasional pockets of soft silty clay.



Classification												
	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	5
SILT	28
SAND	67
GRAVEL	0
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
2 mm	100
1.18 mm	100
600 µm	99
300 µm	92
150 µm	59

Size	% Finer
63 µm	33
20 µm	11
6 µm	6
2 µm	5

Uniformity Coefficient
9.55

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.16
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

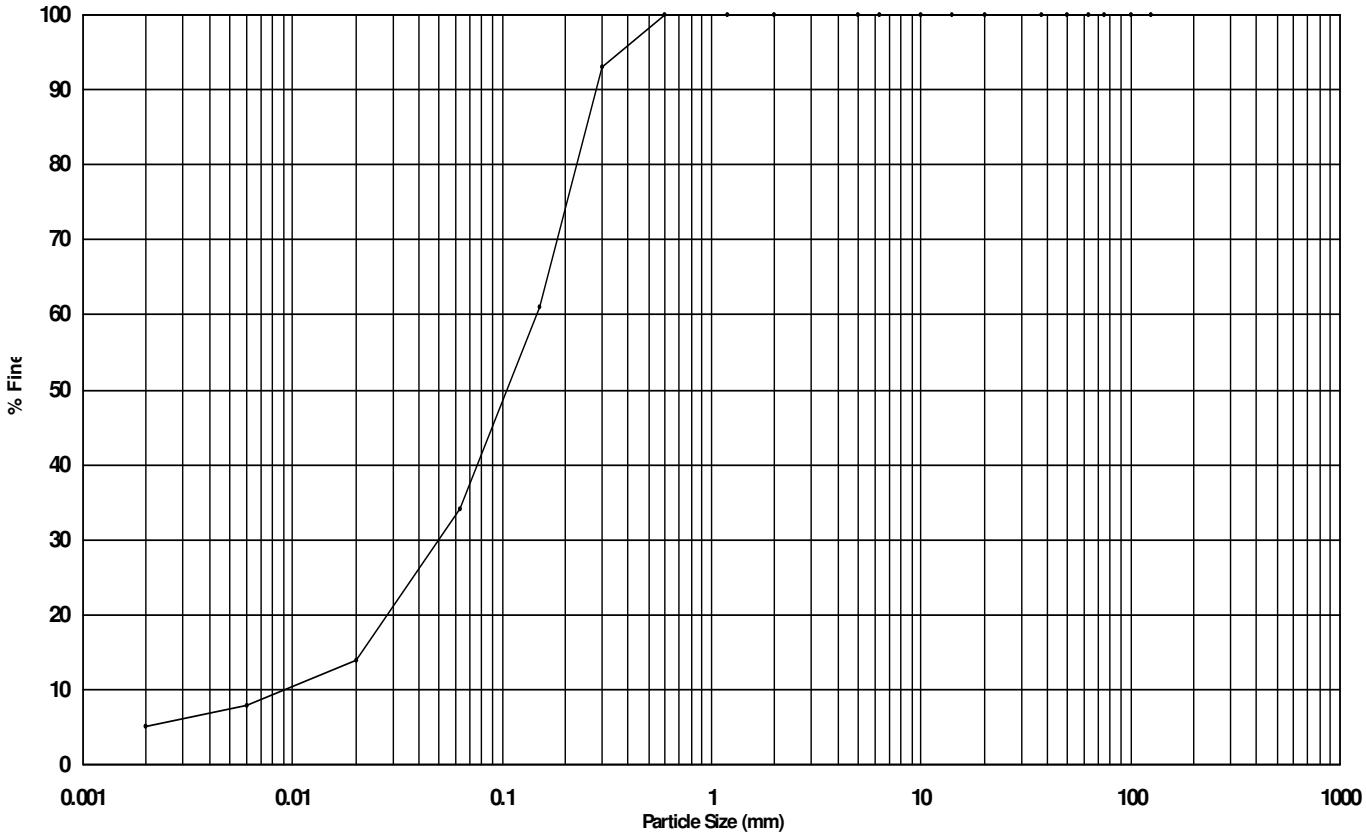
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH218
Sample Depth	9.00-9.45m
Sample Type	D
Sample Ref	N75997

Sample Description

Brown silty fine to medium SAND with occasional pockets of soft silty clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	5
SILT	29
SAND	66
GRAVEL	0
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
2 mm	100
1.18 mm	100
600 µm	100
300 µm	93
150 µm	61

Size	% Finer
63 µm	34
20 µm	14
6 µm	8
2 µm	5

Uniformity Coefficient
17.44

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

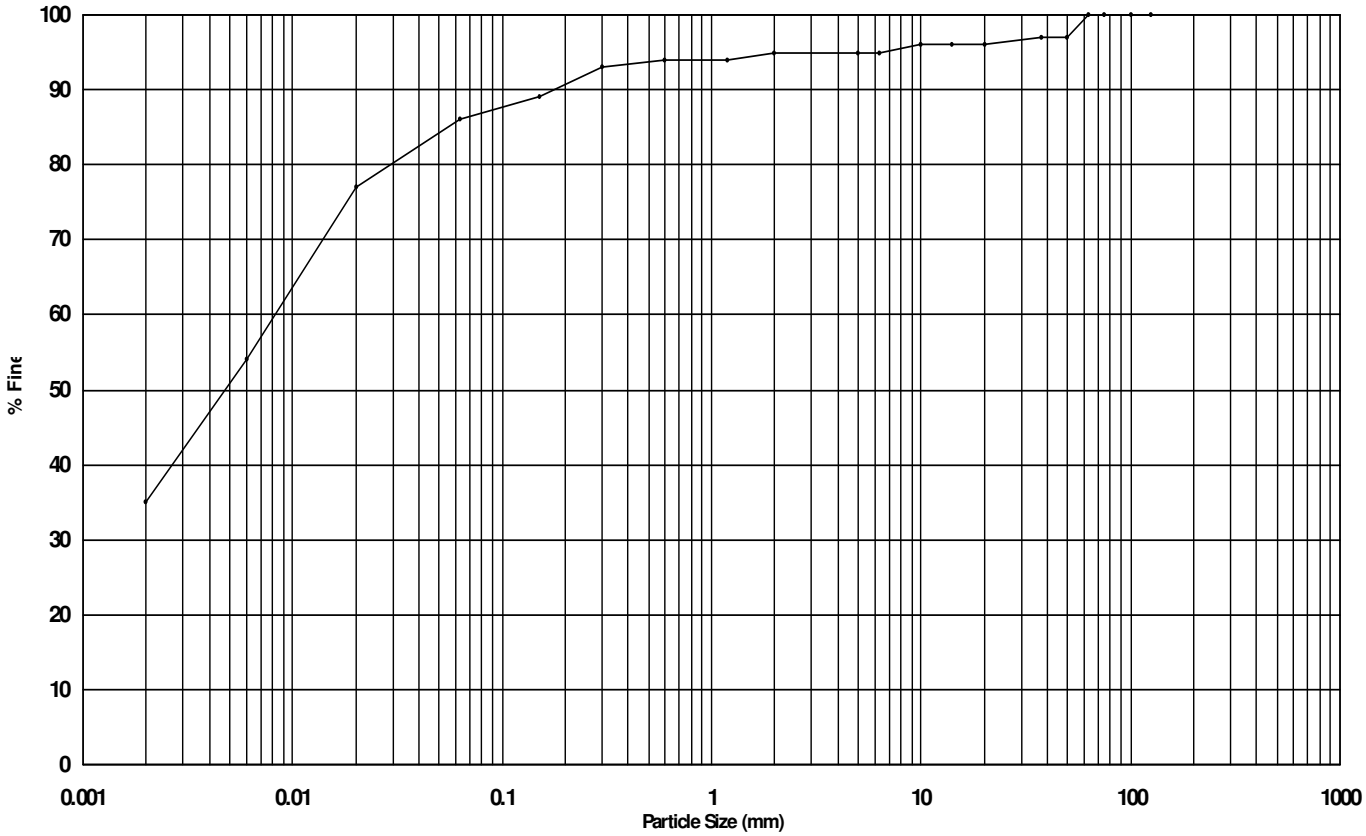
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH219
Sample Depth	5.00-5.45m
Sample Type	B
Sample Ref	N75952

Sample Description

Very soft greyish blue slightly sandy slightly gravelly CLAY with some wood fragments.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	35
SILT	51
SAND	9
GRAVEL	5
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	97
20 mm	96
14 mm	96
10 mm	96
6.3 mm	95
5 mm	95
2 mm	95
1.18 mm	94
600 µm	94
300 µm	93
150 µm	89

Size	% Finer
63 µm	86
20 µm	77
6 µm	54
2 µm	35

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	1.22
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

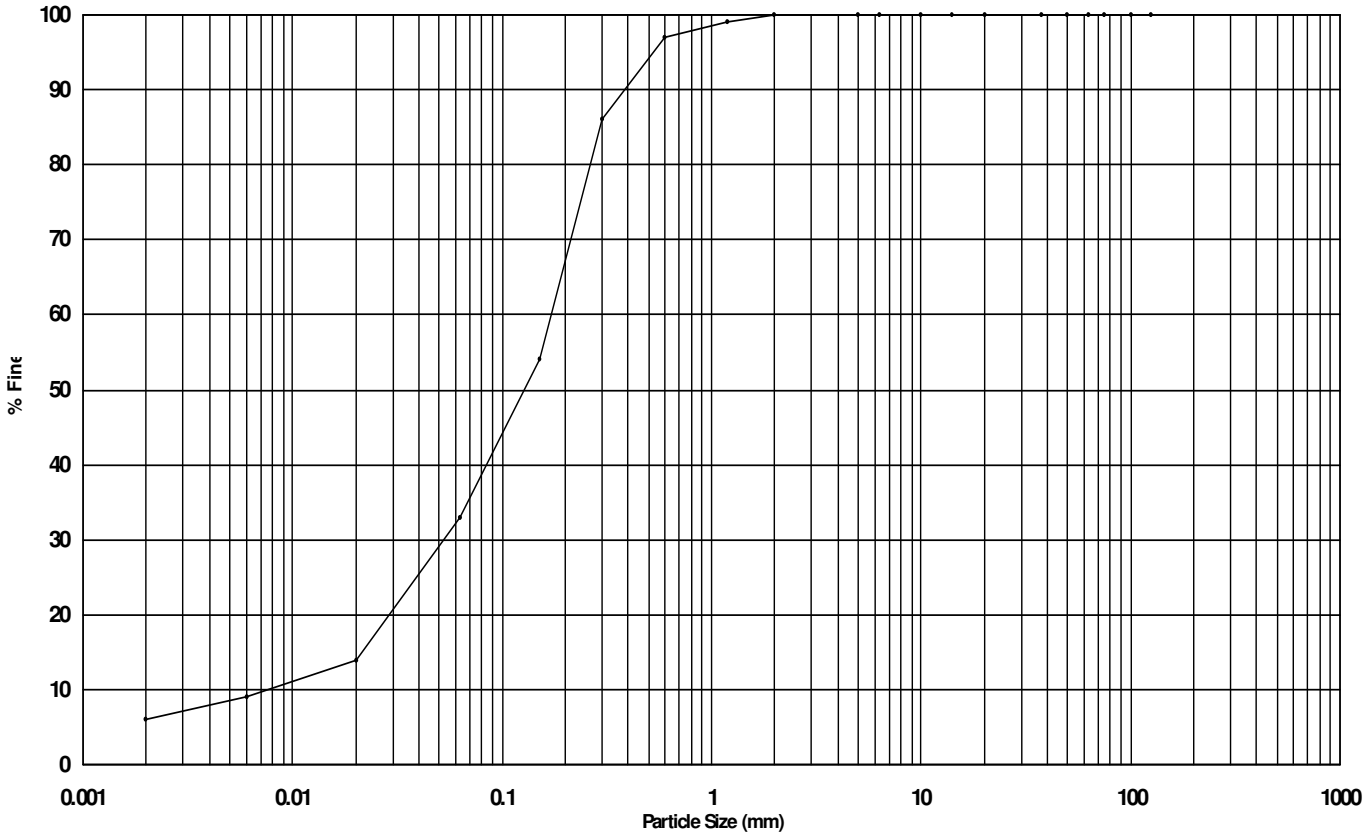
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

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Hole	BH219
Sample Depth	18.00-18.45m
Sample Type	B
Sample Ref	N75954

Sample Description

Greyish brown very silty fine to coarse SAND with pockets of soft sandy silty clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	27
SAND	67
GRAVEL	0
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
2 mm	100
1.18 mm	99
600 µm	97
300 µm	86
150 µm	54

Size	% Finer
63 µm	33
20 µm	14
6 µm	9
2 µm	6

Uniformity Coefficient
23.45

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.30
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

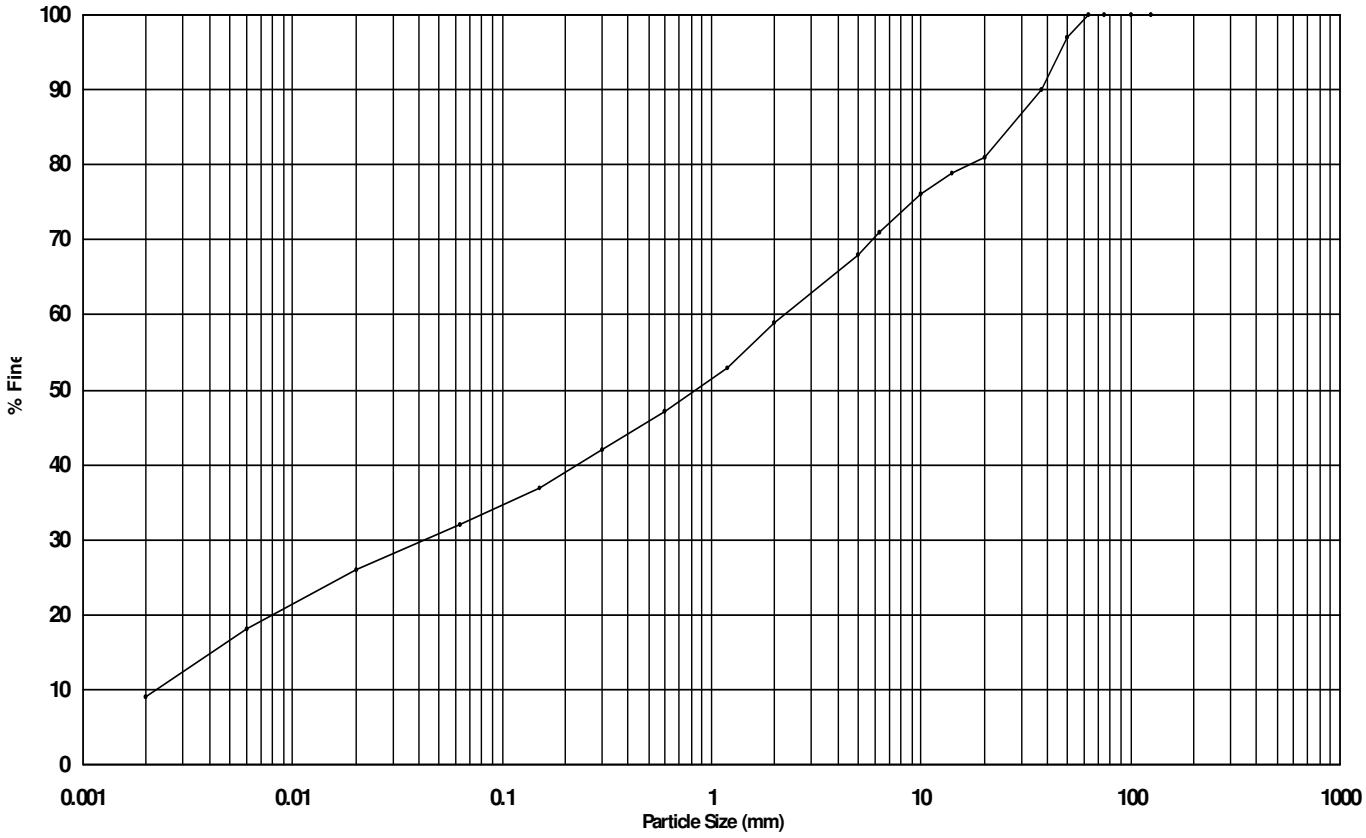
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH221
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76387

Sample Description

Firm to stiff yellowish brown slightly sandy gravelly clayey SILT.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	23
SAND	27
GRAVEL	41
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	90
20 mm	81
14 mm	79
10 mm	76
6.3 mm	71
5 mm	68
2 mm	59
1.18 mm	53
600 µm	47
300 µm	42
150 µm	37

Size	% Finer
63 µm	32
20 µm	26
6 µm	18
2 µm	9

Uniformity Coefficient
1068.77

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

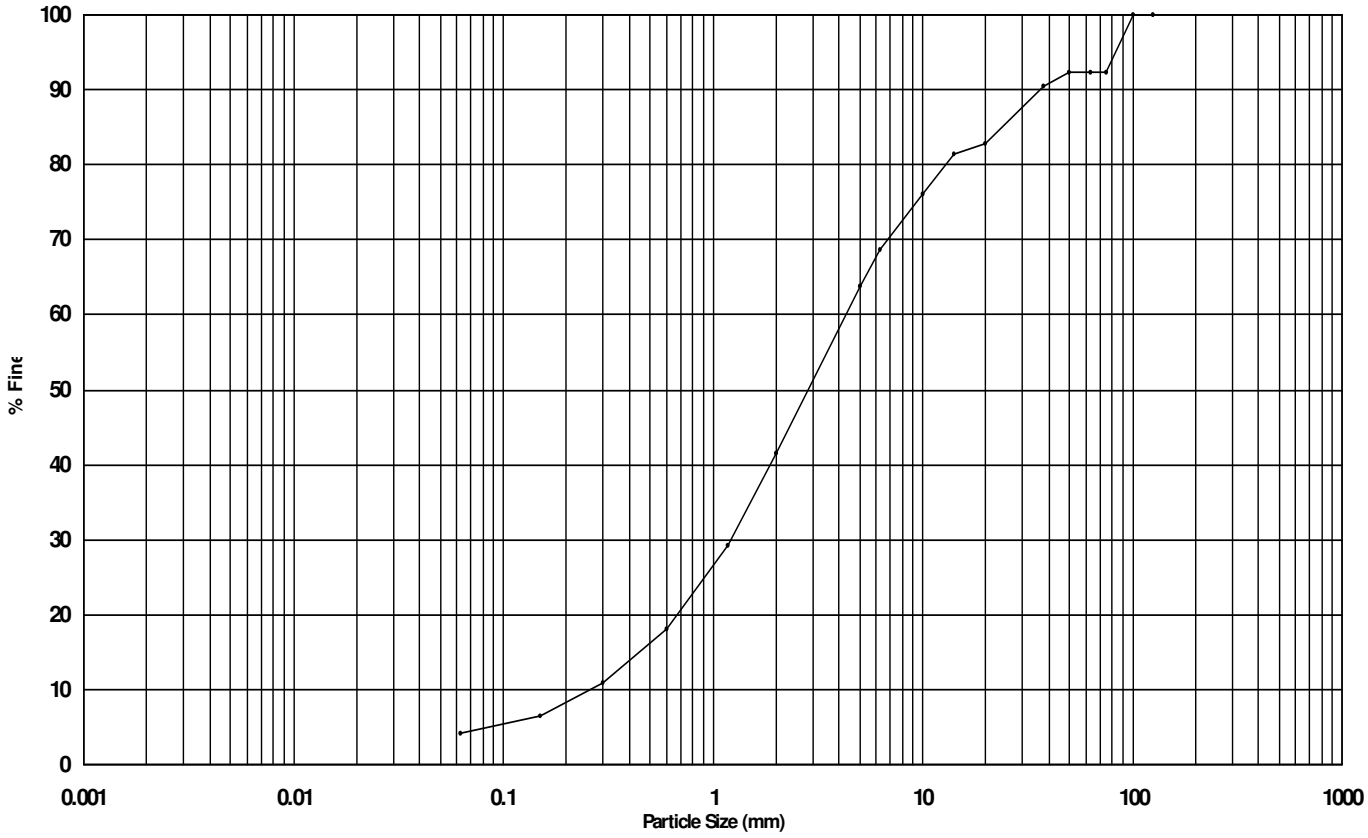
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH221
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N76390

Sample Description

Brown very sandy clayey fine to coarse GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	38
GRAVEL	50
COBBLES	8
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	92
63 mm	92
50 mm	92
37.5 mm	91
20 mm	83
14 mm	81
10 mm	76
6.3 mm	69
5 mm	64
2 mm	42
1.18 mm	29
600 µm	18
300 µm	11
150 µm	6

Size	% Finer
63 µm	4

Uniformity Coefficient
16.58
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

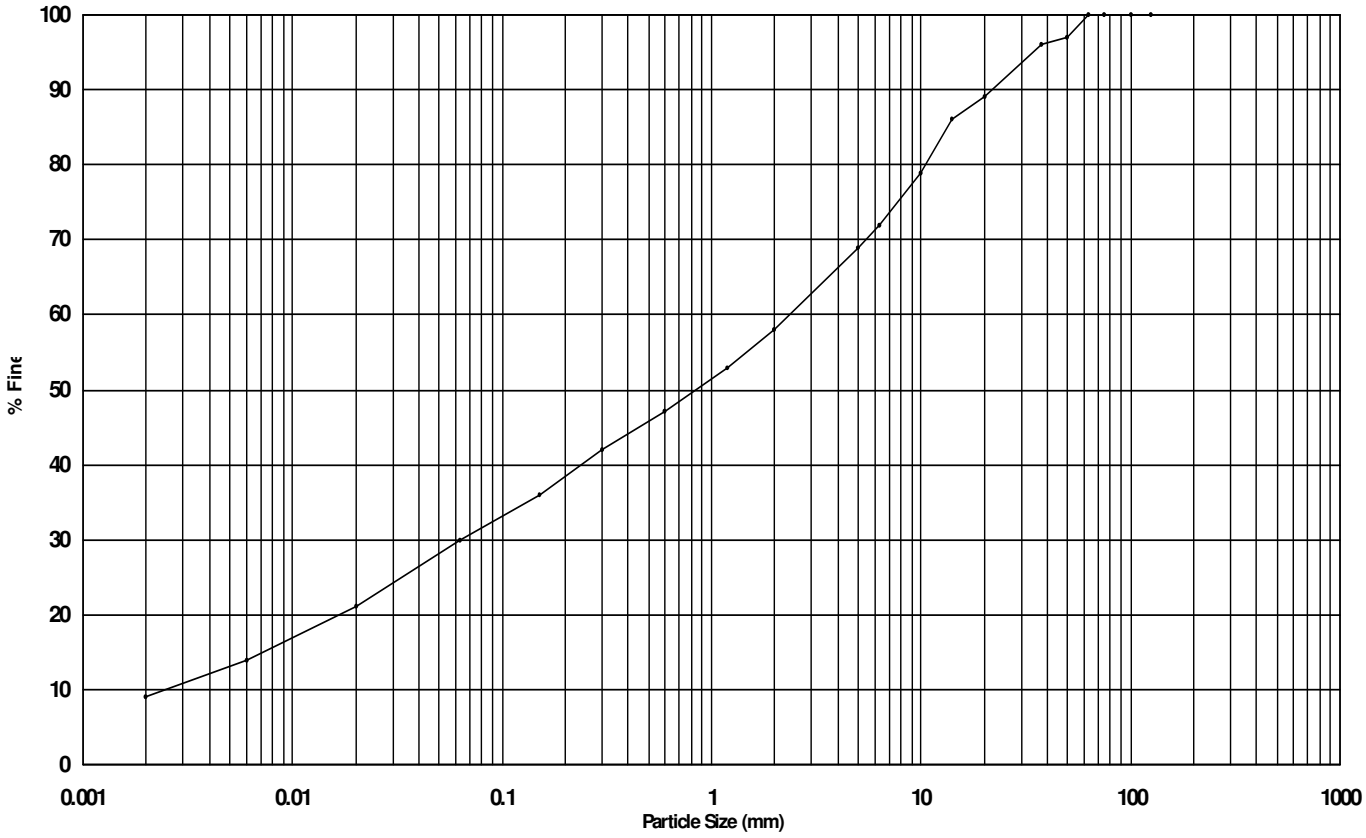
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

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Hole	BH228
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76042

Sample Description

Stiff brown slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	21
SAND	28
GRAVEL	42
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	96
20 mm	89
14 mm	86
10 mm	79
6.3 mm	72
5 mm	69
2 mm	58
1.18 mm	53
600 µm	47
300 µm	42
150 µm	36

Size	% Finer
63 µm	30
20 µm	21
6 µm	14
2 µm	9

Uniformity Coefficient
898.20

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.83
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

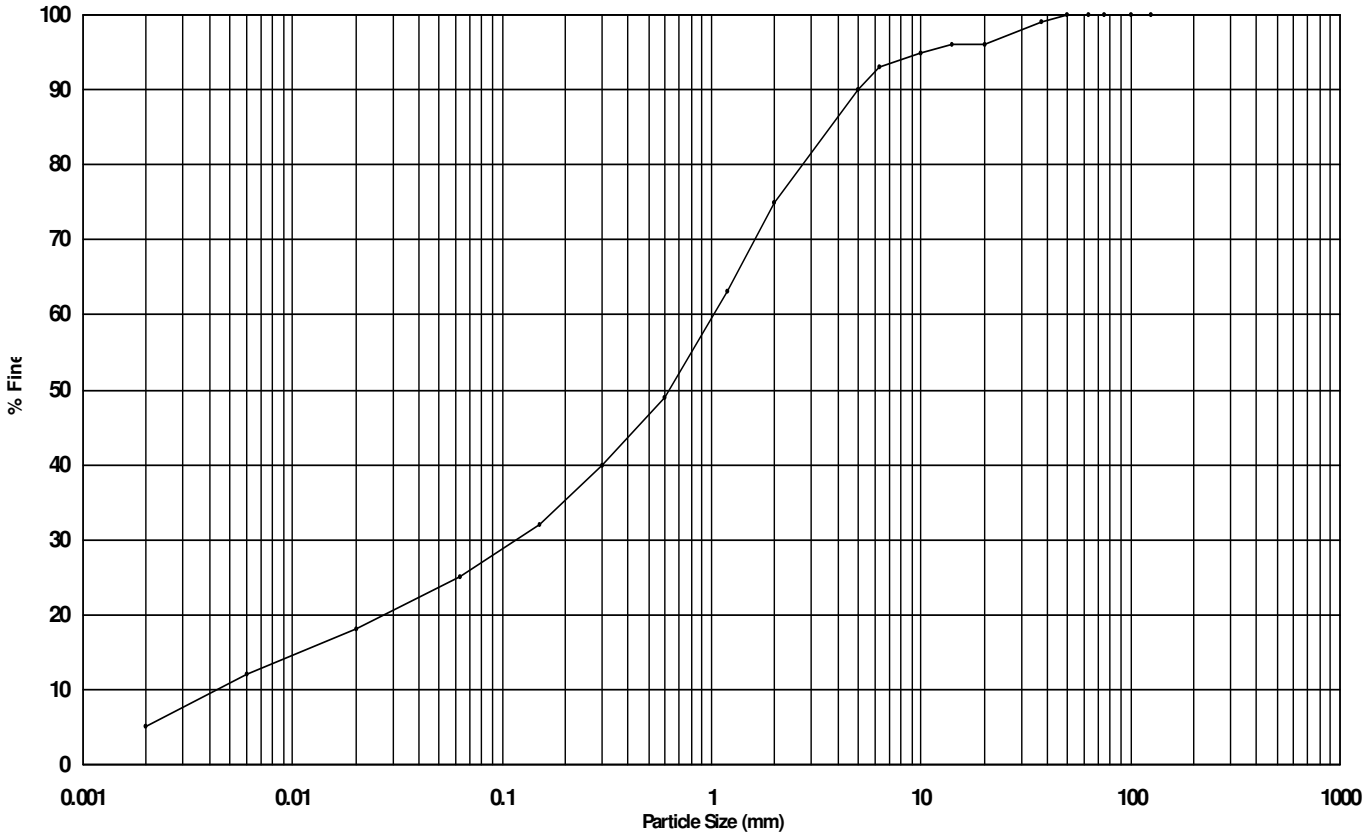
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

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Hole	BHWS101
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76325

Sample Description

MADE GROUND: Grey very gravelly very clayey fine to coarse sand.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	5
SILT	20
SAND	50
GRAVEL	25
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	96
14 mm	96
10 mm	95
6.3 mm	93
5 mm	90
2 mm	75
1.18 mm	63
600 µm	49
300 µm	40
150 µm	32

Size	% Finer
63 µm	25
20 µm	18
6 µm	12
2 µm	5

Uniformity Coefficient
234.25

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.09
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

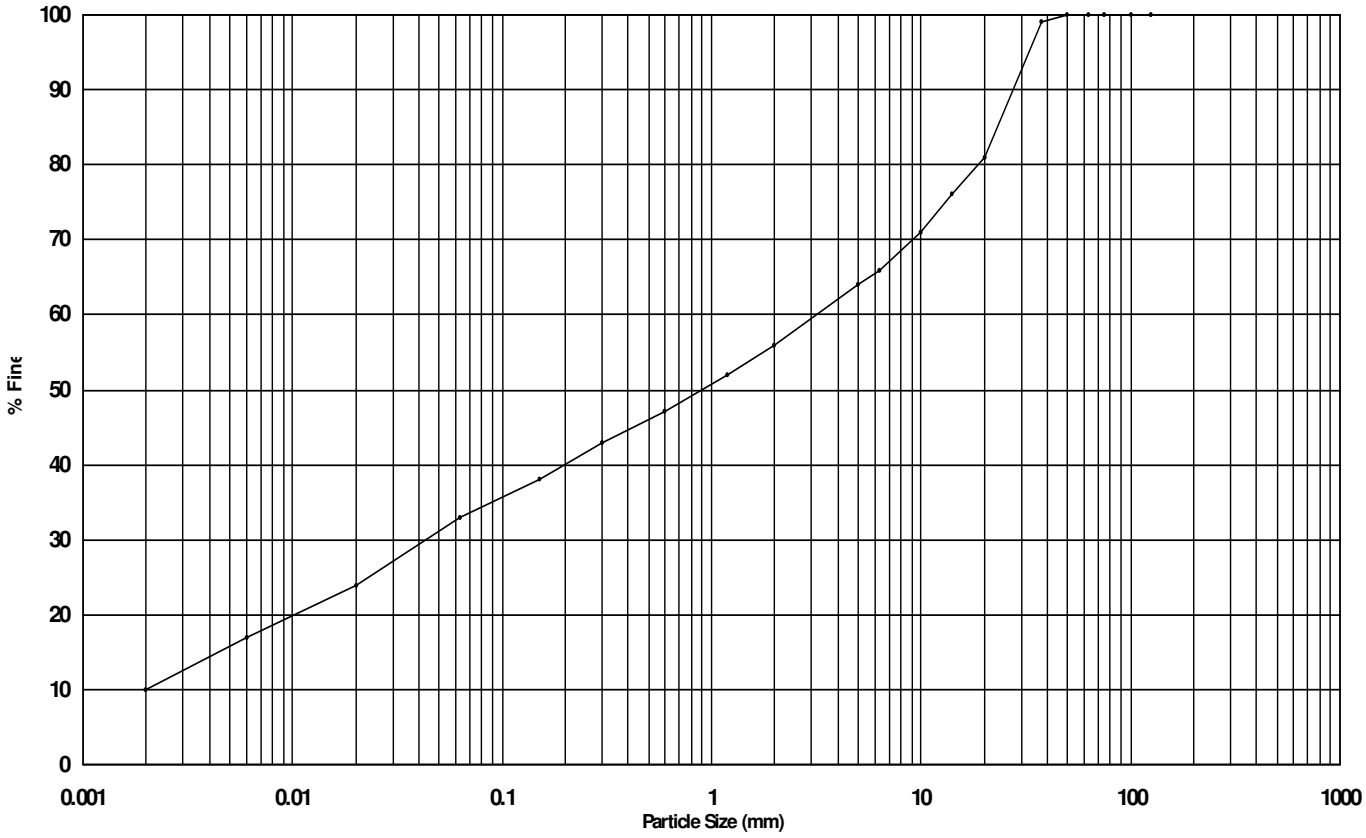
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP201
Sample Depth	1.00-2.00m
Sample Type	B
Sample Ref	N76001

Sample Description

MADE GROUND: Yellowish brown very sandy very clayey fine to coarse gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	10
SILT	23
SAND	23
GRAVEL	44
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	81
14 mm	76
10 mm	71
6.3 mm	66
5 mm	64
2 mm	56
1.18 mm	52
600 µm	47
300 µm	43
150 µm	38

Size	% Finer
63 µm	33
20 µm	24
6 µm	17
2 µm	10

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.66
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

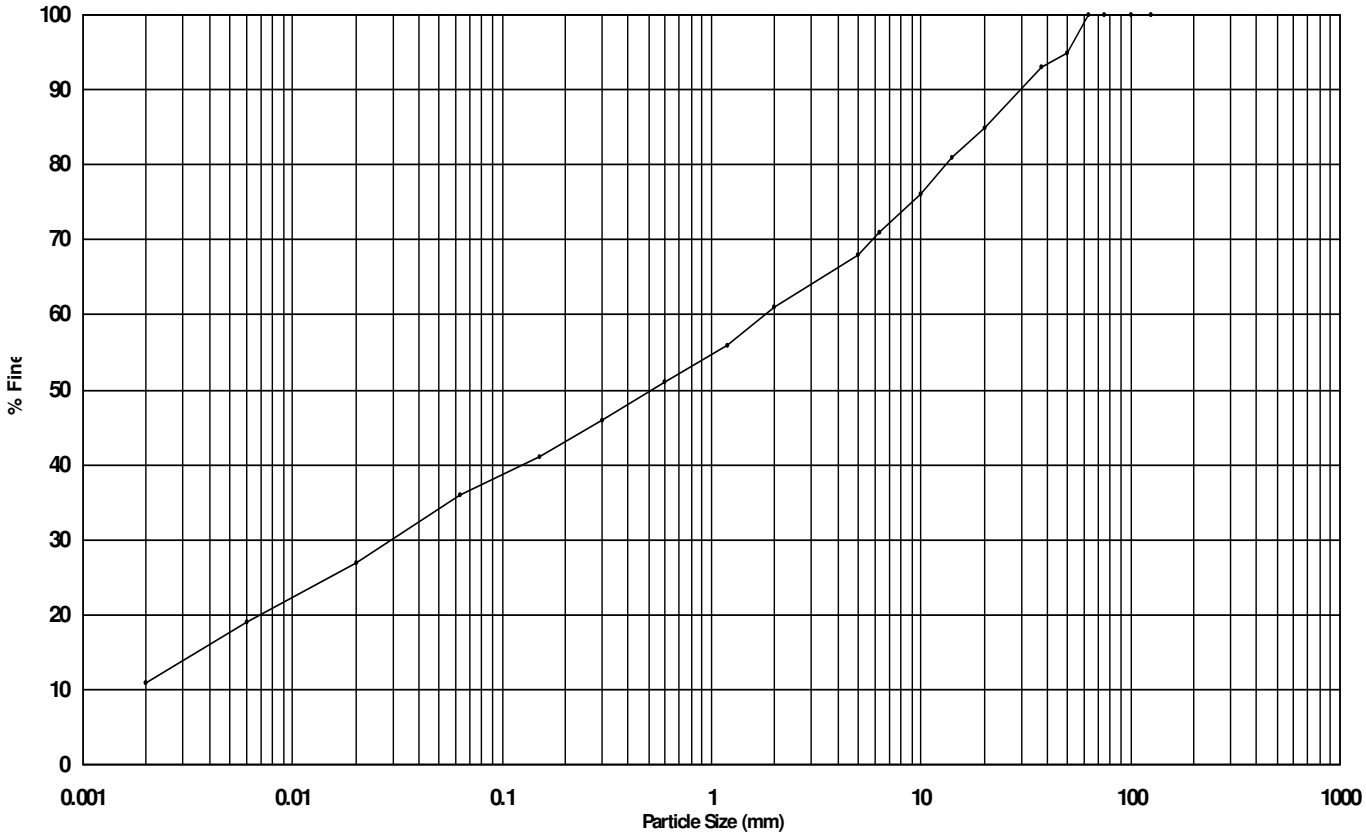
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP201
Sample Depth	3.10-3.40m
Sample Type	B
Sample Ref	N76002

Sample Description

Firm grey slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	25
SAND	25
GRAVEL	39
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	95
37.5 mm	93
20 mm	85
14 mm	81
10 mm	76
6.3 mm	71
5 mm	68
2 mm	61
1.18 mm	56
600 µm	51
300 µm	46
150 µm	41

Size	% Finer
63 µm	36
20 µm	27
6 µm	19
2 µm	11

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

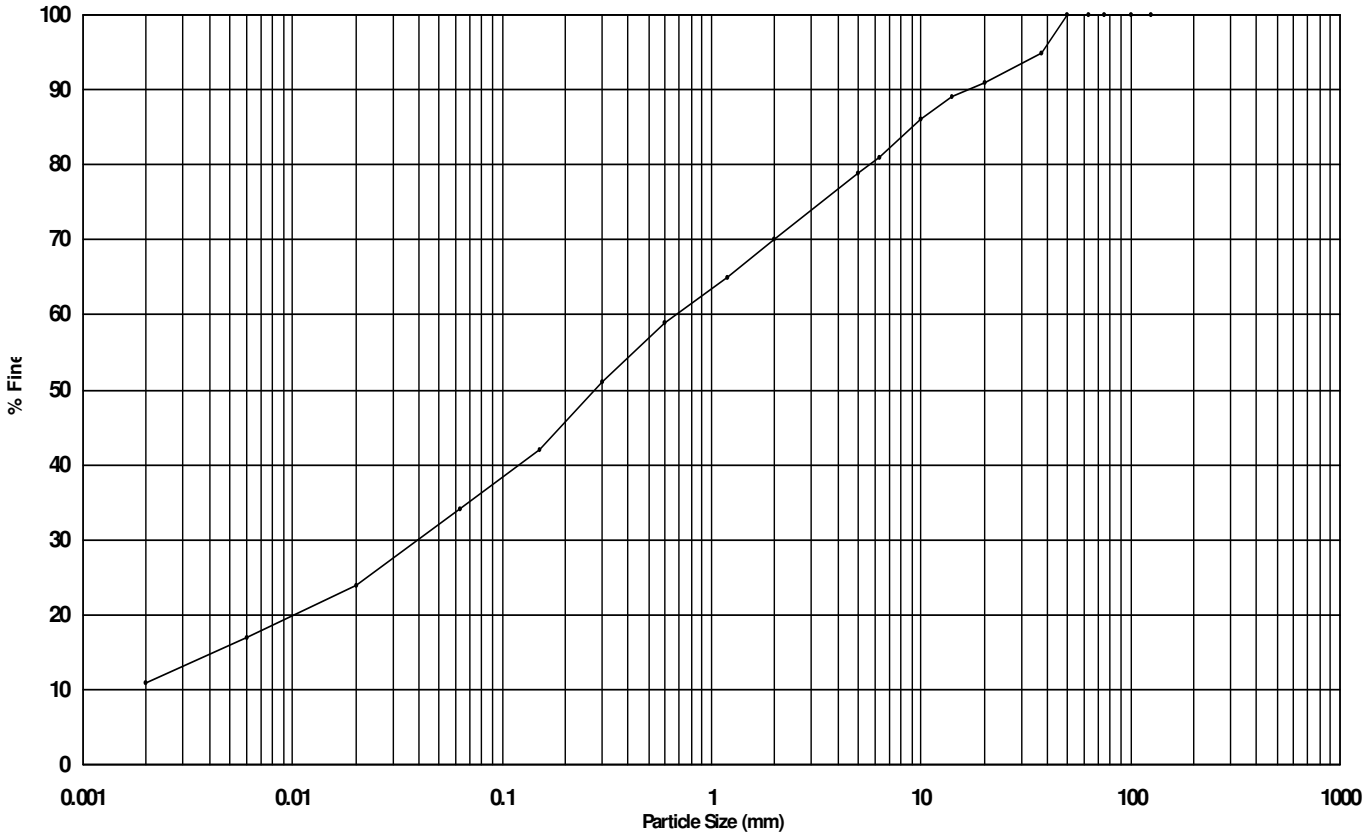
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP202
Sample Depth	1.00-1.50m
Sample Type	B
Sample Ref	N76003

Sample Description

Reddish brown very clayey SAND and GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	23
SAND	36
GRAVEL	30
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	95
20 mm	91
14 mm	89
10 mm	86
6.3 mm	81
5 mm	79
2 mm	70
1.18 mm	65
600 µm	59
300 µm	51
150 µm	42

Size	% Finer
63 µm	34
20 µm	24
6 µm	17
2 µm	11

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.06
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

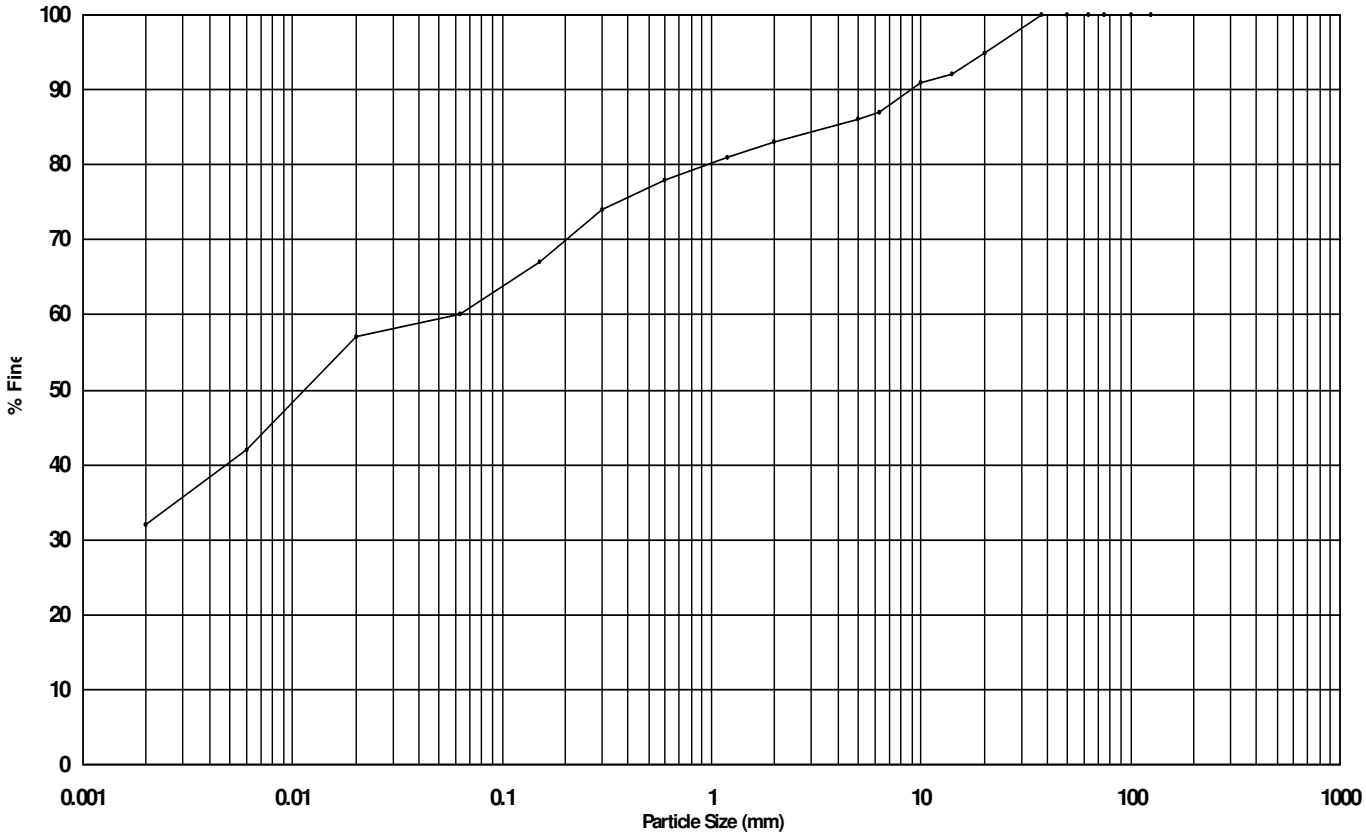
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP202
Sample Depth	2.50-3.50m
Sample Type	B
Sample Ref	N76004

Sample Description

Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	32
SILT	28
SAND	23
GRAVEL	17
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	95
14 mm	92
10 mm	91
6.3 mm	87
5 mm	86
2 mm	83
1.18 mm	81
600 µm	78
300 µm	74
150 µm	67

Size	% Finer
63 µm	60
20 µm	57
6 µm	42
2 µm	32

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

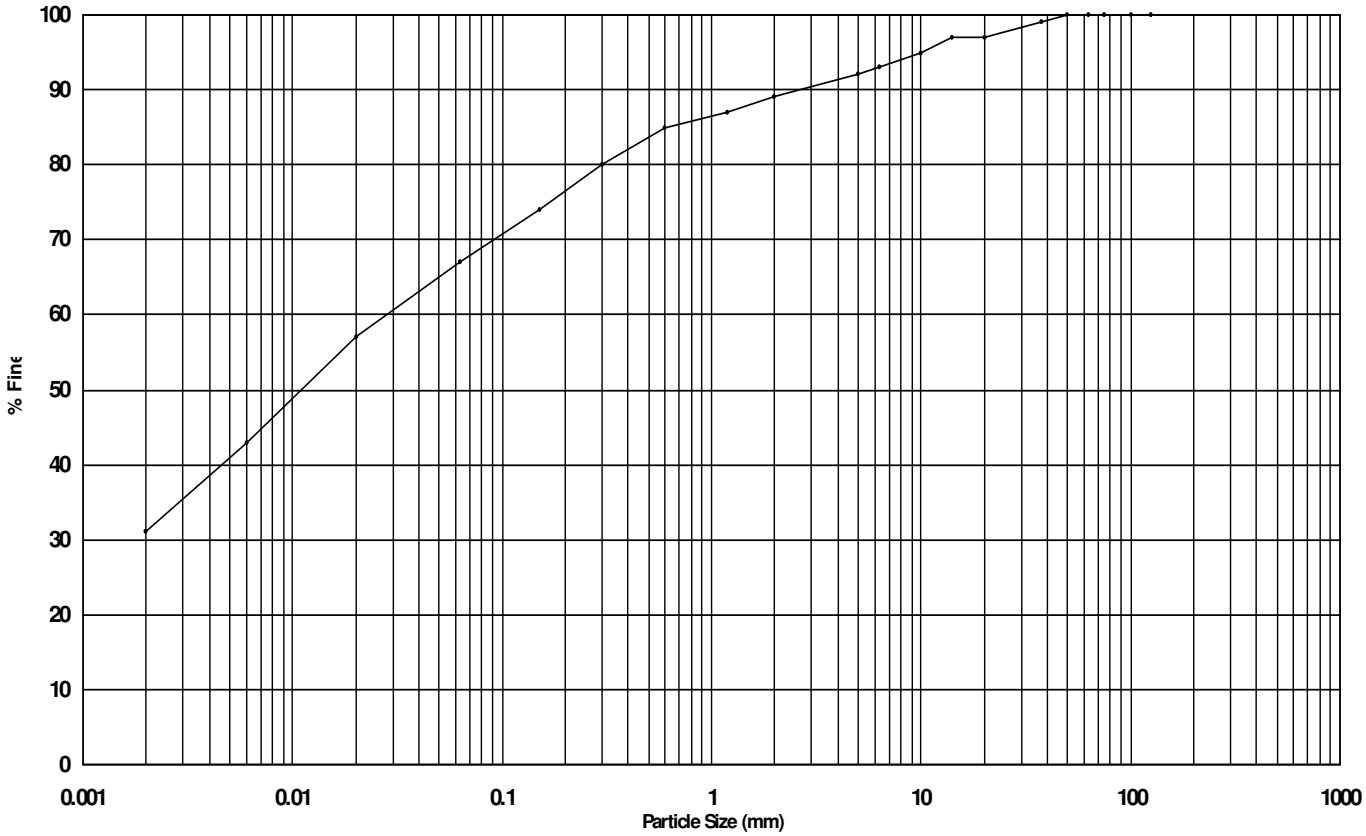
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP203
Sample Depth	0.00-0.80m
Sample Type	B
Sample Ref	N76005

Sample Description

MADE GROUND: Soft brown slightly sandy slightly gravelly clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	31
SILT	36
SAND	22
GRAVEL	11
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	97
14 mm	97
10 mm	95
6.3 mm	93
5 mm	92
2 mm	89
1.18 mm	87
600 µm	85
300 µm	80
150 µm	74

Size	% Finer
63 µm	67
20 µm	57
6 µm	43
2 µm	31

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.43
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

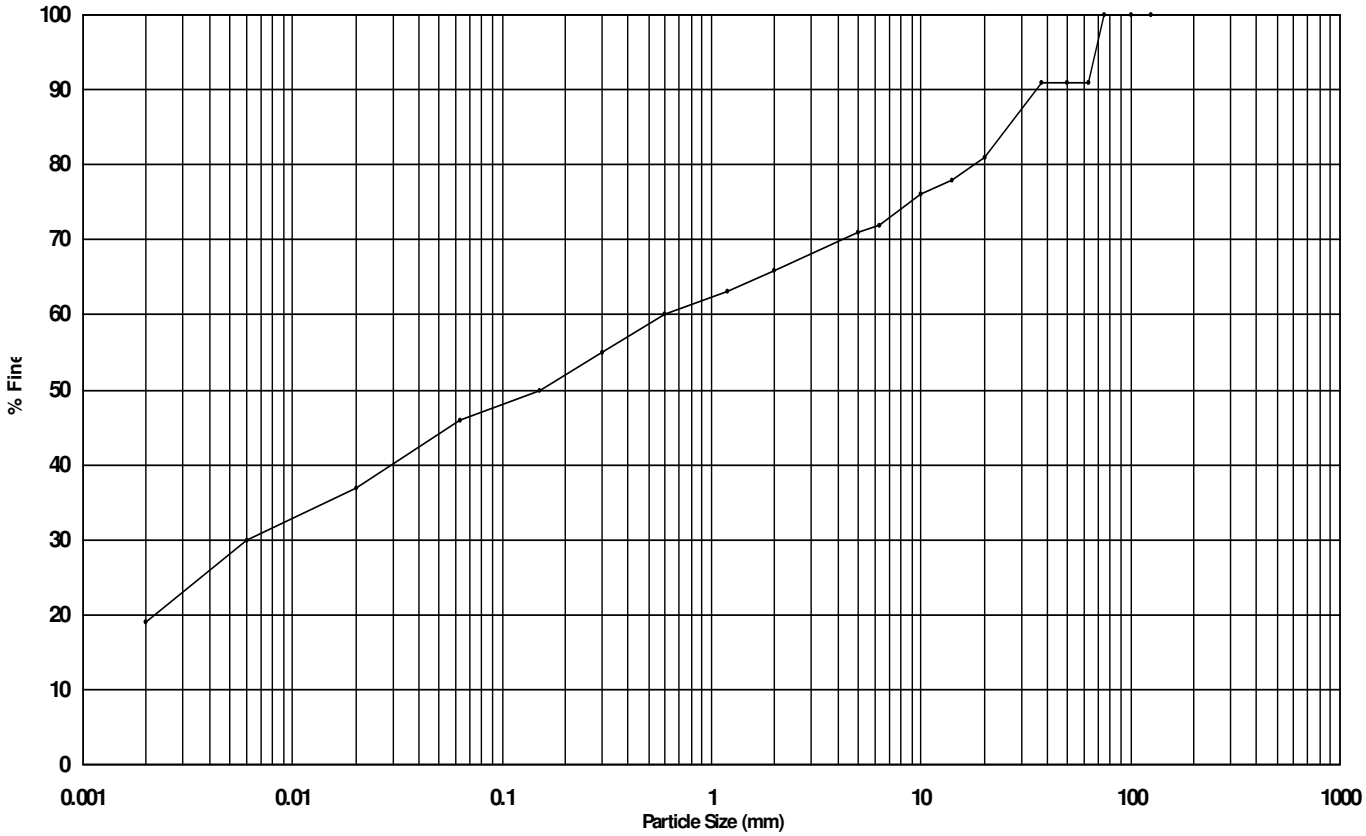
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP203
Sample Depth	3.00-3.80m
Sample Type	B
Sample Ref	N76007

Sample Description

Soft grey mottled black slightly sandy slightly gravelly clayey SILT.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	19
SILT	27
SAND	20
GRAVEL	25
COBBLES	9
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	91
50 mm	91
37.5 mm	91
20 mm	81
14 mm	78
10 mm	76
6.3 mm	72
5 mm	71
2 mm	66
1.18 mm	63
600 µm	60
300 µm	55
150 µm	50

Size	% Finer
63 µm	46
20 µm	37
6 µm	30
2 µm	19

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	22.61
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

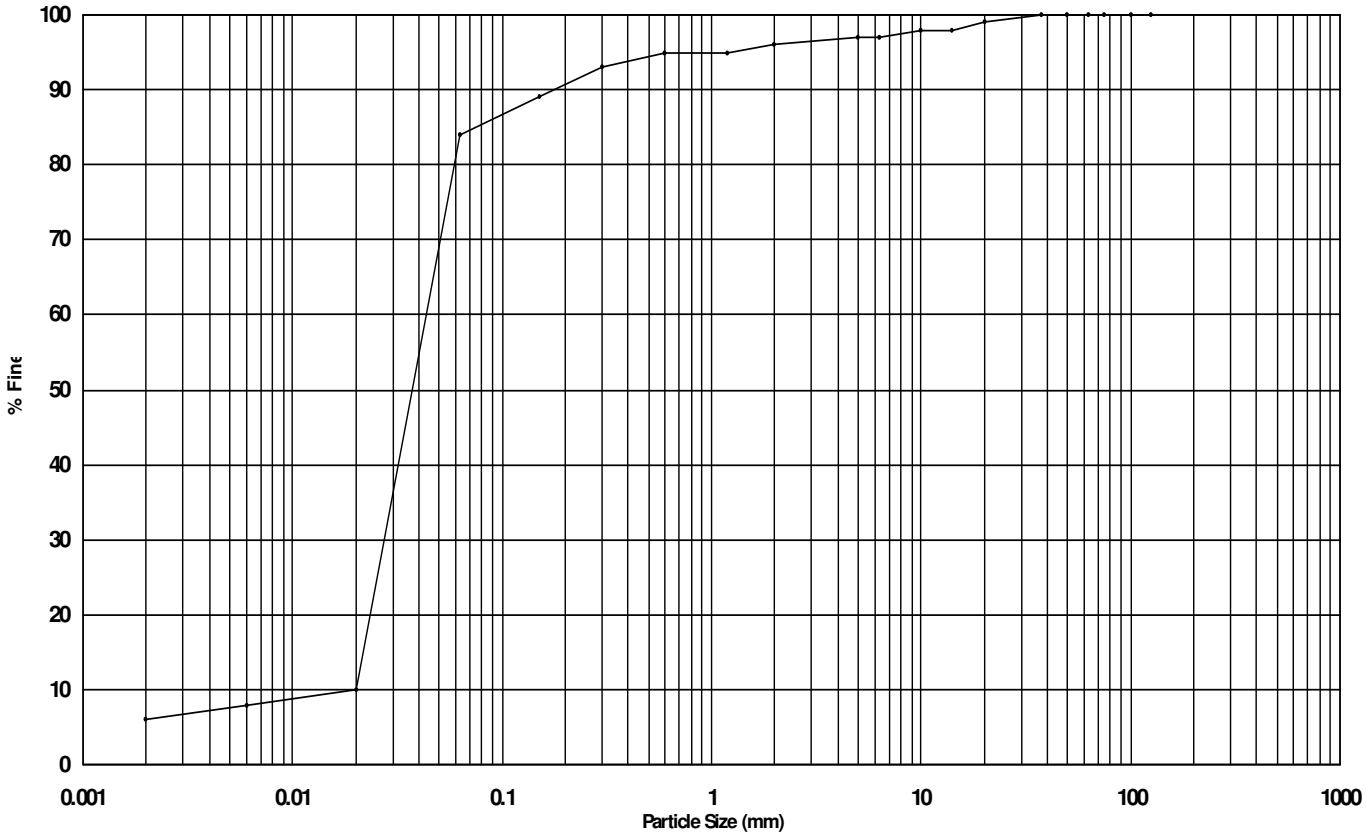
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP204
Sample Depth	1.50-2.50m
Sample Type	B
Sample Ref	N76009

Sample Description

Firm to stiff brown slightly sandy slightly gravelly silty CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	78
SAND	12
GRAVEL	4
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	99
14 mm	98
10 mm	98
6.3 mm	97
5 mm	97
2 mm	96
1.18 mm	95
600 µm	95
300 µm	93
150 µm	89

Size	% Finer
63 µm	84
20 µm	10
6 µm	8
2 µm	6

Uniformity Coefficient
2.36

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.58
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

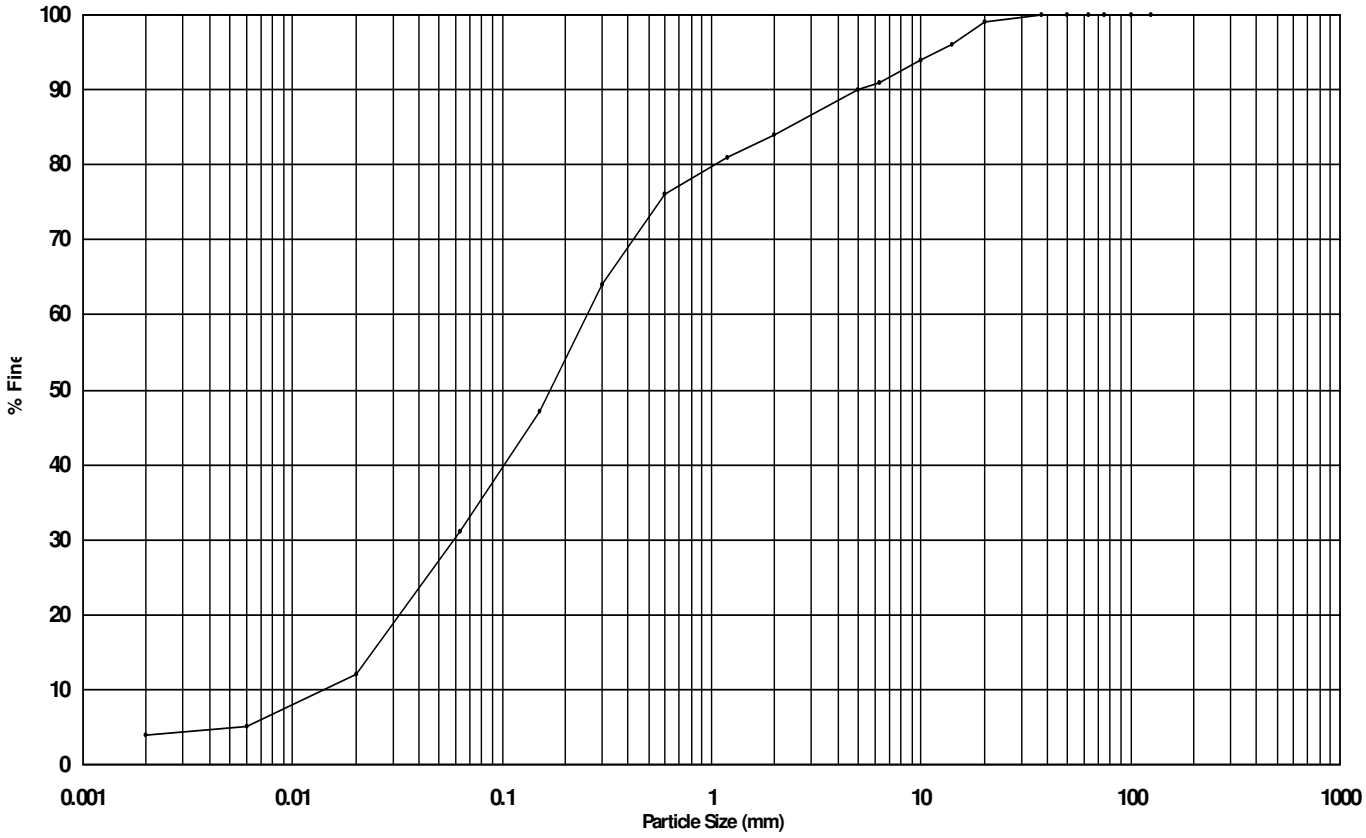
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP205
Sample Depth	1.25-2.50m
Sample Type	B
Sample Ref	N76010

Sample Description

Orangish brown gravelly very silty fine to coarse SAND.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	4
SILT	27
SAND	53
GRAVEL	16
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	99
14 mm	96
10 mm	94
6.3 mm	91
5 mm	90
2 mm	84
1.18 mm	81
600 µm	76
300 µm	64
150 µm	47

Size	% Finer
63 µm	31
20 µm	12
6 µm	5
2 µm	4

Uniformity Coefficient
18.42

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.11
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

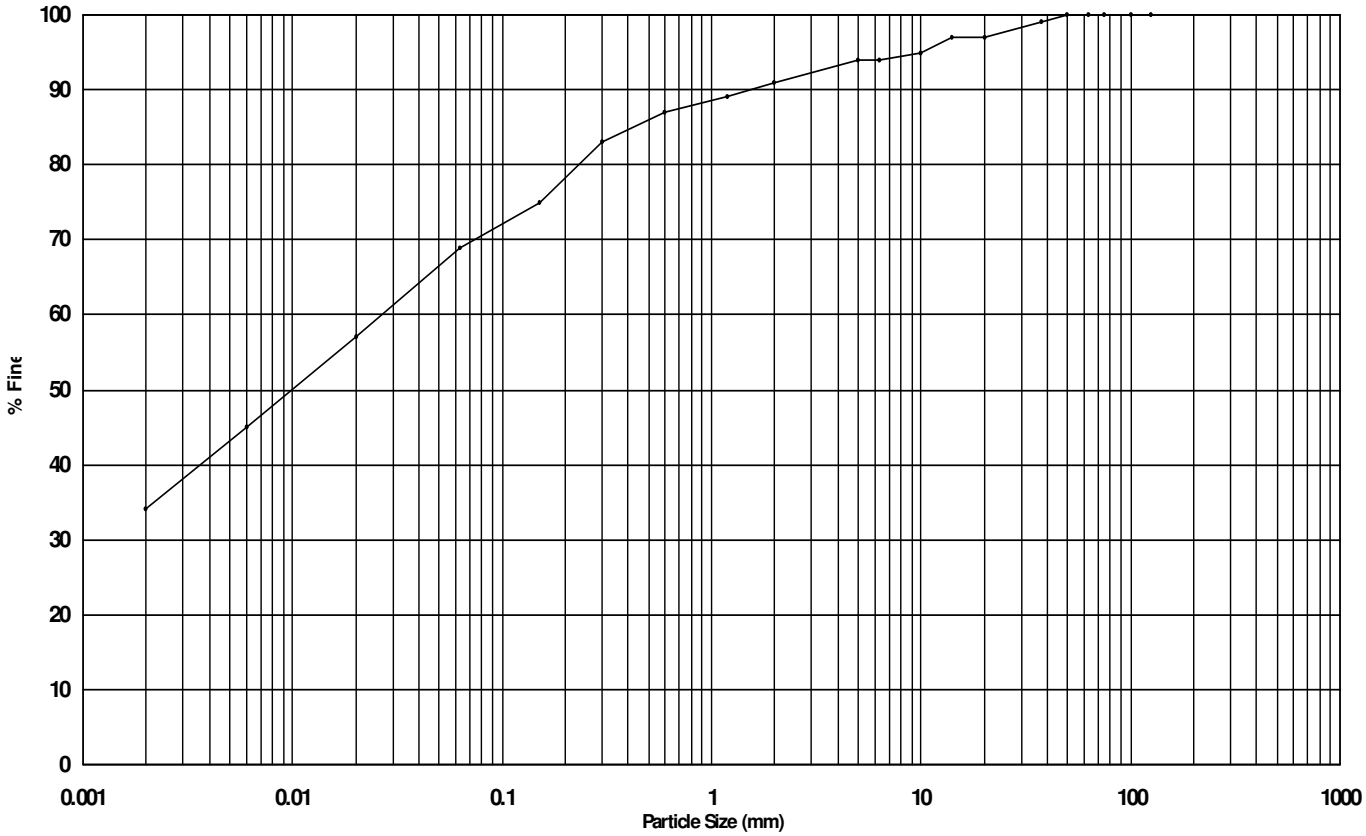
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP206
Sample Depth	0.25-1.40m
Sample Type	B
Sample Ref	N76011

Sample Description

MADE GROUND: Firm brown slightly sandy slightly gravelly clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	34
SILT	35
SAND	22
GRAVEL	9
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	97
14 mm	97
10 mm	95
6.3 mm	94
5 mm	94
2 mm	91
1.18 mm	89
600 µm	87
300 µm	83
150 µm	75

Size	% Finer
63 µm	69
20 µm	57
6 µm	45
2 µm	34

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

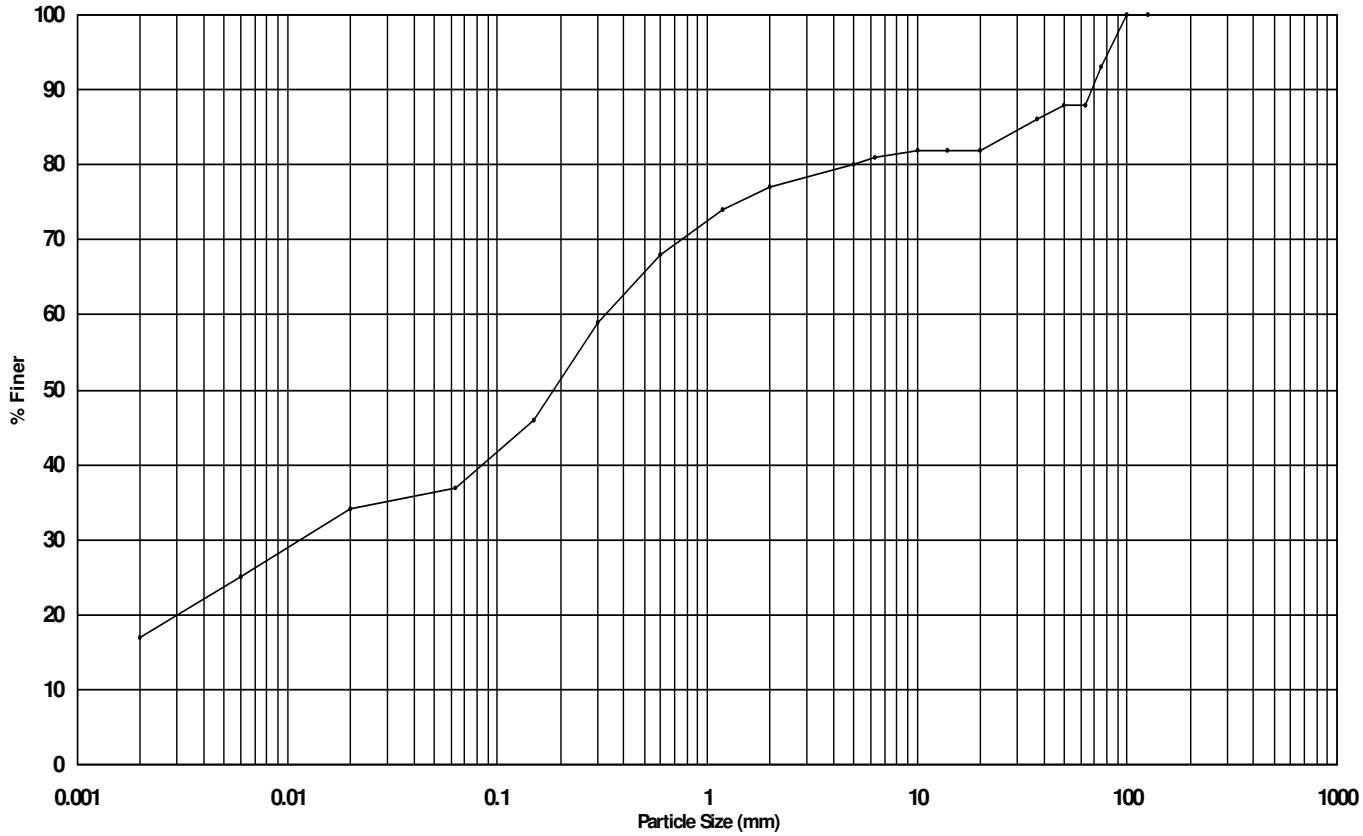
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP207
Sample Depth	0.20-0.50m
Sample Type	B
Sample Ref	N76481

Sample Description

MADE GROUND: Brown slightly gravelly sandy clay with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	17
SILT	20
SAND	40
GRAVEL	11
COBBLES	12
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	93
63 mm	88
50 mm	88
37.5 mm	86
20 mm	82
14 mm	82
10 mm	82
6.3 mm	81
5 mm	80
2 mm	77
1.18 mm	74
600 µm	68
300 µm	59
150 µm	46

Size	% Finer
63 µm	37
20 µm	34
6 µm	25
2 µm	17

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

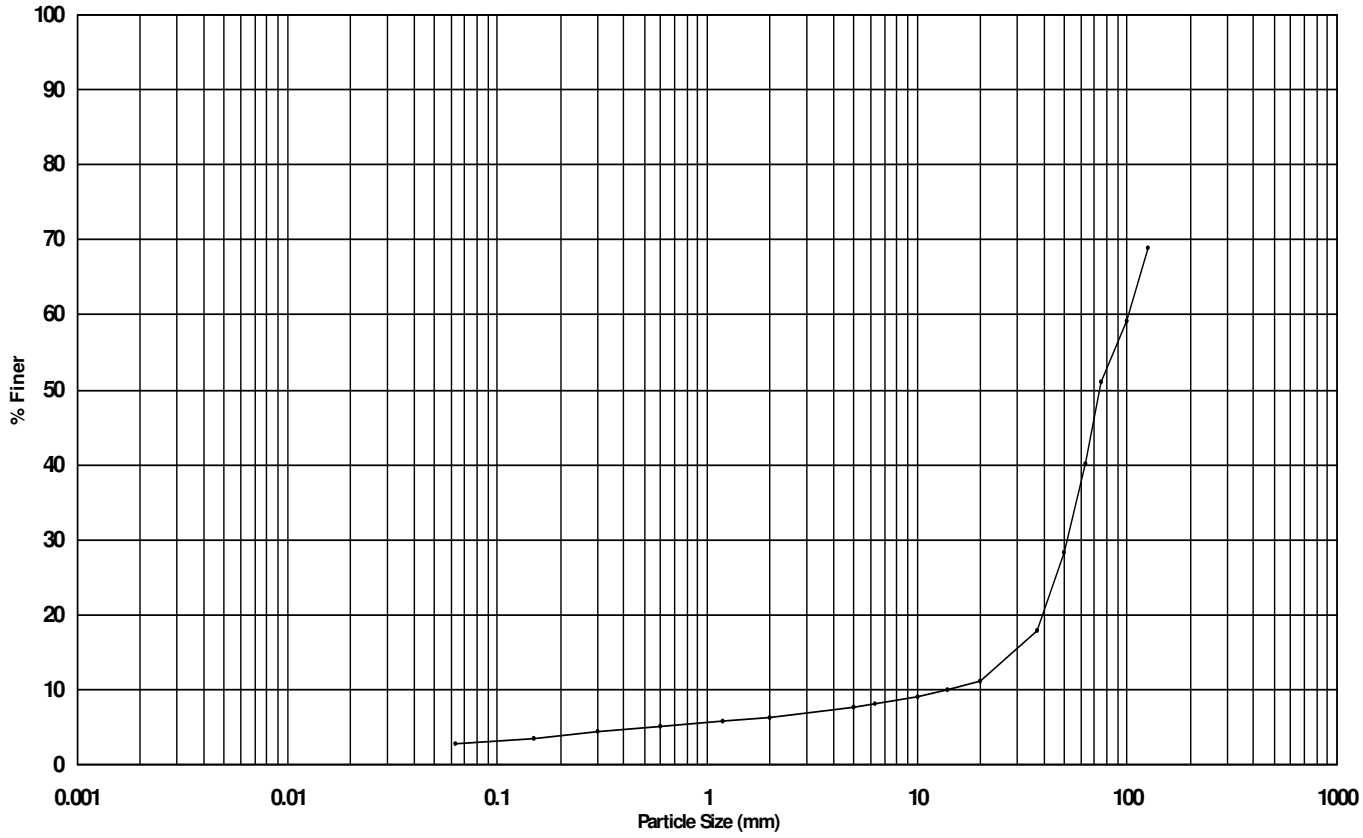
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP207
Sample Depth	0.80m
Sample Type	B
Sample Ref	N76483

Sample Description

MADE GROUND: Brown cobbles with much sandy silty gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	3
SAND	3
GRAVEL	34
COBBLES	60
BOULDERS	0

Size	% Finer
125 mm	69
100 mm	59
75 mm	51
63 mm	40
50 mm	28
37.5 mm	18
20 mm	11
14 mm	10
10 mm	9
6.3 mm	8
5 mm	8
2 mm	6
1.18 mm	6
600 µm	5
300 µm	4
150 µm	3

Size	% Finer
63 µm	3

Uniformity Coefficient
7.09
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

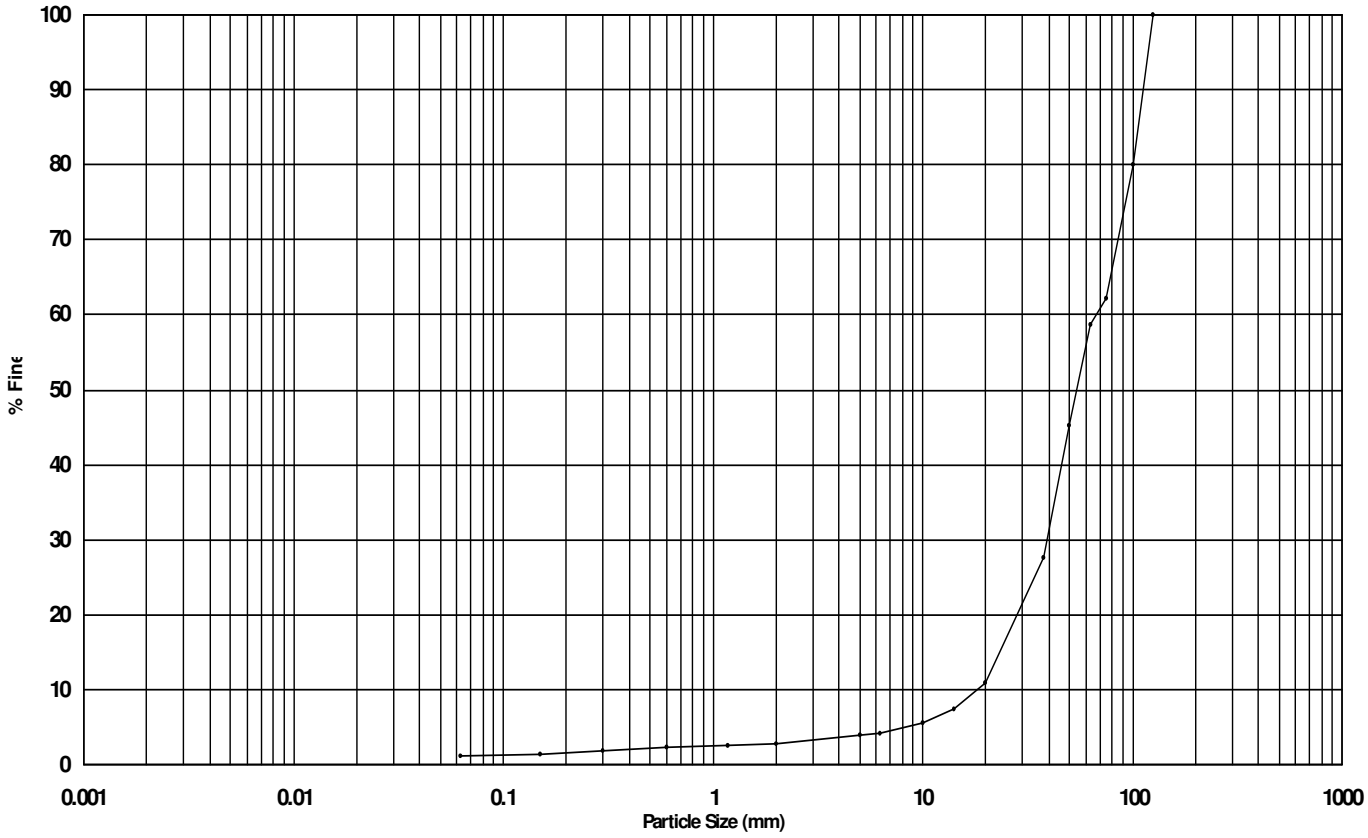
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP207
Sample Depth	2.15-2.40m
Sample Type	B
Sample Ref	N76514

Sample Description

Brown slightly sandy slightly silty GRAVEL with a high cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	2
GRAVEL	56
COBBLES	41
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	80
75 mm	62
63 mm	59
50 mm	45
37.5 mm	28
20 mm	11
14 mm	7
10 mm	6
6.3 mm	4
5 mm	4
2 mm	3
1.18 mm	3
600 µm	2
300 µm	2
150 µm	1

Size	% Finer
63 µm	1

Uniformity Coefficient
3.66
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

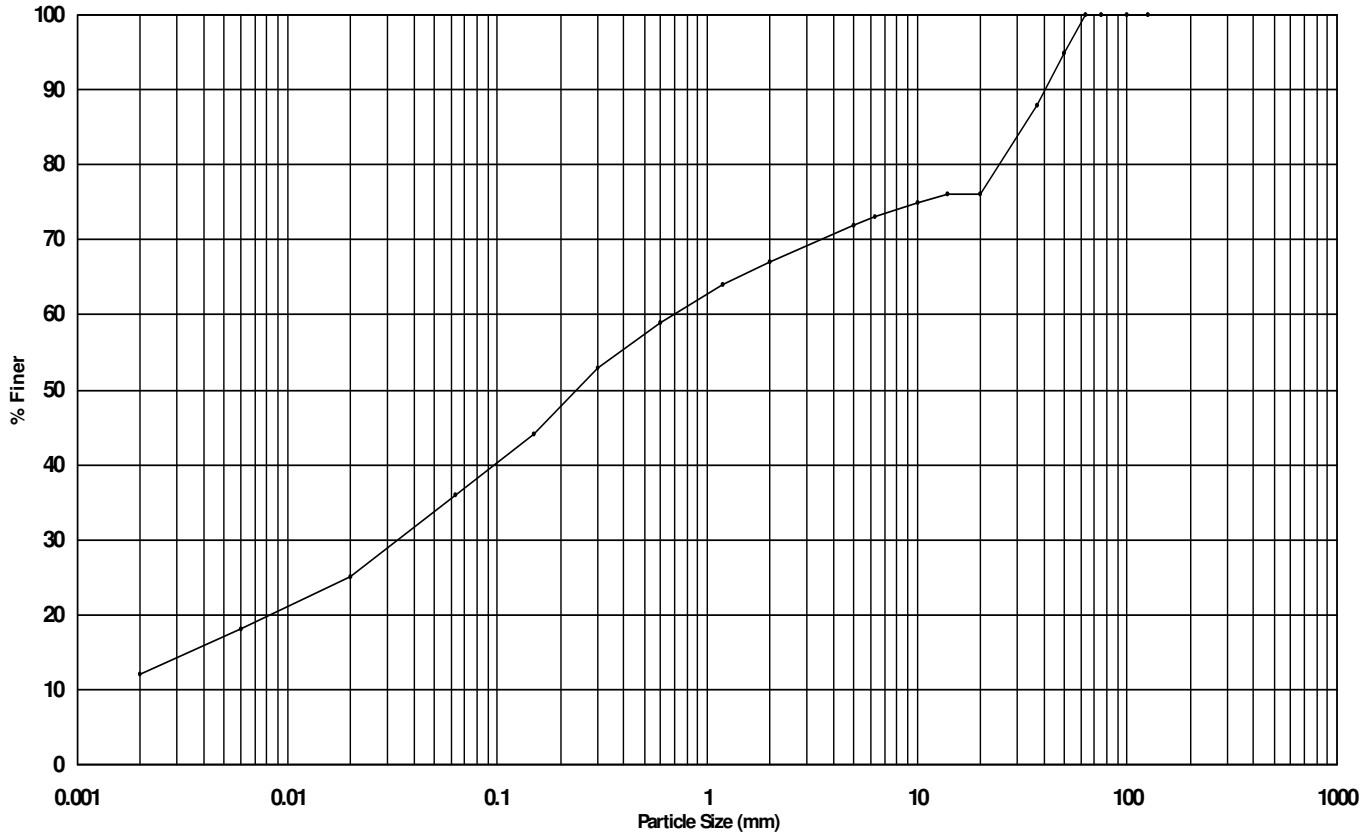
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP208
Sample Depth	0.20-0.50m
Sample Type	B
Sample Ref	N76485

Sample Description

MADE GROUND: Brown slightly sandy slightly gravelly clay.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	24
SAND	31
GRAVEL	33
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	95
37.5 mm	88
20 mm	76
14 mm	76
10 mm	75
6.3 mm	73
5 mm	72
2 mm	67
1.18 mm	64
600 µm	59
300 µm	53
150 µm	44

Size	% Finer
63 µm	36
20 µm	25
6 µm	18
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.29
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

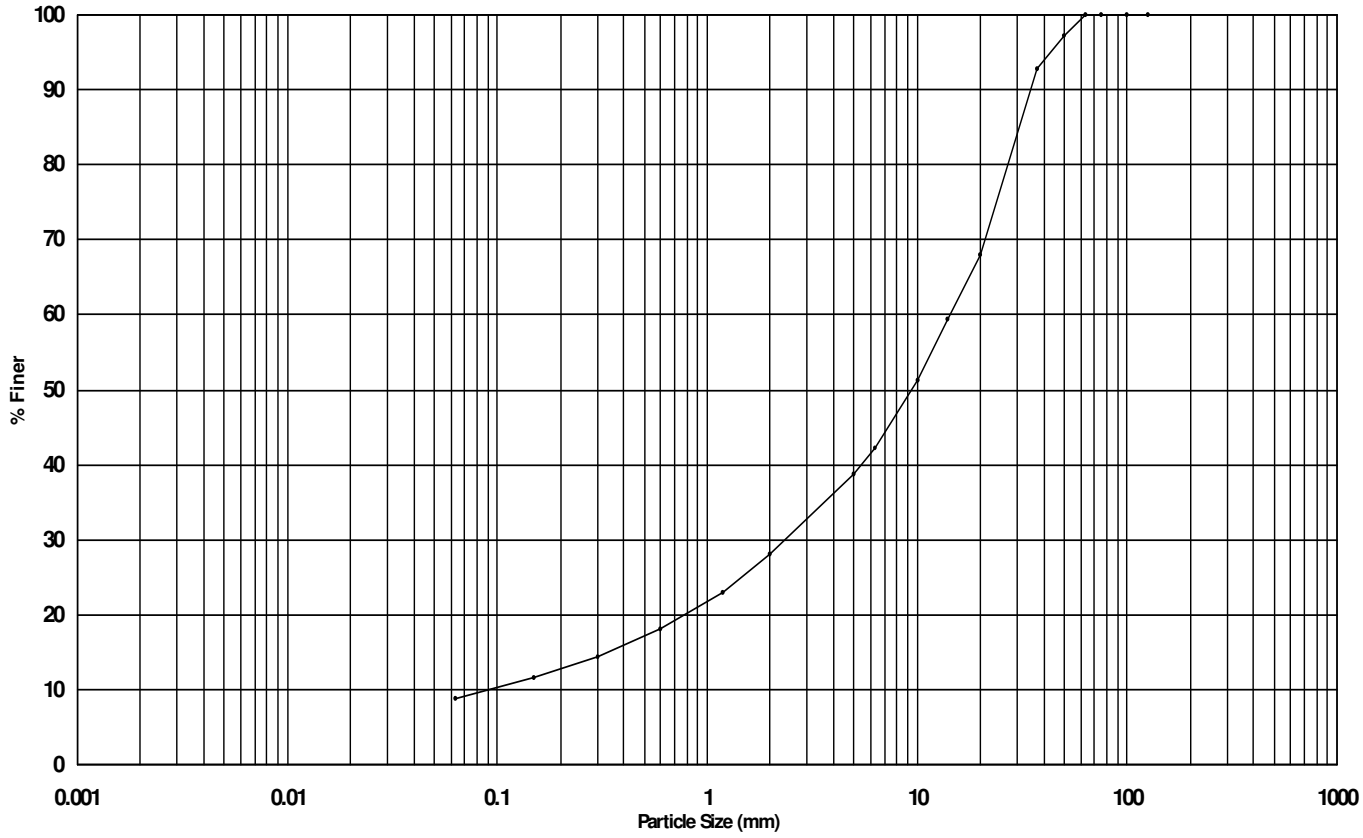
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP208
Sample Depth	0.65m
Sample Type	B
Sample Ref	N76487

Sample Description

MADE GROUND: Grey sandy silty fine to coarse gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	9
SAND	19
GRAVEL	72
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	93
20 mm	68
14 mm	59
10 mm	51
6.3 mm	42
5 mm	39
2 mm	28
1.18 mm	23
600 µm	18
300 µm	14
150 µm	12

Size	% Finer
63 µm	9

Uniformity Coefficient
156.60
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

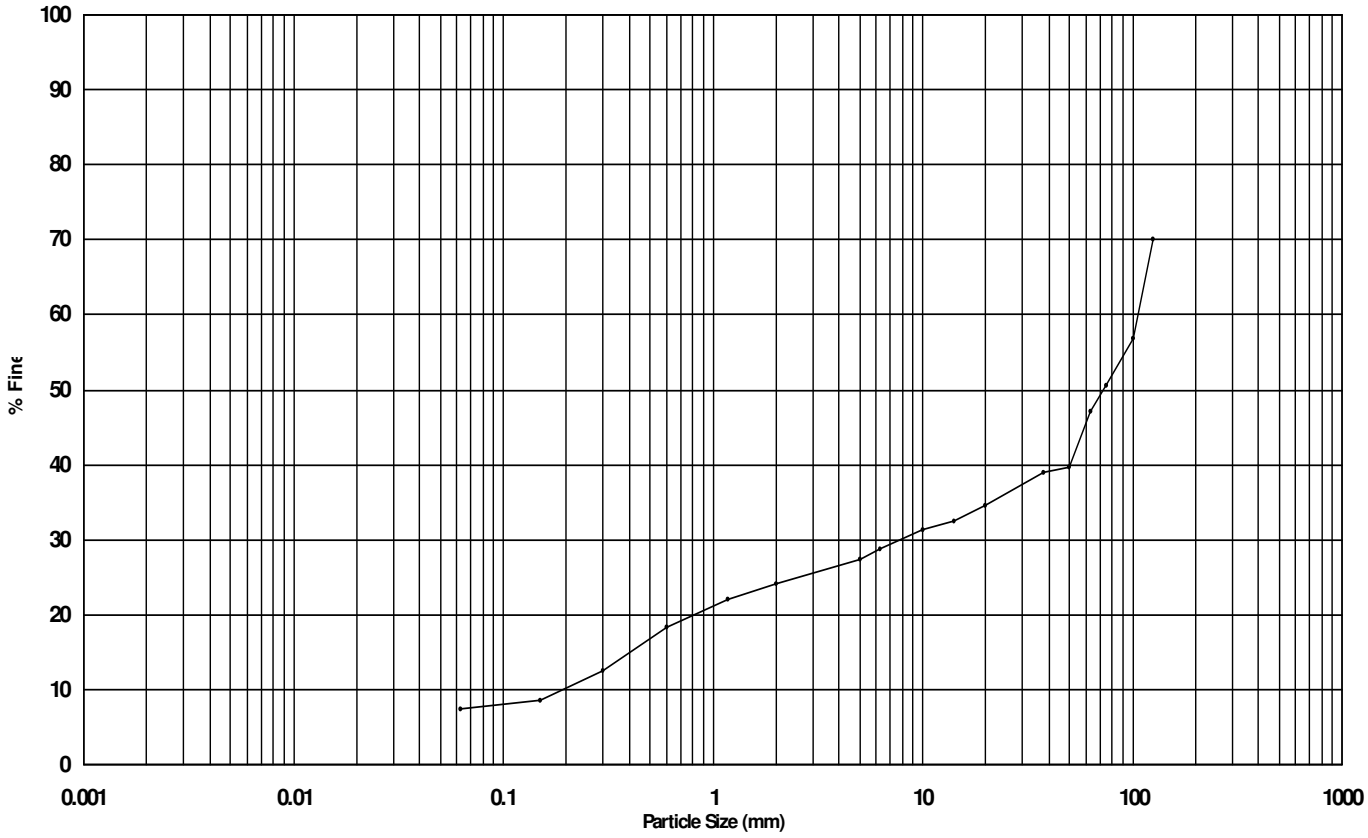
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP208
Sample Depth	1.50m
Sample Type	B
Sample Ref	N76489

Sample Description

Brown COBBLES with much very sandy clayey fine to coarse gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	17
GRAVEL	23
COBBLES	53
BOULDERS	0

Size	% Finer
125 mm	70
100 mm	57
75 mm	51
63 mm	47
50 mm	40
37.5 mm	39
20 mm	35
14 mm	32
10 mm	31
6.3 mm	29
5 mm	27
2 mm	24
1.18 mm	22
600 µm	18
300 µm	12
150 µm	9

Size	% Finer
63 µm	7

Uniformity Coefficient
541.28

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

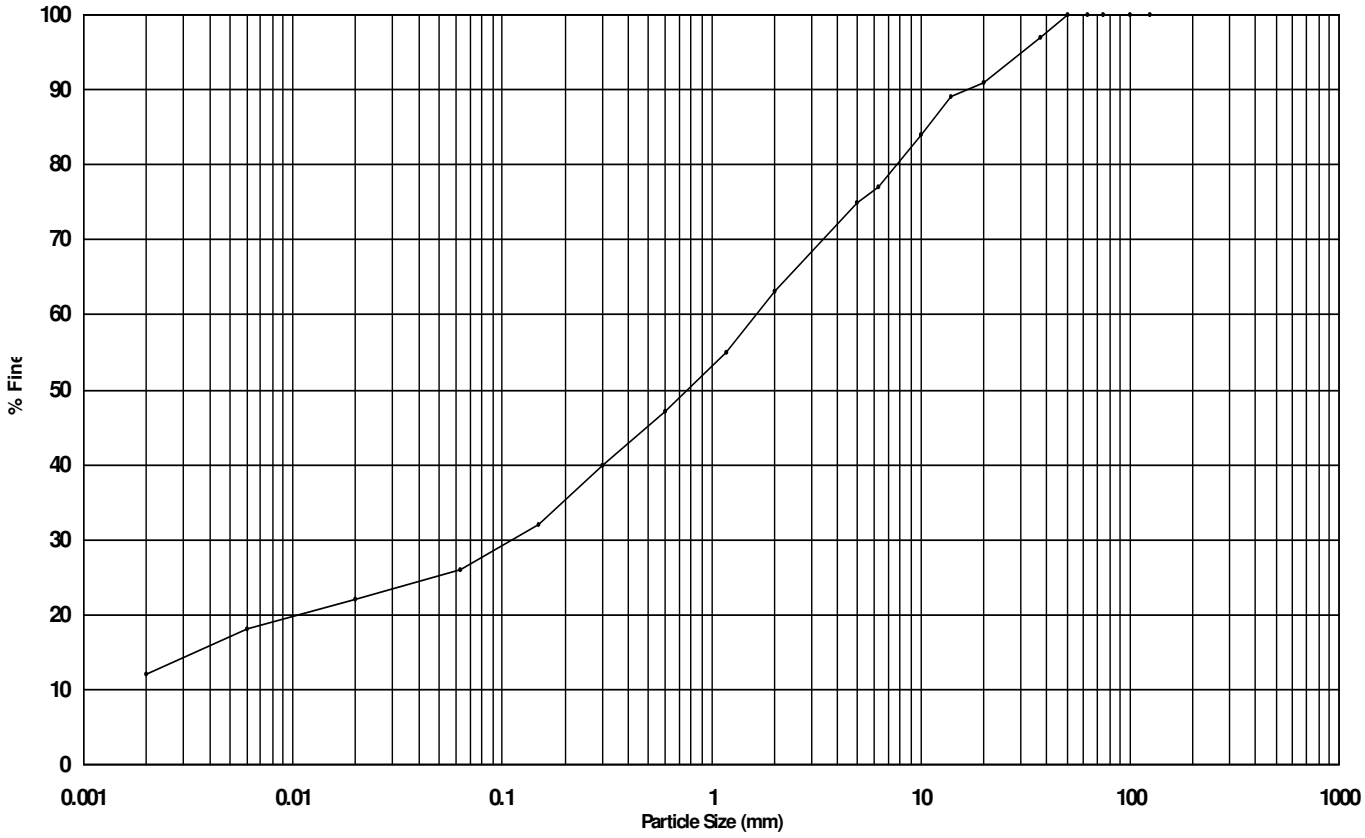
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP210
Sample Depth	0.10-1.00m
Sample Type	B
Sample Ref	N76013

Sample Description

MADE GROUND: Yellowish brown very clayey sand and gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	14
SAND	37
GRAVEL	37
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	91
14 mm	89
10 mm	84
6.3 mm	77
5 mm	75
2 mm	63
1.18 mm	55
600 µm	47
300 µm	40
150 µm	32

Size	% Finer
63 µm	26
20 µm	22
6 µm	18
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.32
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

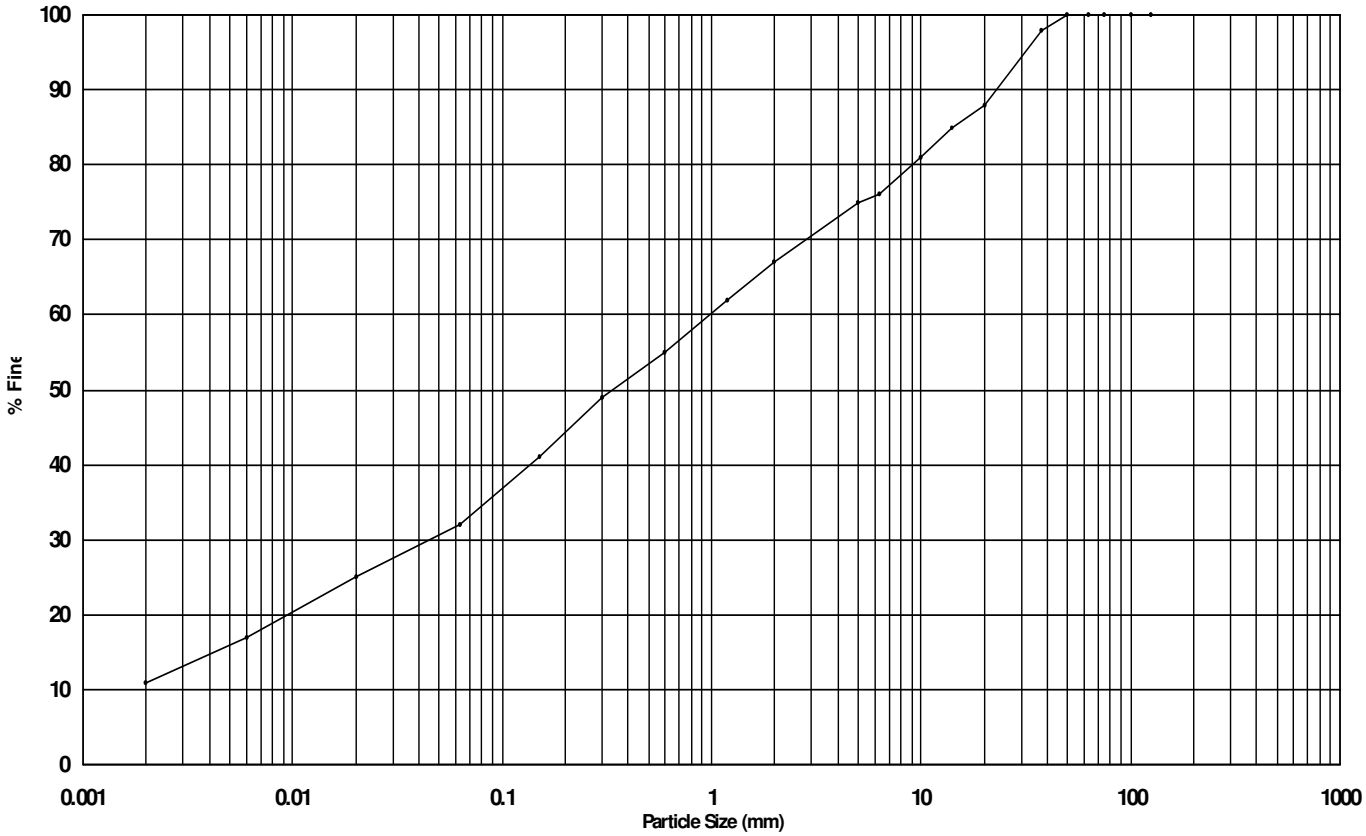
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP210
Sample Depth	1.00-2.00m
Sample Type	B
Sample Ref	N76014

Sample Description

POSSIBLE MADE GROUND: Yellowish brown very clayey sand and gravel.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	21
SAND	35
GRAVEL	33
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	88
14 mm	85
10 mm	81
6.3 mm	76
5 mm	75
2 mm	67
1.18 mm	62
600 µm	55
300 µm	49
150 µm	41

Size	% Finer
63 µm	32
20 µm	25
6 µm	17
2 µm	11

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.15
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

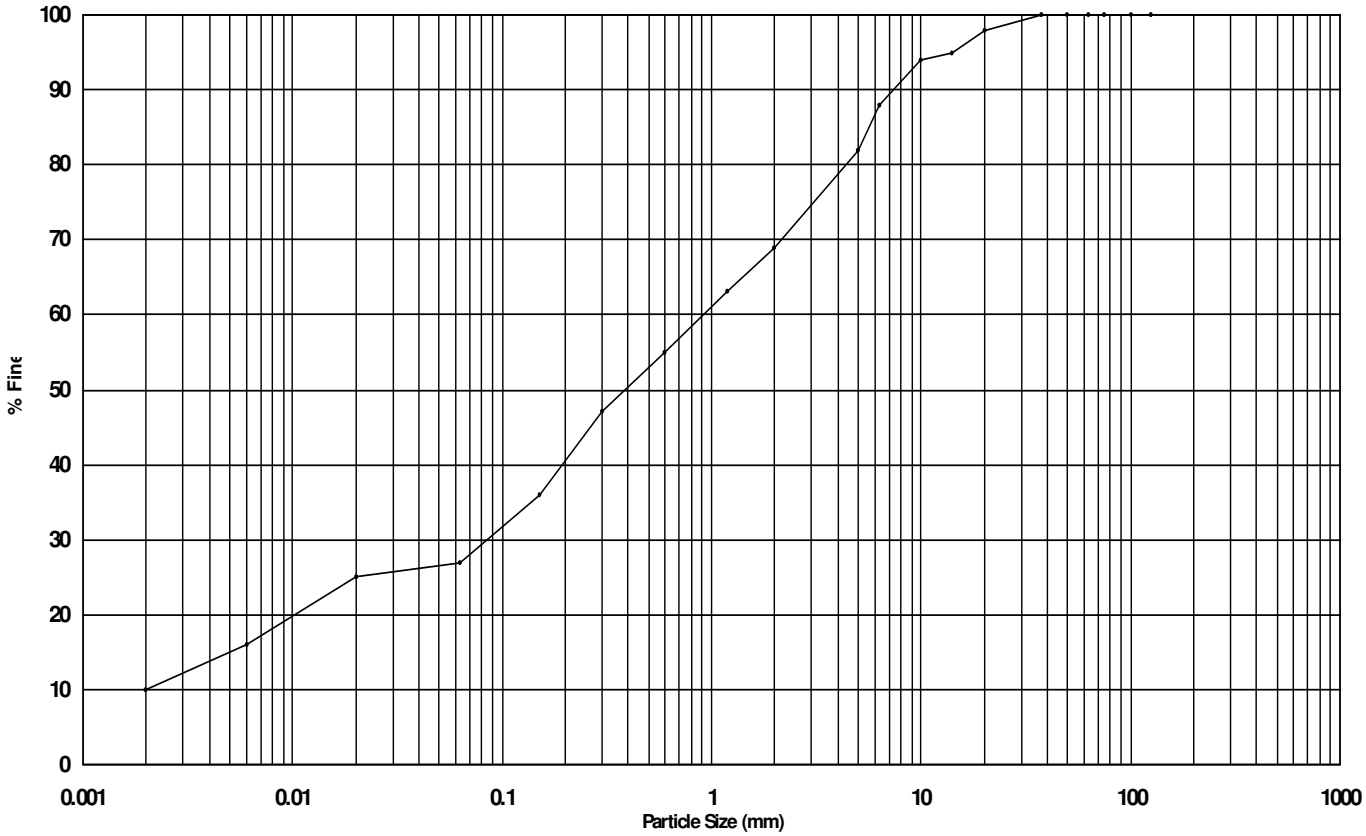
Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP211
Sample Depth	1.00-2.00m
Sample Type	B
Sample Ref	N76015

Sample Description

MADE GROUND: Black very gravelly very clayey fine to coarse sand.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	10
SILT	17
SAND	42
GRAVEL	31
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	98
14 mm	95
10 mm	94
6.3 mm	88
5 mm	82
2 mm	69
1.18 mm	63
600 µm	55
300 µm	47
150 µm	36

Size	% Finer
63 µm	27
20 µm	25
6 µm	16
2 µm	10

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	1.04
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - MCV, Compaction, CBR

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					MCV		Compaction					CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m³	γ_b Mg/m³	γ_d (Max) Mg/m³	Type	Top CBR %	Top w %	Bottom CBR %	Bottom w %
BH104	2.00-2.45 (2.00-2.45)	B	N76177	Soft grey slightly gravelly sandy CLAY.			4.5kg	(11.5)	2.95a		(1.93)					
								44.4*		*1.71	*1.19					
								10.9		2.12	1.91					
								12.4		2.16	1.92					
								25.2		2.11	1.68					
								26.9		2.05	1.62					
								34.2		1.99	1.48					
								5.0		1.47	1.40					
BH105	3.00-3.45 (3.00-3.45)	B	N76476	Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.			4.5kg	(4.8)	2.65a		(2.14)					
								2.4		2.03	1.99					
								3.3		2.16	2.09					
								6.3		2.24	2.11					
								12.9		2.18	1.93					
								14.6		2.15	1.88					
								15.1*		*2.13	*1.85					
BH205C	2.00-2.45 (2.00-2.45)	B	N76030	MADE GROUND: Very stiff brownish grey slightly gravelly sandy clay.			4.5kg	(7.0)	2.65a		(2.12)					
								10.8*		*2.25	*2.03					
								2.8		2.04	1.98					
								4.6		2.18	2.08					
								6.4		2.24	2.11					
								14.4		2.15	1.88					
BH207	2.00-2.45 (2.00-2.45)	B	N76034	Stiff brownish orange slightly sandy slightly gravelly CLAY.			4.5kg	(5.5)	2.70a		(2.26)					
								11.3*		*2.28	*2.05					
								1.9		2.18	2.14					
								3.5		2.27	2.19					
								5.3		2.36	2.24					
								9.2		2.37	2.17					
								13.8		2.22	1.95					
BH209	3.00-3.45 (3.00-3.45)	B	N76184	Soft bluish grey slightly sandy gravelly CLAY.			4.5kg	(9.0)	2.75a		(2.03)					
								14.7*		*2.24	*1.96					
								7.2		2.15	2.01					
								17.1		2.15	1.83					
								2.7		2.00	1.95					
								12.2		2.24	2.00					
BH210	1.20-1.65 (1.20-1.65)	B	N76186	MADE GROUND: Soft brown slightly gravelly sandy clay.			4.5kg	(9.3)	2.65a		(1.97)					
								5.0		2.02	1.93					
								11.9		2.17	1.94					
								21.1*		*2.04	*1.69					
								2.1		1.90	1.86					
								14.2		2.19	1.92					
BH220	2.00-2.45 (2.00-2.45)	B	N76156	Stiff brown slightly sandy slightly gravelly CLAY.			4.5kg	(9.0)	2.77a		(2.16)					
								14.8*		*2.23	*1.94					
								3.6		1.99	1.92					
								8.0		2.30	2.13					
								10.6		2.36	2.14					
								13.3		2.29	2.02					

Remarks AGS

Particle Density - a=assumed, m=measured

* = at natural moisture content NST - Not suitable for Test

= stabilised, see relevant test plot for details

For Standards followed see Laboratory Test Certficate

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LABORATORY RESULTS - MCV, Compaction, CBR

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					MCV		Compaction						CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m³	γ_b Mg/m³	γ_d (Max) Mg/m³	Type	Top CBR %	Top w %	Bottom CBR %	Bottom w %
BH220	3.00-3.45 (3.00-3.45)	B	N76157	Very stiff brown slightly sandy gravelly CLAY.			4.5kg	(6.0)	2.68a		(2.19)					
								12.7*		*2.25	*2.00					
								4.5		2.23	2.13					
								7.3		2.34	2.18					
								10.7		2.29	2.06					
								14.4		2.20	1.92					
								3.7		2.19	2.12					
BH220A	2.00-2.45 (2.00-2.45)	B	N76159	Stiff to very stiff yellowish brown slightly sandy gravelly CLAY.			4.5kg	(7.4)	2.70a		(2.13)					
								15.2*		*2.18	*1.90					
								5.0		2.16	2.06					
								6.5		2.26	2.12					
								11.4		2.29	2.06					
								13.4		2.24	1.98					
								17.0		2.15	1.84					
BH220A	4.00-4.45 (4.00-4.45)	B	N76160	Very stiff yellowish brown slightly sandy gravelly CLAY.			4.5kg	(5.5)	2.65a		(2.16)					
								15.3*		*2.17	*1.88					
								3.8		2.17	2.09					
								3.2		2.15	2.08					
								18.0		2.08	1.76					
								4.9		2.26	2.15					
BH228	2.00-2.45 (2.00-2.45)	B	N76044	Very stiff brown gravelly CLAY.			4.5kg	(7.6)	2.65a		(2.05)					
								6.7		2.18	2.04					
								10.6		2.23	2.02					
								12.2		2.20	1.96					
								17.8		2.10	1.78					
								4.2		2.08	1.99					
								14.9*		*2.11	*1.84					
TP207	0.50-0.60 (0.50-0.60)	B	N76482	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.			4.5kg	(6.0)	2.65a		(2.13)					
								4.9*		*2.21	*2.11					
								1.9		1.96	1.92					
								7.4		2.26	2.11					
								10.2		2.15	1.95					
								7.2		2.24	2.09					
								2.3		2.03	1.98					
TP208	0.50-0.60 (0.50-0.60)	B	N76486	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.			4.5kg	(6.5)	2.65a		(2.12)					
								2.0		2.00	1.96					
								3.7		2.10	2.02					
								6.9		2.26	2.11					
								8.9		2.27	2.08					
								11.7		2.24	2.00					
								14.9		2.18	1.90					
								5.0*		*2.20	*2.10					
TP208	1.10 (1.10)	B	N76488	MADE GROUND: Grey sandy medium to coarse gravel.			4.5kg	(6.0)	2.65a		(2.17)					
								5.0*		*2.25	*2.15					
								11.6		2.26	2.02					
								2.2		2.08	2.03					
								8.3		2.30	2.13					
								3.8		2.18	2.10					

Remarks AGS

Particle Density - a=assumed, m=measured

* = at natural moisture content NST - Not suitable for Test

= stabilised, see relevant test plot for details

For Standards followed see Laboratory Test Certficate

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LABORATORY RESULTS - *MCV, Compaction, CBR*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample					MCV		Compaction					CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m³	γ_b Mg/m³	γ_d (Max) Mg/m³	Type	Top CBR %	Top w %	Bottom CBR %	Bottom w %
TP211	1.00-2.00 (1.00-2.00)	B	N76015	MADE GROUND: Black very gravelly very clayey fine to coarse sand.			4.5kg	(20.5)	2.65a		(1.31)					
								35.9*		*1.61	*1.18					
								4.9		1.25	1.20					
								10.8		1.39	1.25					
								14.9		1.44	1.25					
								19.4		1.55	1.30					
								27.2		1.60	1.26					
TP212	1.20-2.00 (1.20-2.00)	B	N76018	Soft bluish grey CLAY.			4.5kg	(20.0)	2.65a		(1.40)					
								59.8*		*1.61	*1.01					
								11.4		1.50	1.34					
								19.4		1.66	1.39					
								29.5		1.78	1.37					
								37.9		1.73	1.26					

Remarks AGS

Particle Density - a=assumed, m=measured

* = at natural moisture content NST - Not suitable for Test

= stabilised, see relevant test plot for details

For Standards followed see Laboratory Test Certficate

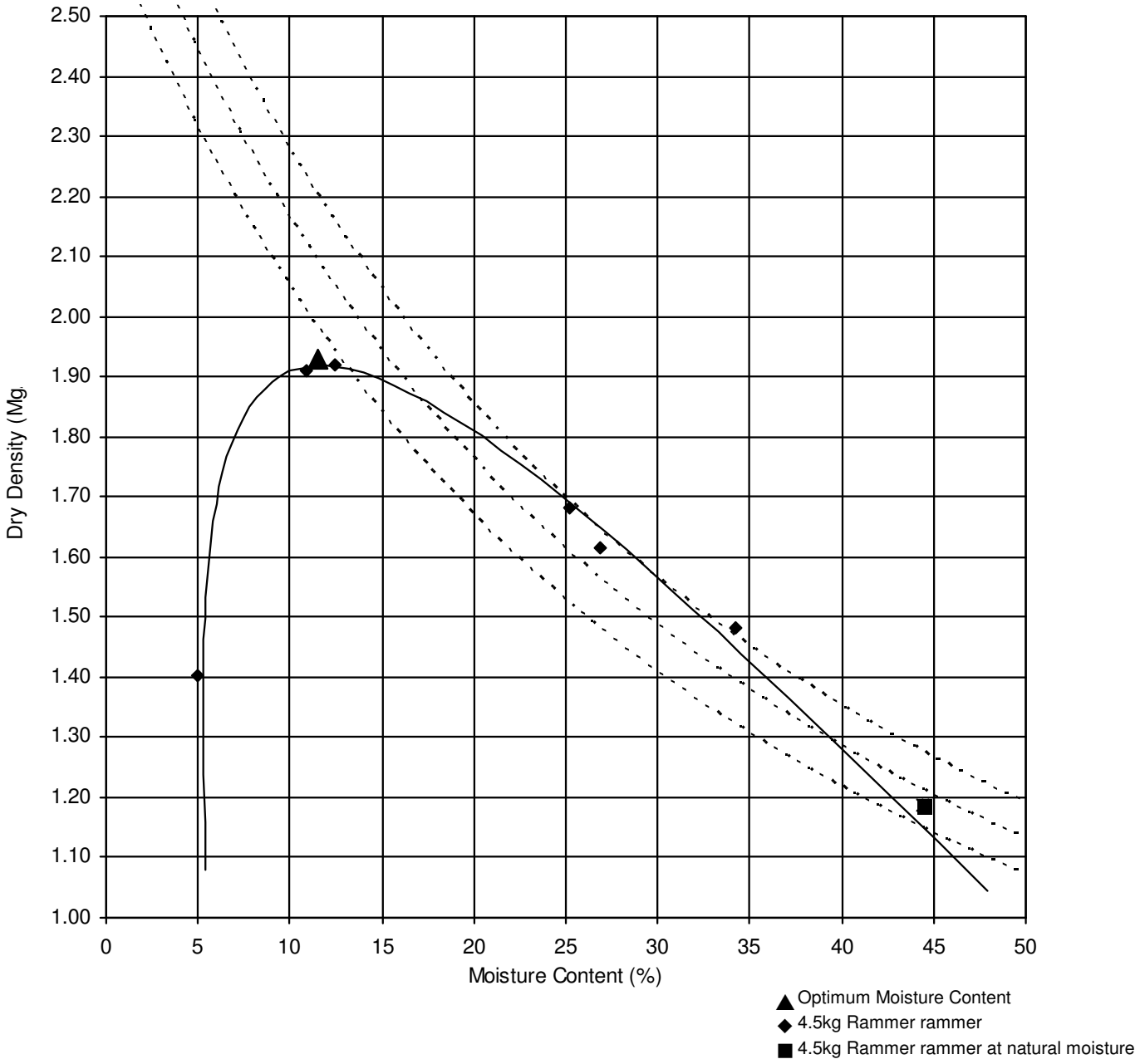
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LABORATORY RESULTS - *Compaction*

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH104
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76177



Optimum Moisture Content	11.5	
Maximum Dry Density	1.93	Mg/m^3
Particle Density	2.95 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	38 %
	20mm sieve	5 %
Description	Soft grey slightly gravelly sandy CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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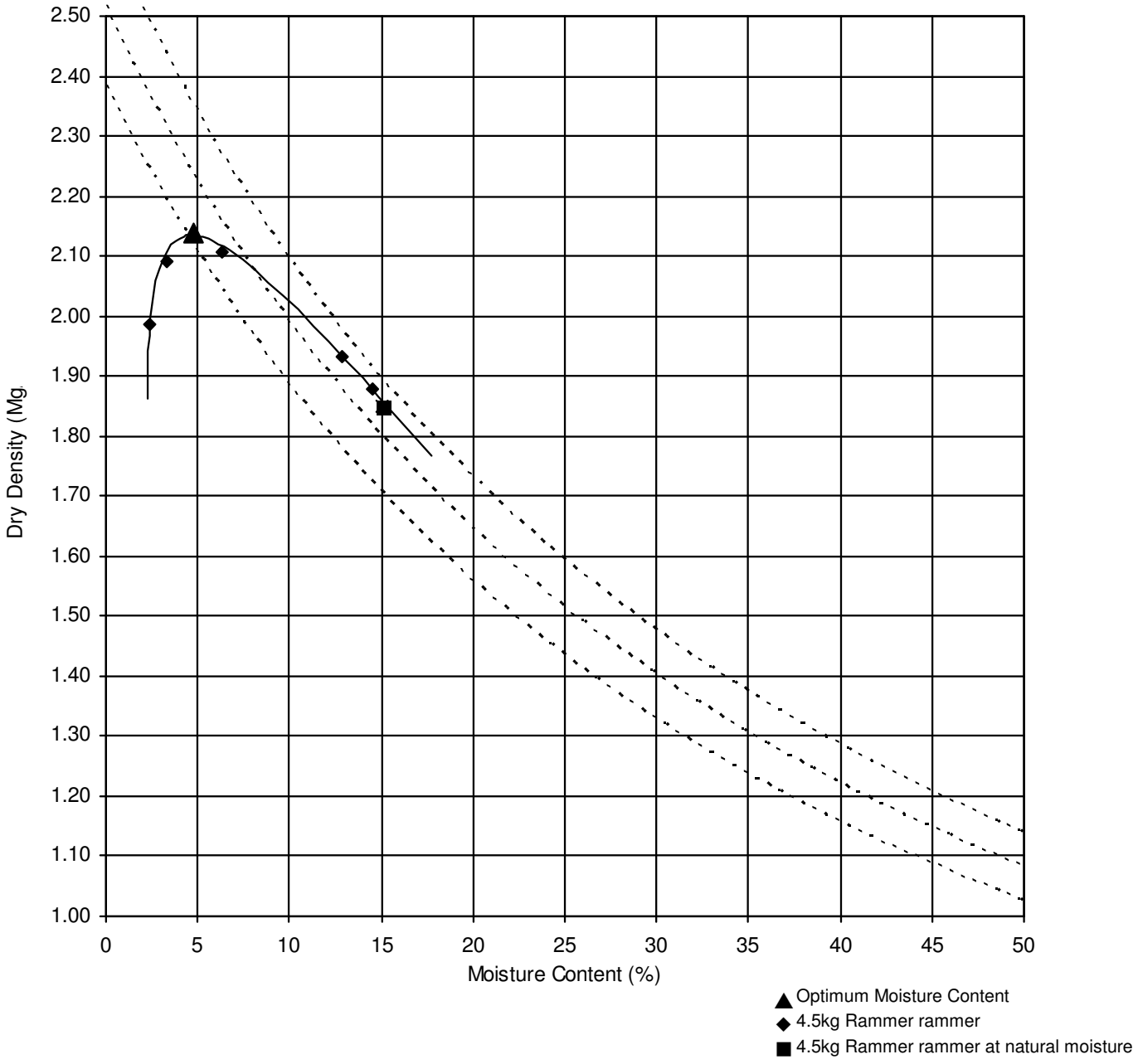
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH105
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76476



Optimum Moisture Content	4.8	
Maximum Dry Density	2.14	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	2 %
	20mm sieve	1 %
Description	Stiff brown slightly sandy slightly gravelly CLAY with a low cobble content.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.5 and 3.6

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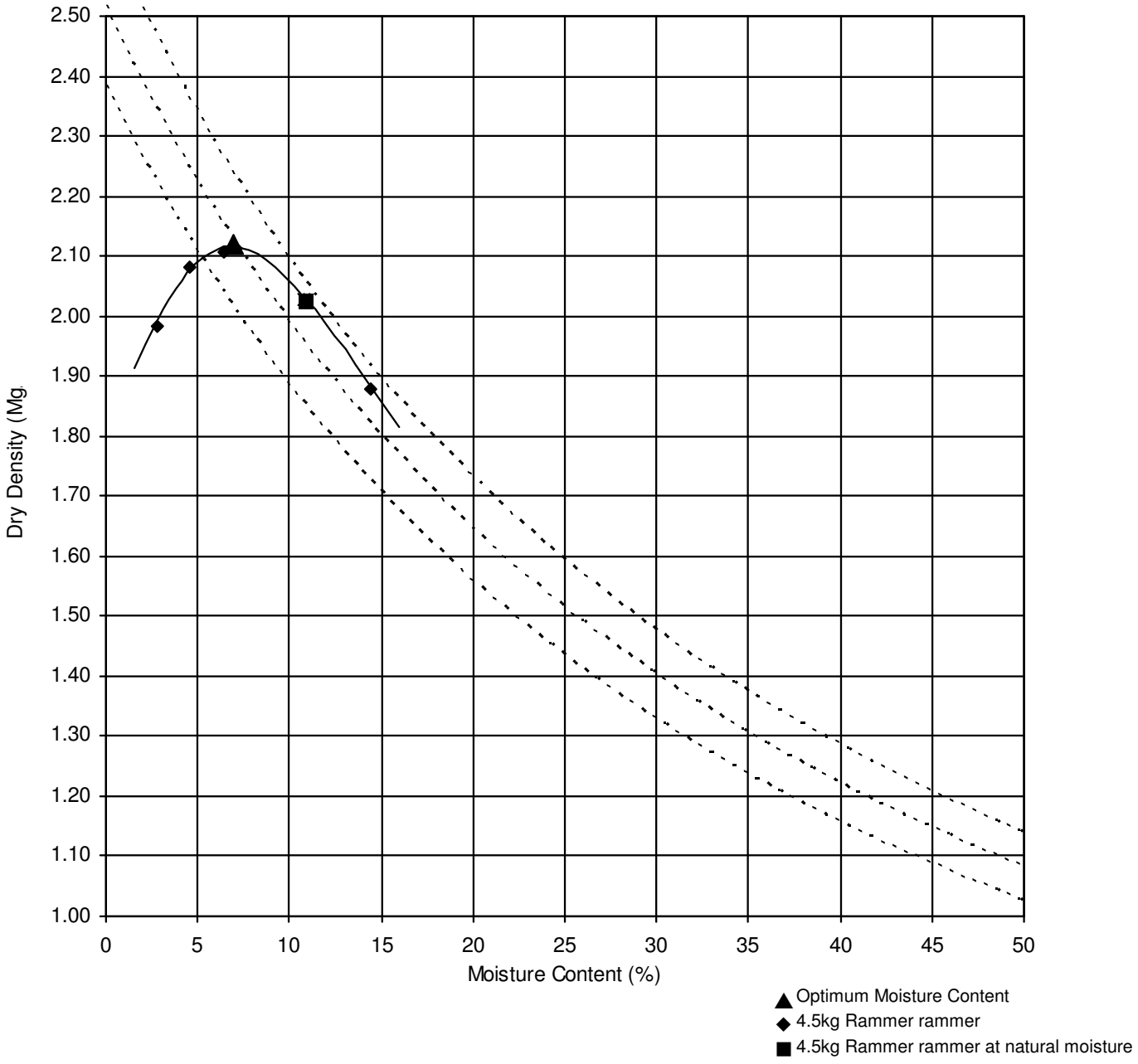
12/11/2019

LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH205C
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76030



Optimum Moisture Content	7.0	
Maximum Dry Density	2.12	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	42 %
	20mm sieve	13 %
Description	MADE GROUND: Very stiff brownish grey slightly gravelly sandy clay.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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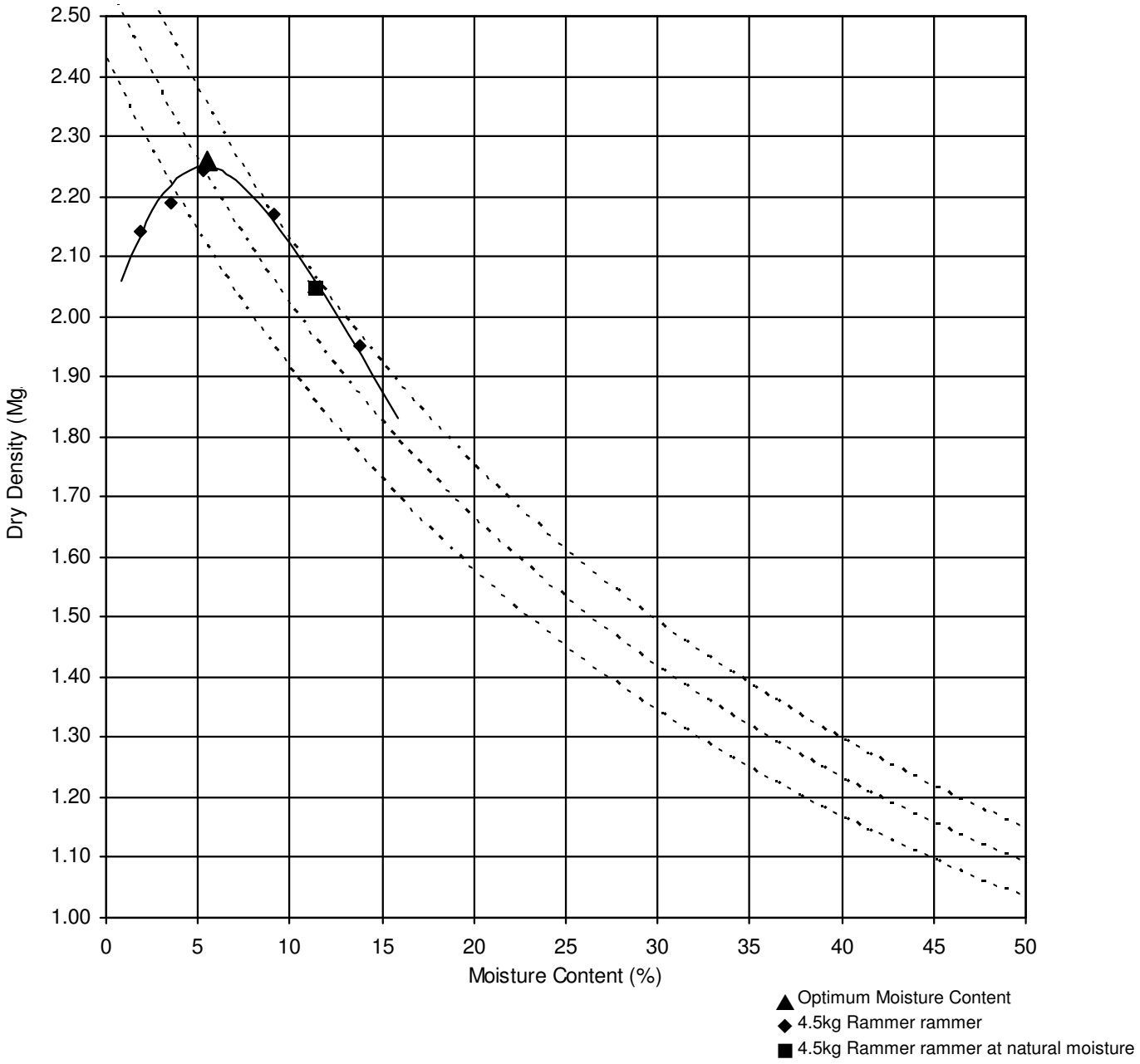
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LABORATORY RESULTS - *Compaction*

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH207
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76034



Optimum Moisture Content	5.5	
Maximum Dry Density	2.26	Mg/m^3
Particle Density	2.70 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	14 %
	20mm sieve	7 %
Description	Stiff brownish orange slightly sandy slightly gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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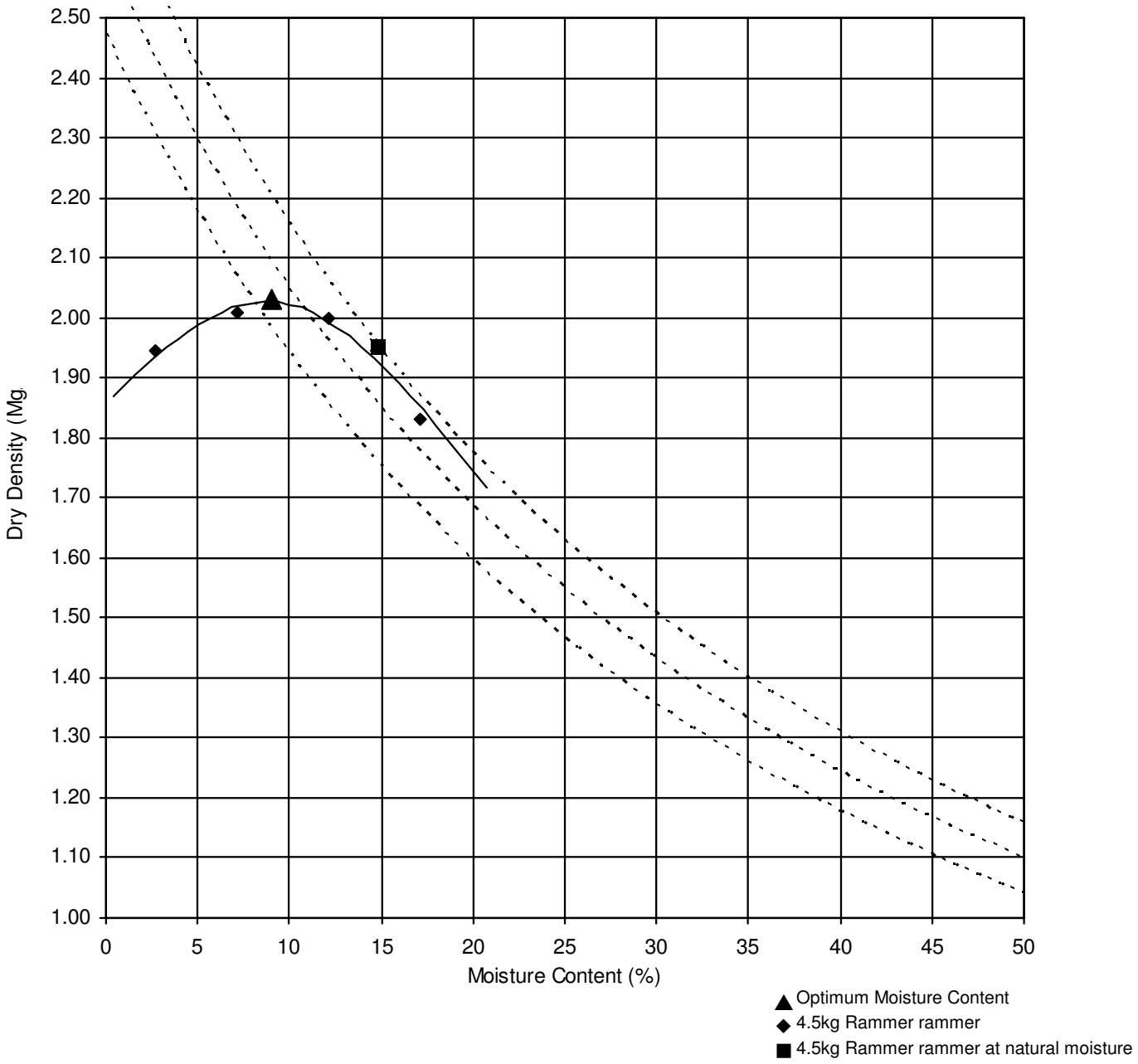
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH209
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76184



Optimum Moisture Content	9.0	
Maximum Dry Density	2.03	Mg/m^3
Particle Density	2.75 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	7 %
	20mm sieve	6 %
Description	Soft bluish grey slightly sandy gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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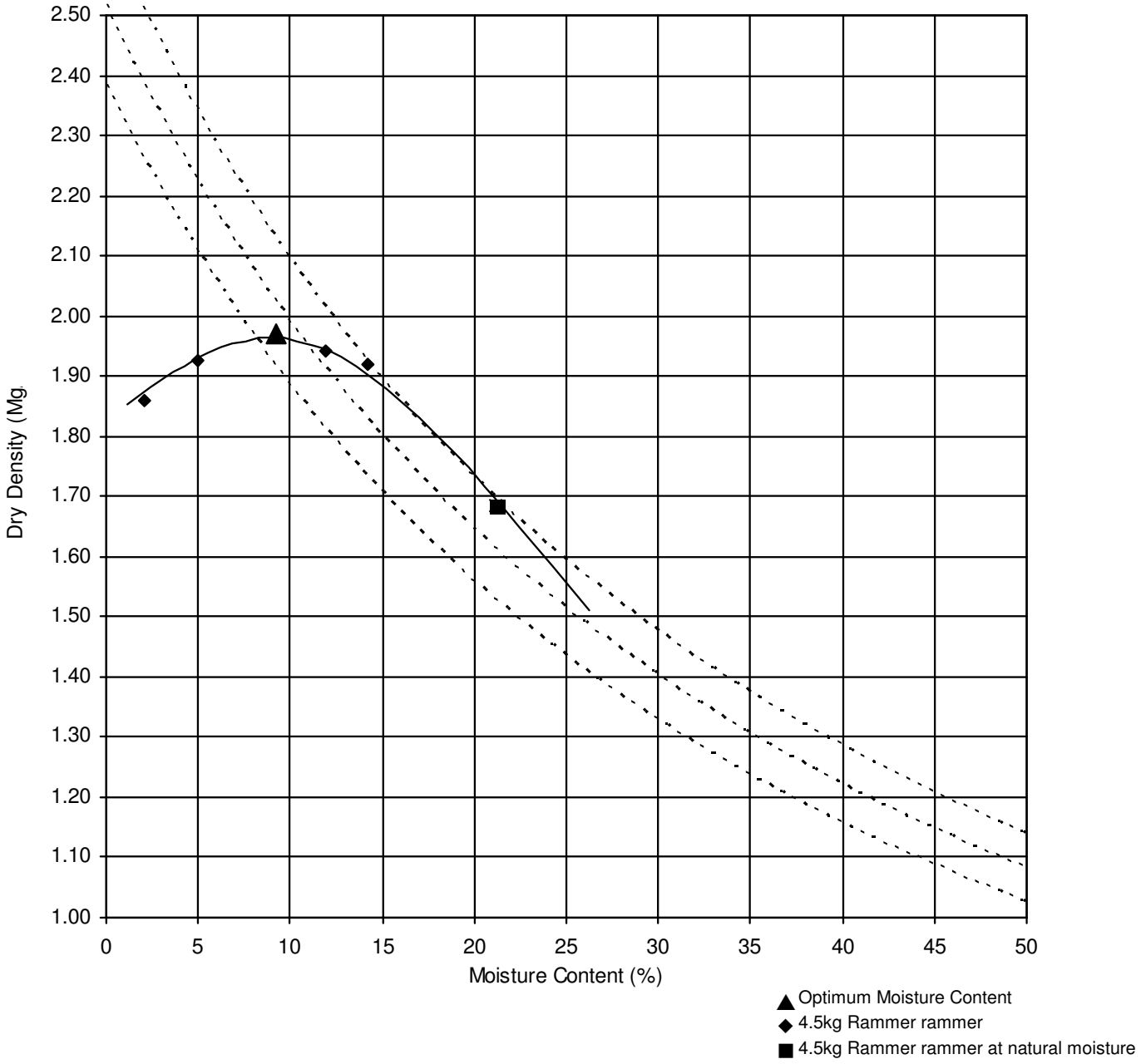
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH210
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76186



Optimum Moisture Content	9.3	
Maximum Dry Density	1.97	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	12 %
	20mm sieve	12 %
Description	MADE GROUND: Soft brown slightly gravelly sandy clay.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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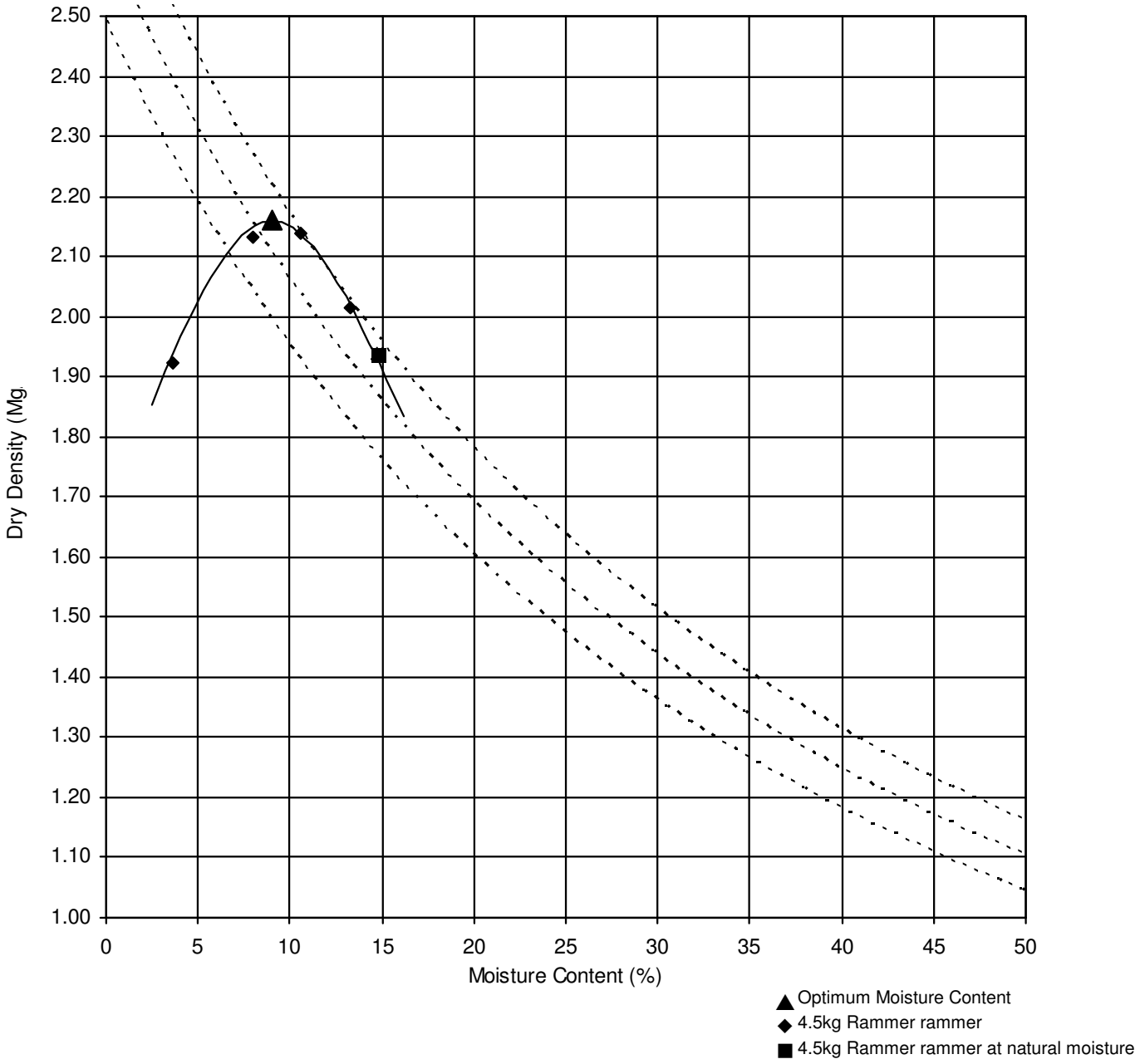
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH220
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76156



Optimum Moisture Content	9.0	
Maximum Dry Density	2.16	Mg/m^3
Particle Density	2.77 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	2 %
Description	Stiff brown slightly sandy slightly gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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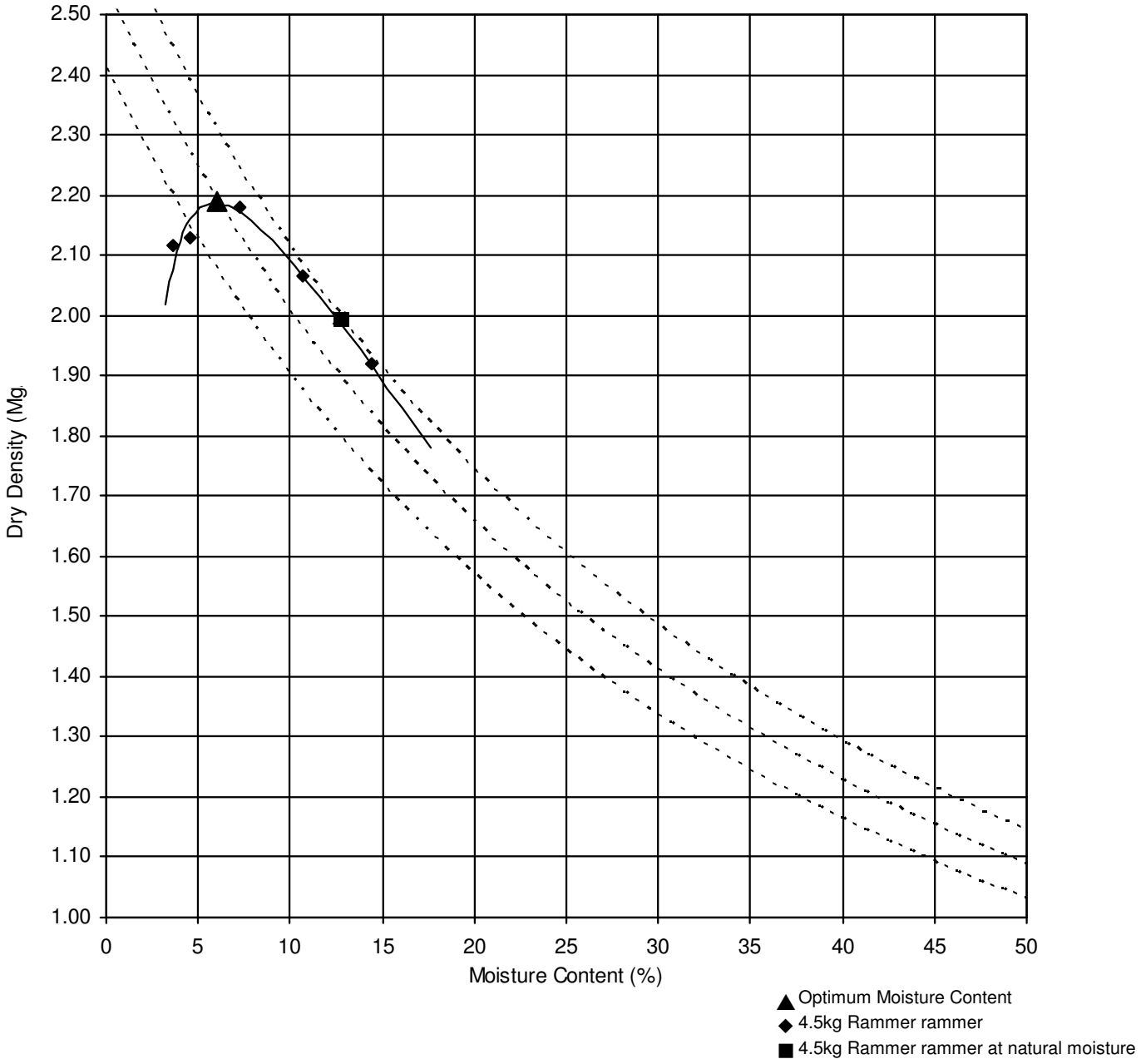
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH220
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76157



Optimum Moisture Content	6.0	
Maximum Dry Density	2.19	Mg/m^3
Particle Density	2.68 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	2 %
Description	Very stiff brown slightly sandy gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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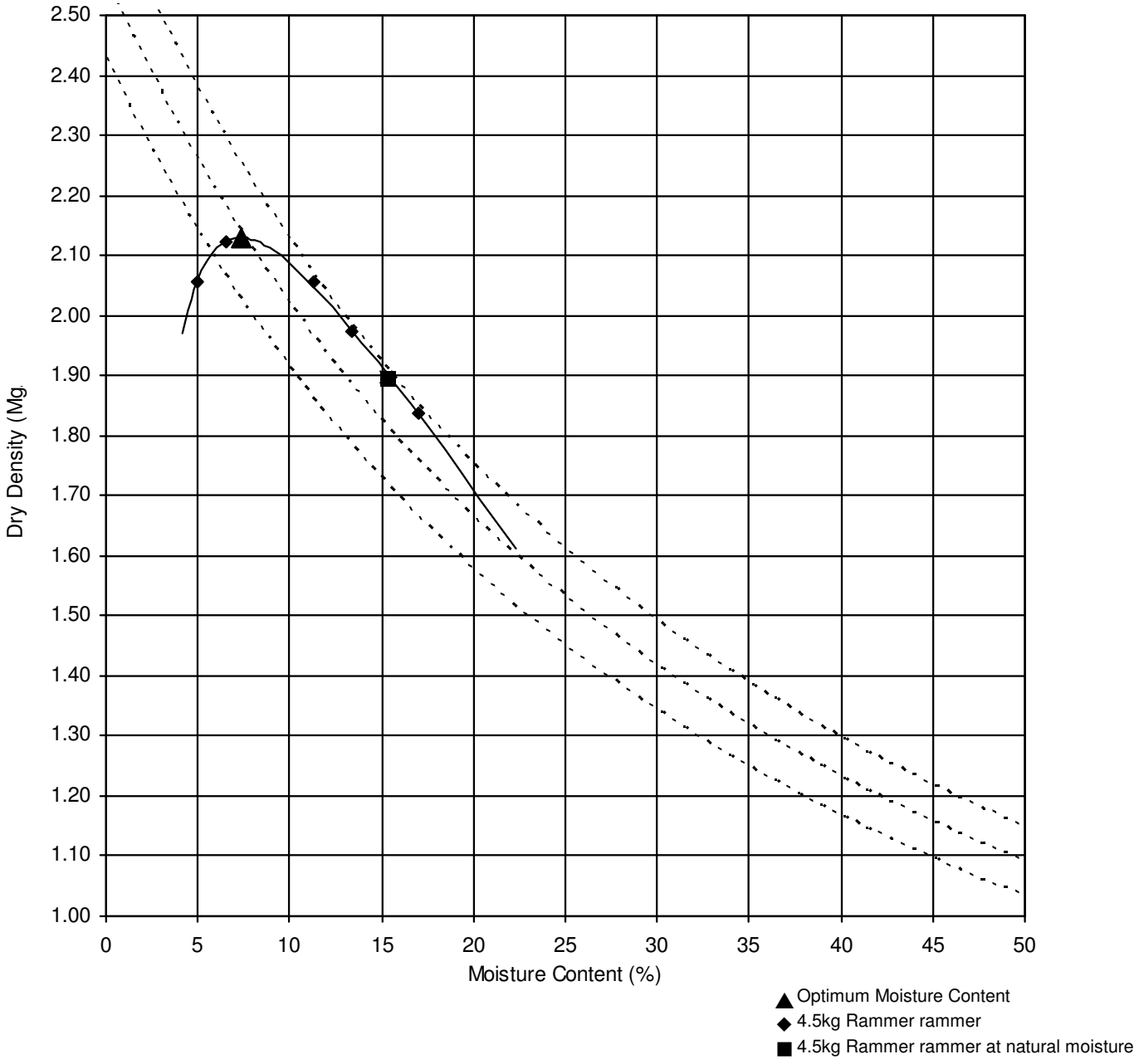
12/11/2019

LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH220A
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76159



Optimum Moisture Content	7.4	
Maximum Dry Density	2.13	Mg/m^3
Particle Density	2.70 (Ass'm)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	2 %
Description	Stiff to very stiff yellowish brown slightly sandy gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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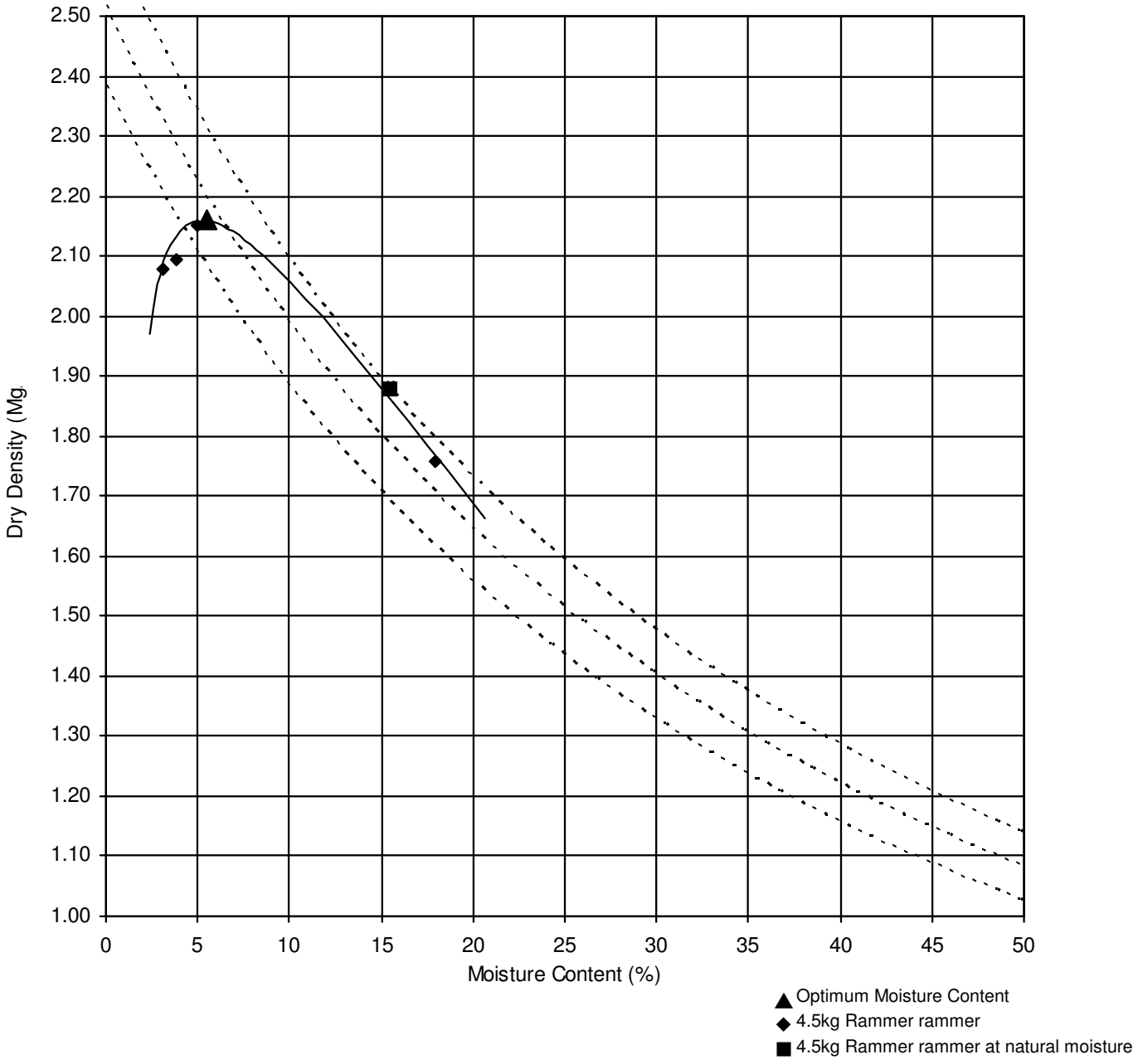
12/11/2019

LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH220A
Sample Depth	4.00-4.45m
Sample Type	B
Sample Ref	N76160



Optimum Moisture Content	5.5	
Maximum Dry Density	2.16	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	0 %
Description	Very stiff yellowish brown slightly sandy gravelly CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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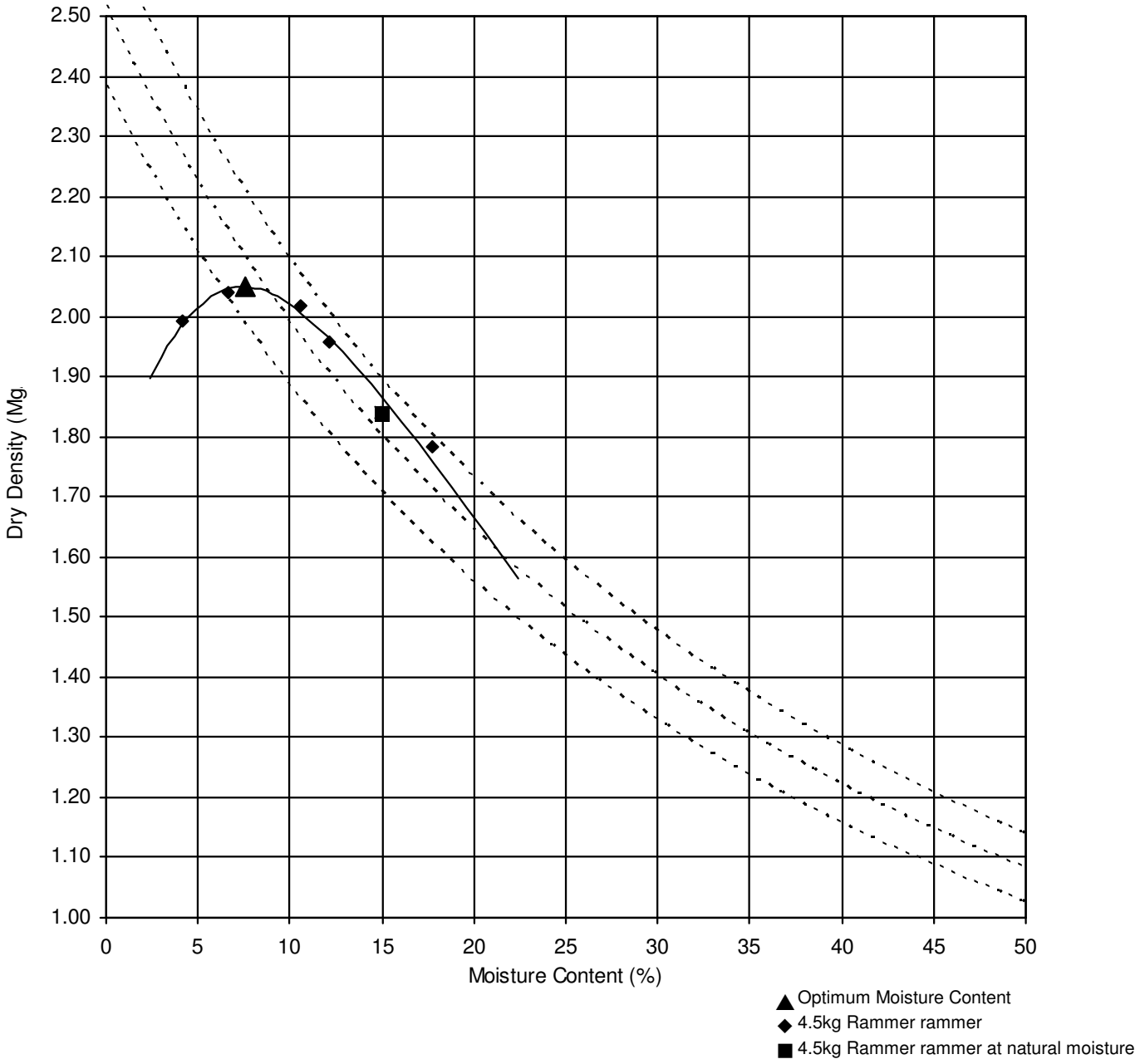
12/11/2019

LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	BH228
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76044



Optimum Moisture Content	7.6	
Maximum Dry Density	2.05	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	4 %
	20mm sieve	6 %
Description	Very stiff brown gravelly CLAY.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.5 and 3.6

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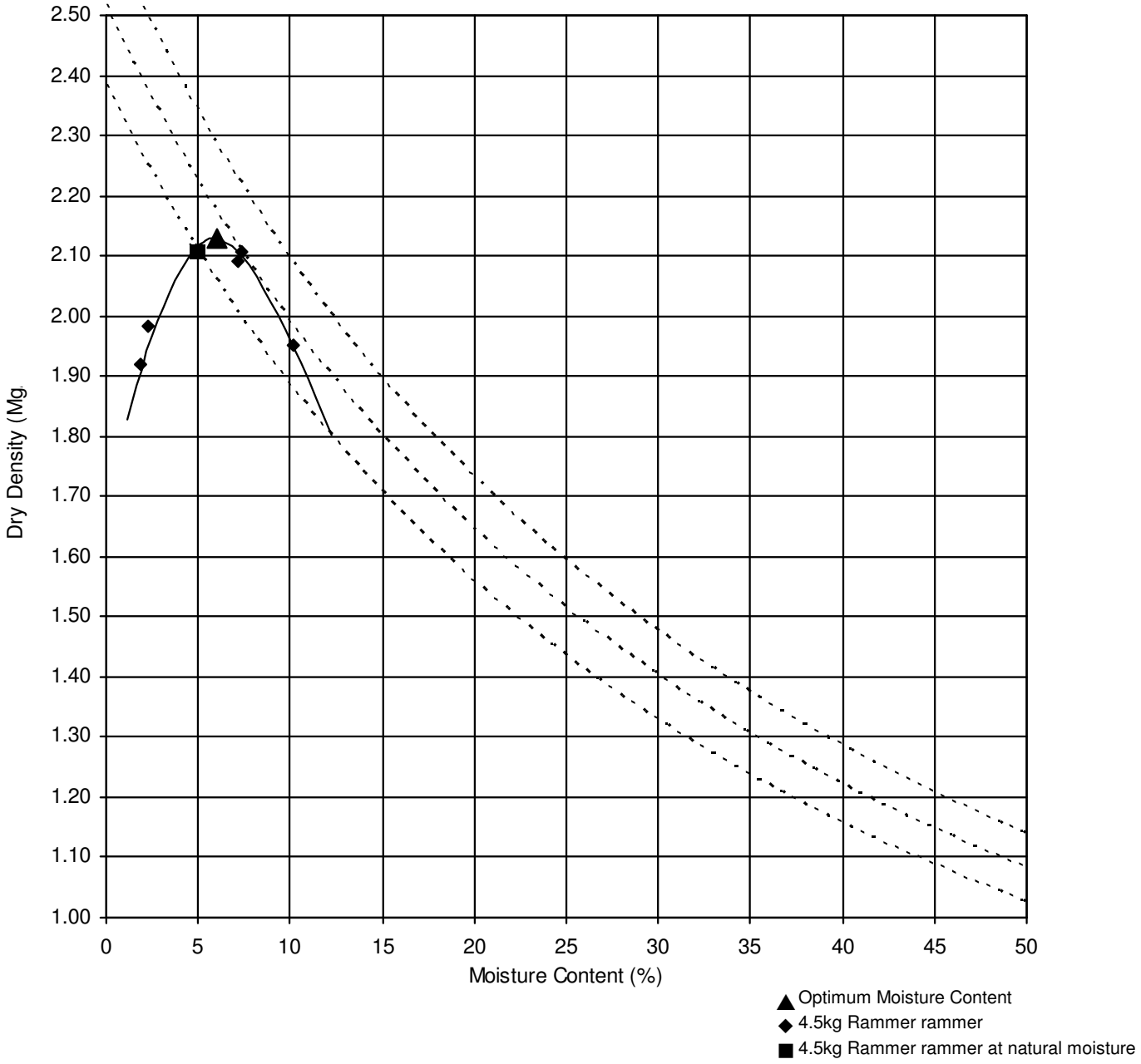
12/11/2019

LABORATORY RESULTS - *Compaction*

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP207
Sample Depth	0.50-0.60m
Sample Type	B
Sample Ref	N76482



Optimum Moisture Content	6.0	
Maximum Dry Density	2.13	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	22 %
	20mm sieve	17 %
Description	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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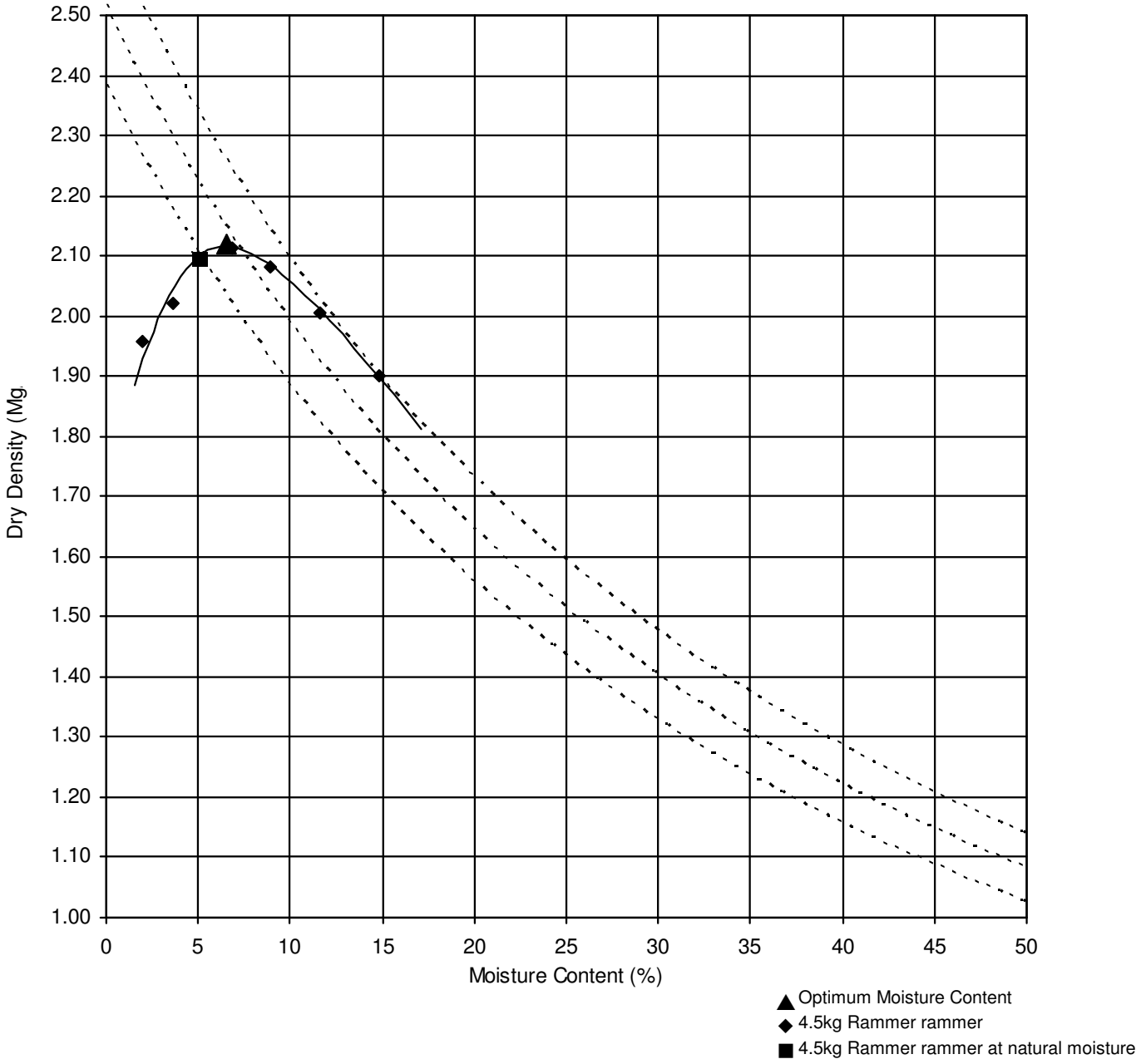
12/11/2019

LABORATORY RESULTS - *Compaction*

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP208
Sample Depth	0.50-0.60m
Sample Type	B
Sample Ref	N76486



Optimum Moisture Content	6.5	
Maximum Dry Density	2.12	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	19 %
	20mm sieve	14 %
Description	MADE GROUND: Brown gravelly slightly silty fine to coarse sand with a low cobble content.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.5 and 3.6

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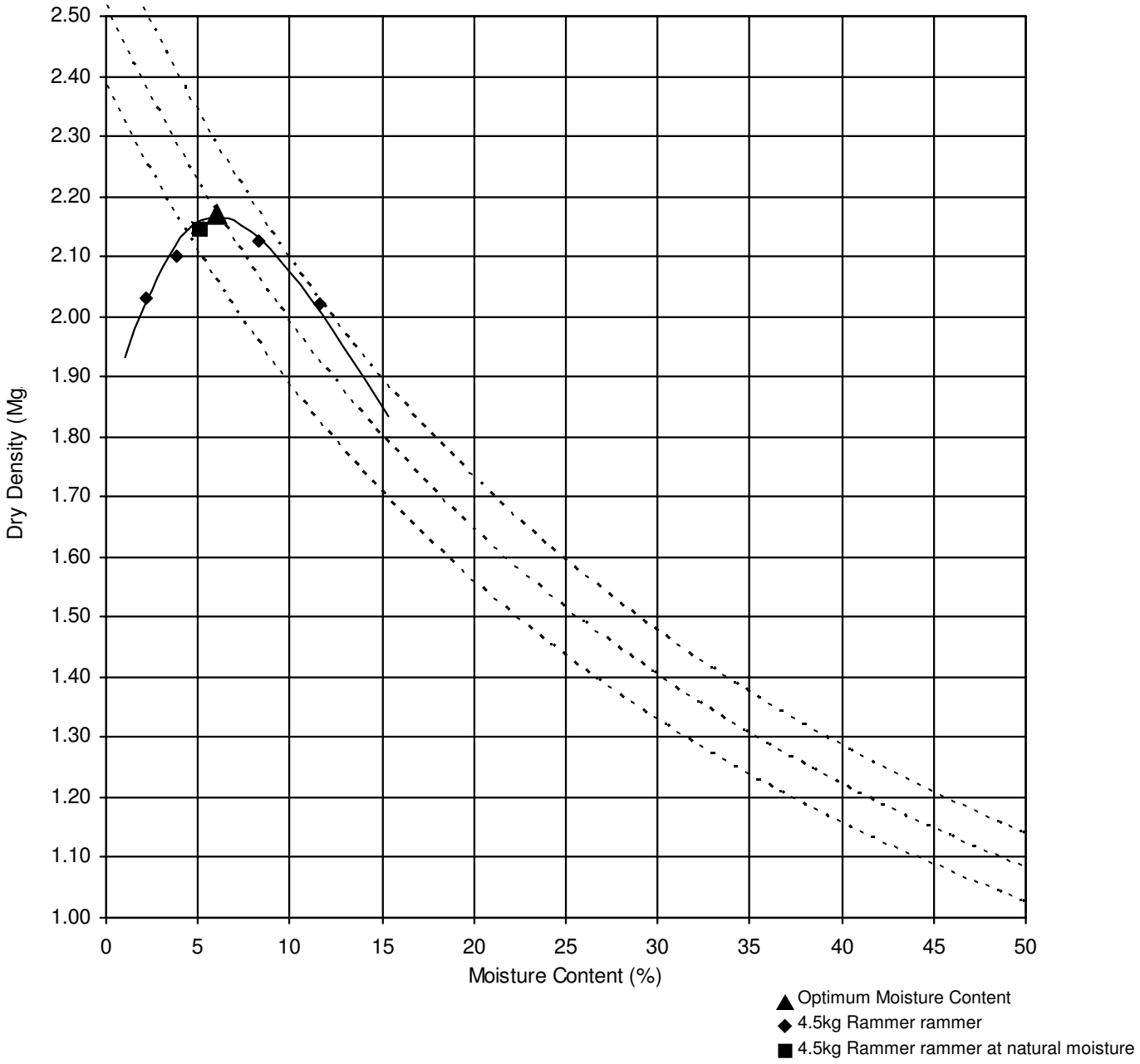
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP208
Sample Depth	1.10m
Sample Type	B
Sample Ref	N76488



Optimum Moisture Content	6.0	
Maximum Dry Density	2.17	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	46 %
	20mm sieve	16 %
Description	MADE GROUND: Grey sandy medium to coarse gravel.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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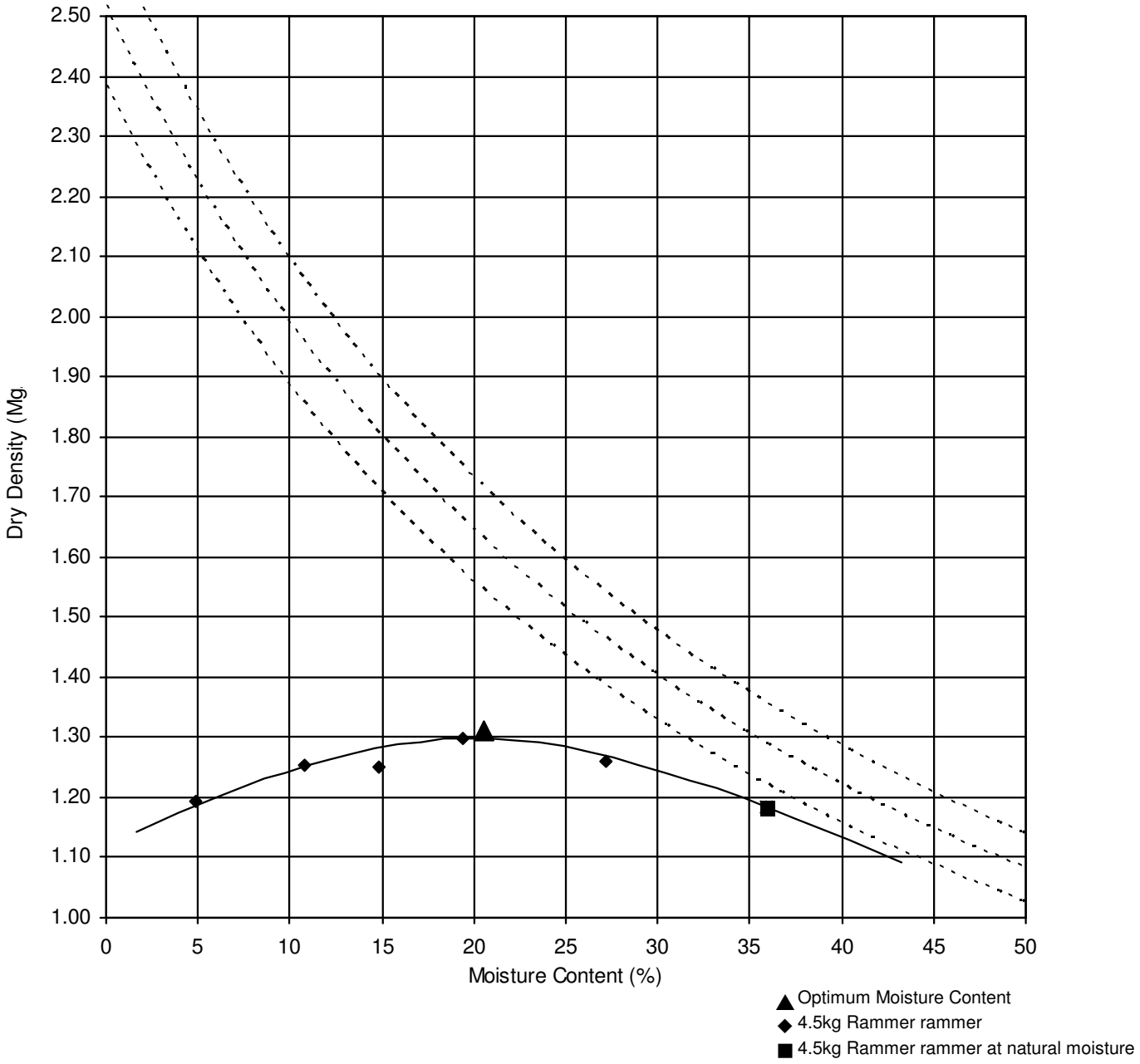
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LABORATORY RESULTS - Compaction

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP211
Sample Depth	1.00-2.00m
Sample Type	B
Sample Ref	N76015



Optimum Moisture Content	20.5	
Maximum Dry Density	1.31	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	1 %
Description	MADE GROUND: Black very gravelly very clayey fine to coarse sand.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.5 and 3.6

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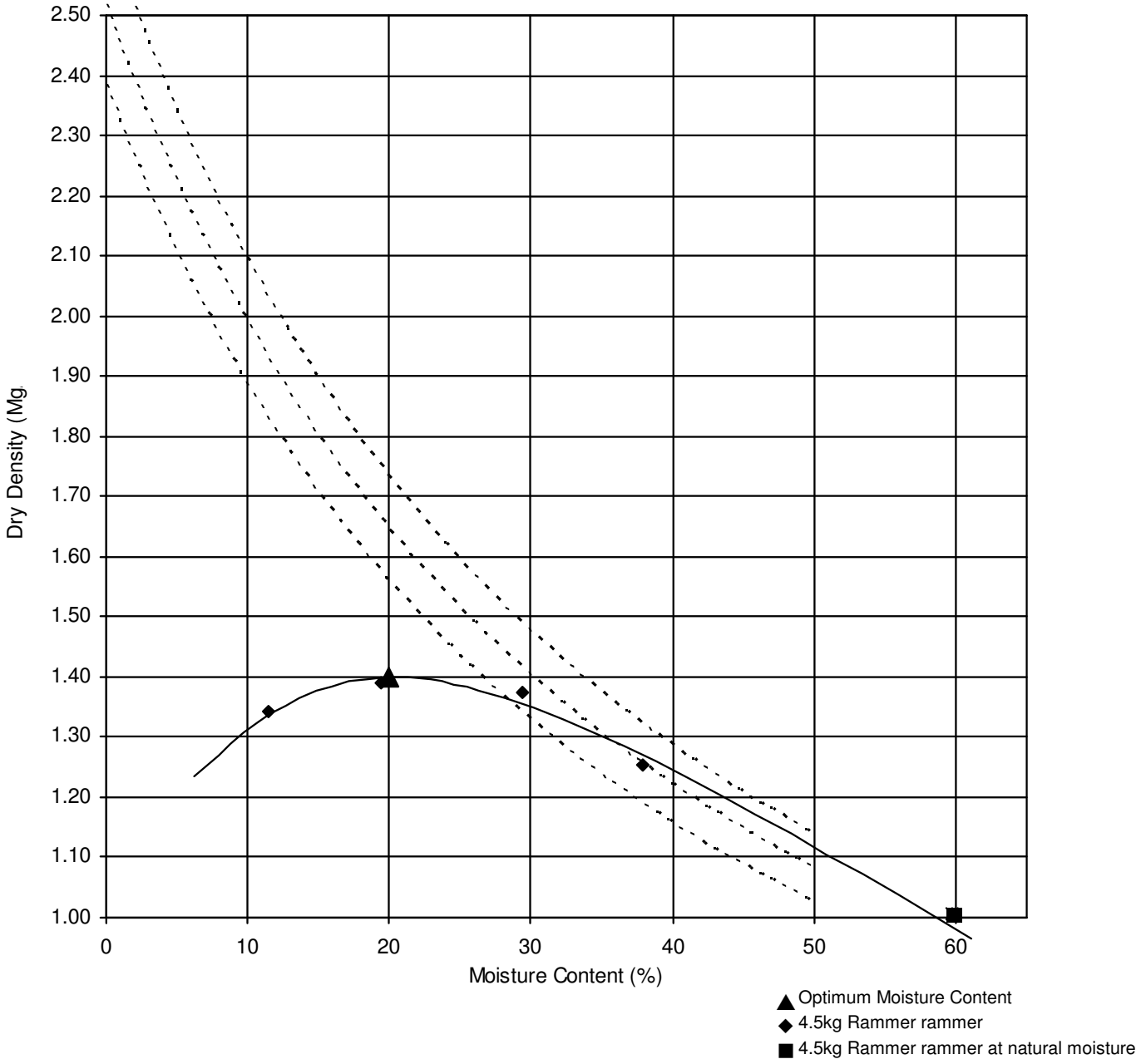
12/11/2019

LABORATORY RESULTS - *Compaction*

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole	TP212
Sample Depth	1.20-2.00m
Sample Type	B
Sample Ref	N76018



Optimum Moisture Content	20.0	
Maximum Dry Density	1.40	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 4.5kg Rammer	

Particles retained on	37.5mm	0 %
	20mm sieve	0 %
Description	Soft bluish grey CLAY.	

Remarks BS1377 Part 4 1990 : Clause 3.5 and 3.6

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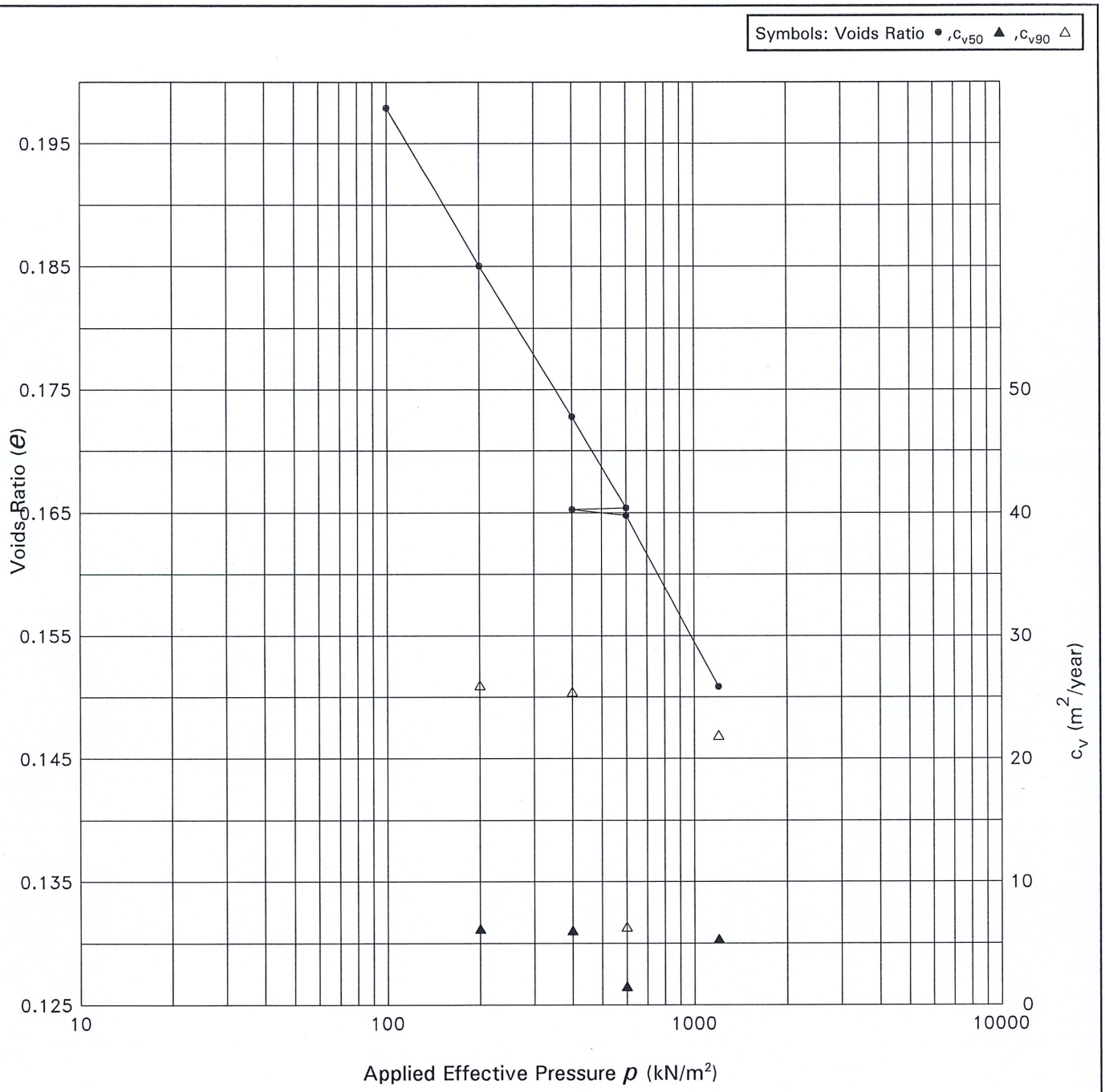
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH109
Sample Depth 9.60 - 10.05 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-600	600-400	400-600	600-1200			
m_v m²/MN	0.48	0.11	0.05	0.03	-.00	.00	0.02			
c_{v50} Log Time m²/yr	-	6.17	6.04	1.50	-	-	5.34			
c_{v90} Root Time m²/yr	-	25.95	25.41	6.33	-	-	21.89			
Voids Ratio	0.198	0.185	0.173	0.165	0.165	0.165	0.151			

Description
N76302 Very soft brown sandy gravelly CLAY

Specimen Diameter	74.560	mm
Initial Height	18.700	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.259	

Initial Water Content	11.86	%
Final Water Content	9.52	%
Initial Saturation	100	%
Initial Bulk Density	2.35	Mg/m³
Initial Dry Density	2.11	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

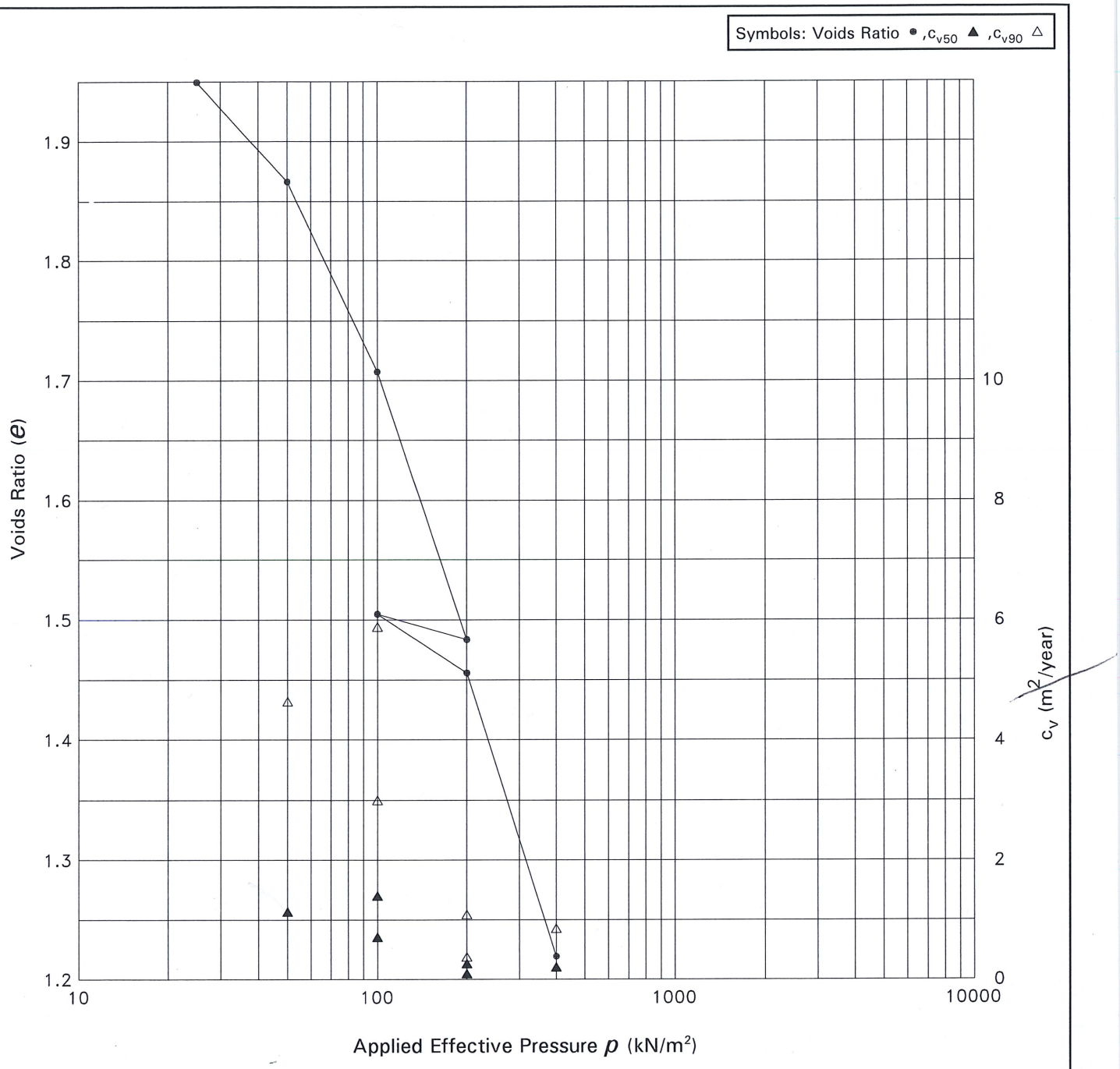
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH102
Sample Depth 2.00 - 2.45 m
Sample Type U



Applied Pressure kN/m²	0-25	25-50	50-100	100-200	200-100	100-200	200-400			
m_v m²/MN	1.49	1.13	1.11	0.83	0.08	0.20	0.48			
c_{v50} Log Time m²/yr	-	1.14	0.71	0.26	1.40	0.09	0.20			
c_{v90} Root Time m²/yr	-	4.64	3.00	1.08	5.88	0.37	0.85			
Voids Ratio	1.949	1.866	1.707	1.484	1.505	1.456	1.219			

Description
N76021 Very soft grey organic peaty CLAY

Specimen Diameter	74.540	mm
Initial Height	18.800	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	2.064	

Initial Water Content	74.77	%
Final Water Content	48.69	%
Initial Saturation	96.01	%
Initial Bulk Density	1.51	Mg/m³
Initial Dry Density	0.86	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

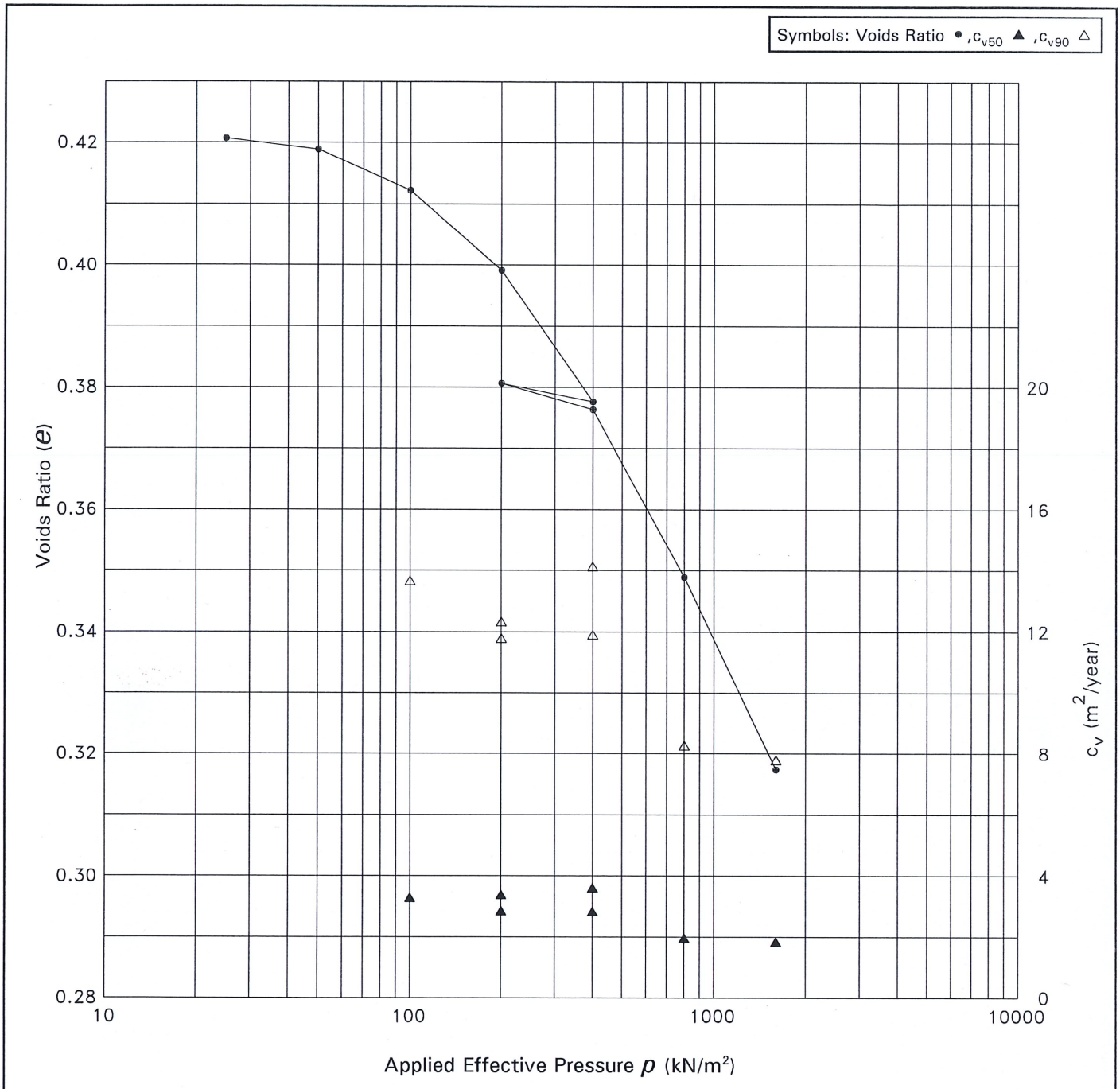
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH212
Sample Depth 2.00 - 2.45 m
Sample Type UT



Applied Pressure kN/m²	0-25	25-50	50-100	100-200	200-400	400-200	200-400	400-800	800-1600	
m_v m^2/MN	0.05	0.05	0.09	0.09	0.08	0.01	0.02	0.05	0.03	
c_{v50} Log Time m^2/yr	-	-	3.29	2.86	2.83	3.39	3.61	1.96	1.84	
c_{v90} Root Time m^2/yr	-	-	13.66	11.79	11.90	12.33	14.13	8.27	7.79	
Voids Ratio	0.421	0.419	0.412	0.399	0.378	0.381	0.376	0.349	0.317	

Description
N76554 Firm reddish brown slightly gravelly slightly sandy CLAY

Specimen Diameter	74.540	mm
Initial Height	18.920	mm
Particle Density	2.65 Measured	
Initial Voids Ratio	0.422	

Initial Water Content	16.16	%
Final Water Content	15.51	%
Initial Saturation	100	%
Initial Bulk Density	2.16	Mg/m^3
Initial Dry Density	1.86	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

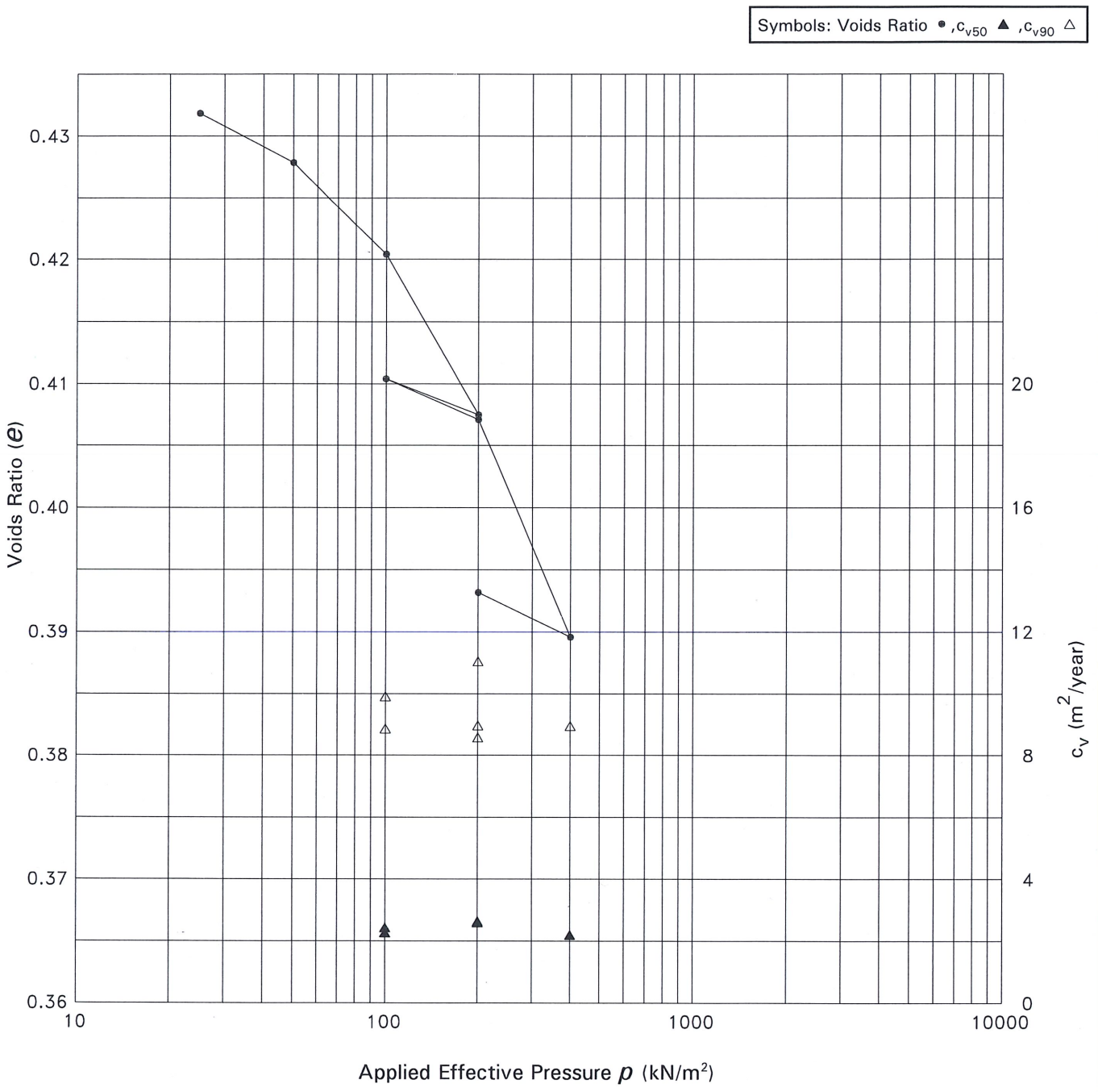
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH213
Sample Depth 2.00 - 2.45 m
Sample Type UT



Applied Pressure kN/m²	0-25	25-50	50-100	100-200	200-100	100-200	200-400	400-200		
m_v m^2/MN	0.91	0.11	0.10	0.09	0.02	0.02	0.06	0.01		
c_{v50} Log Time m^2/yr	-	-	2.42	2.64	2.26	2.62	2.19	2.59		
c_{v90} Root Time m^2/yr	-	-	9.91	11.04	8.86	8.97	8.95	8.58		
Voids Ratio	0.432	0.428	0.420	0.407	0.410	0.407	0.390	0.393		

Description
N76037 Firm reddish brown slightly gravelly CLAY

Specimen Diameter	74.550	mm
Initial Height	18.720	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.465	

Initial Water Content	18.98	%
Final Water Content	18.87	%
Initial Saturation	100	%
Initial Bulk Density	2.15	Mg/m^3
Initial Dry Density	1.81	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

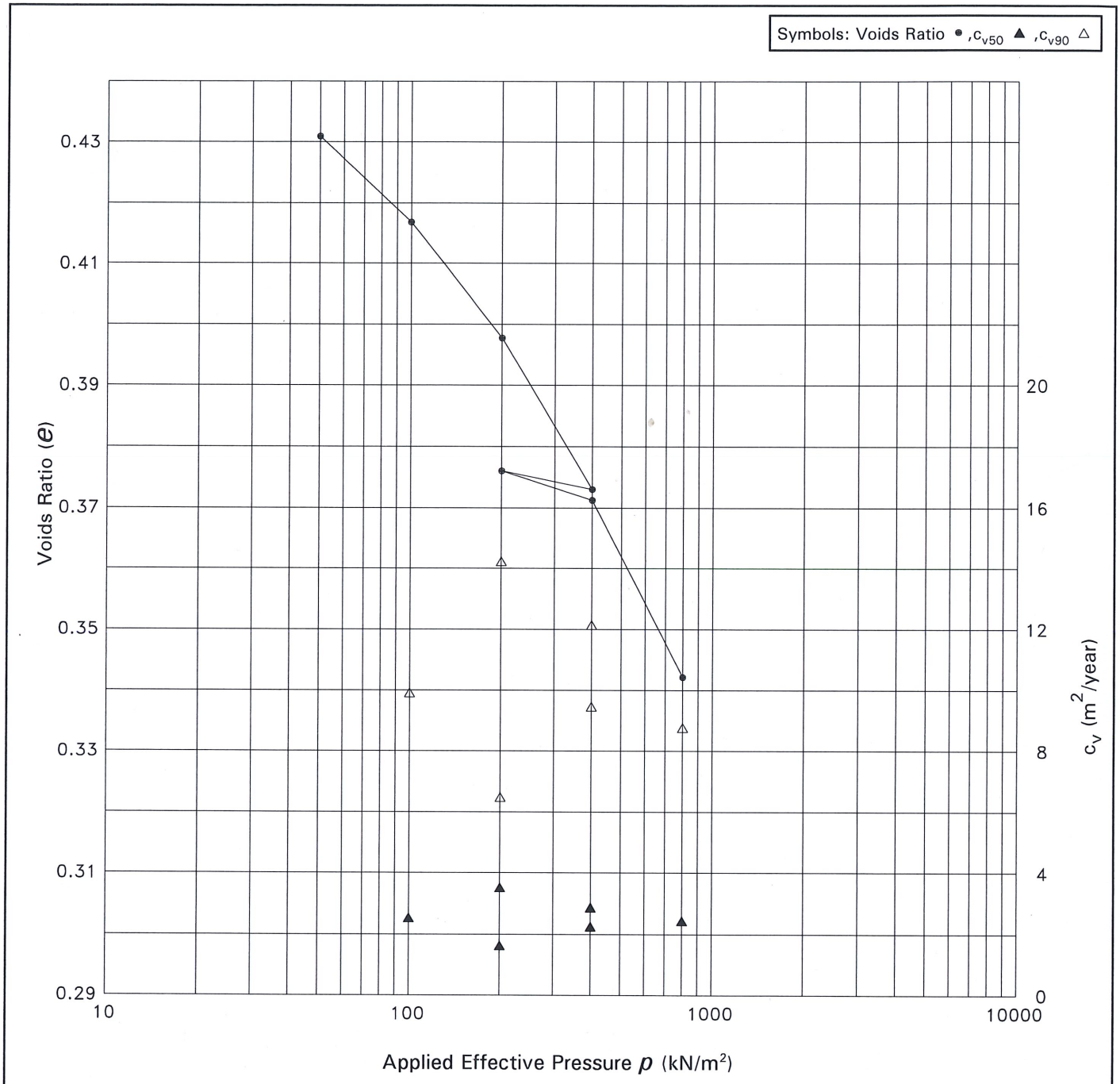
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH213
Sample Depth 4.00 - 4.45 m
Sample Type UT



Applied Pressure kN/m²	0-50	50-100	100-200	200-400	400-200	200-400	400-800			
m_v m²/MN	0.26	0.20	0.13	0.09	0.01	0.02	0.05			
c_{v50} Log Time m²/yr	-	2.53	1.63	2.25	3.52	2.87	2.43			
c_{v90} Root Time m²/yr	-	9.91	6.48	9.45	14.23	12.13	8.76			
Voids Ratio	0.431	0.417	0.398	0.373	0.376	0.371	0.342			

Description
N76040 Firm reddish brown slightly gravelly CLAY

Specimen Diameter	74.550	mm
Initial Height	18.730	mm
Particle Density	2.65	Assumed
Initial Voids Ratio	0.450	

Initial Water Content	18.38	%
Final Water Content	16.66	%
Initial Saturation	100	%
Initial Bulk Density	2.16	Mg/m³
Initial Dry Density	1.83	Mg/m³

Remarks
Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

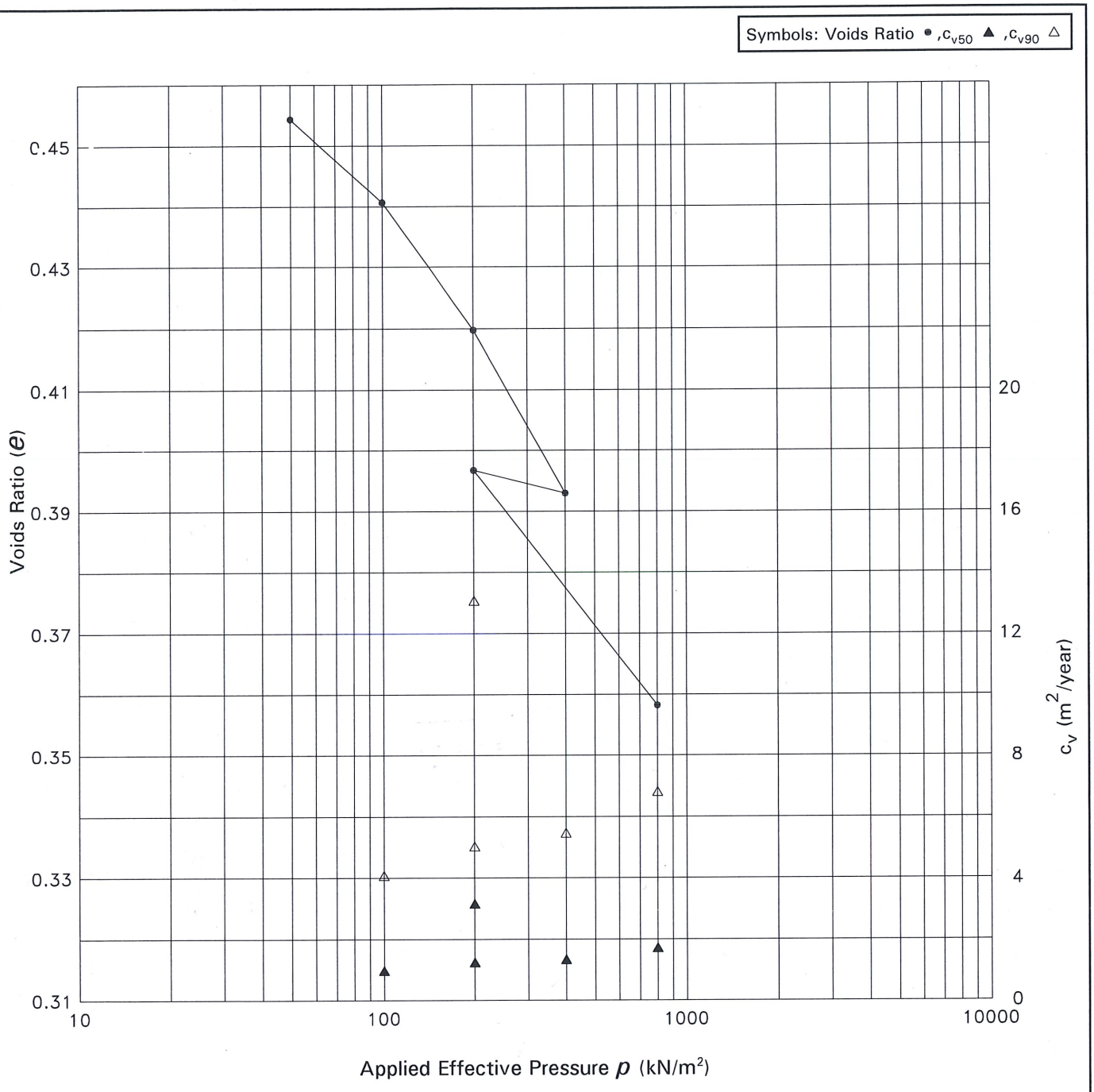
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH216A
Sample Depth 5.00 - 5.45 m
Sample Type UT



Applied Pressure kN/m²	0-50	50-100	100-200	200-400	400-200	200-800				
m_v m^2/MN	0.37	0.19	0.14	0.09	0.01	0.05				
c_{v50} Log Time m^2/yr	-	0.97	1.24	1.34	3.16	1.71				
c_{v90} Root Time m^2/yr	-	4.08	5.03	5.47	13.08	6.81				
Voids Ratio	0.454	0.441	0.420	0.393	0.397	0.358				

Description
Soft Reddish Brown slight Gravelly CLAY

Specimen Diameter	74.870	mm
Initial Height	18.810	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.482	

Initial Water Content	19.90	%
Final Water Content	17.34	%
Initial Saturation	100	%
Initial Bulk Density	2.14	Mg/m^3
Initial Dry Density	1.79	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

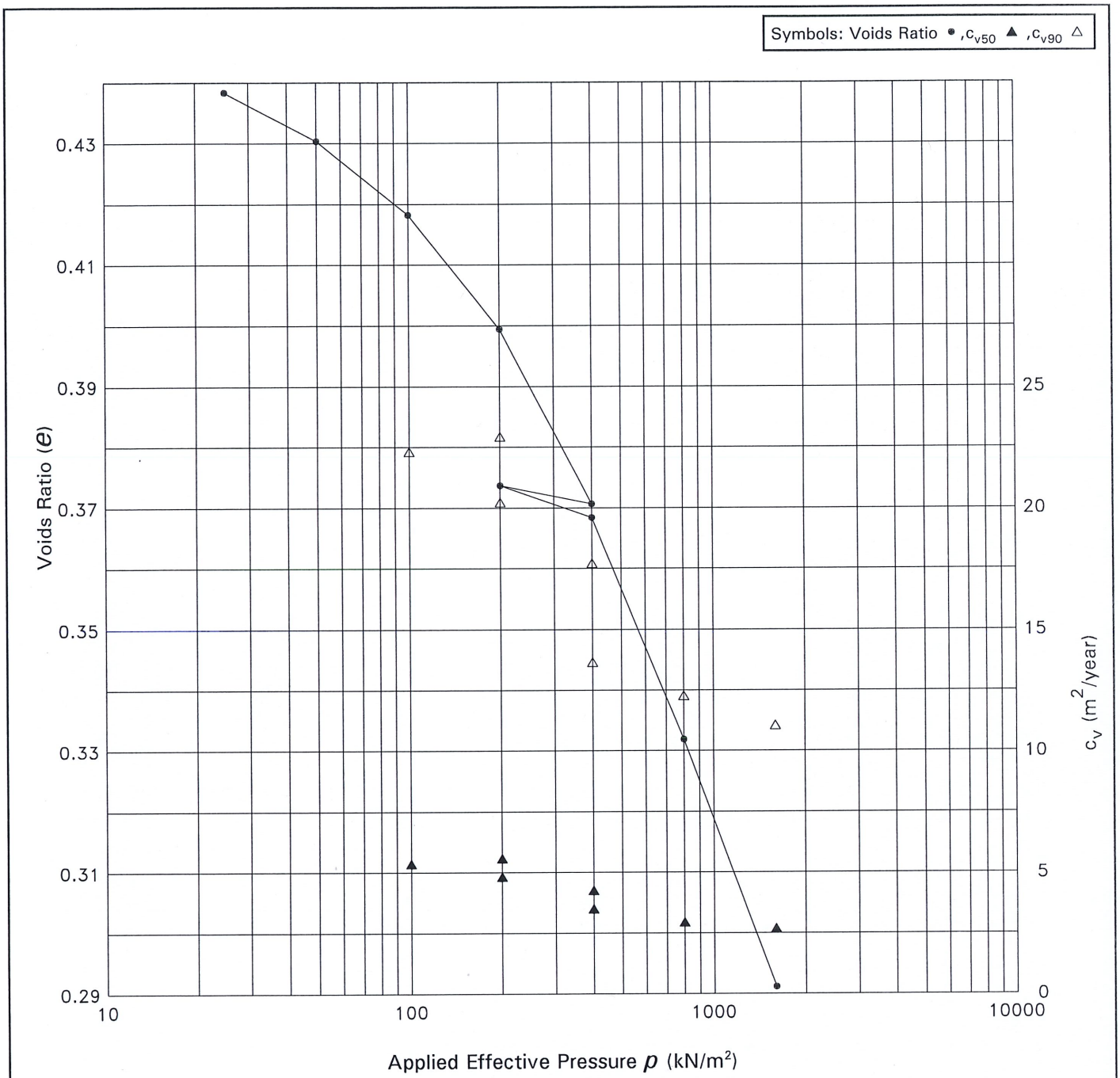
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH217
Sample Depth 3.20 - 3.65 m
Sample Type UT



Applied Pressure kN/m²	0-25	25-50	50-100	100-200	200-400	400-200	200-400	400-800	800-1600	
m_v m^2/MN	0.78	0.22	0.17	0.13	0.10	0.01	0.02	0.07	0.04	
c_{v50} Log Time m^2/yr	-	-	5.36	5.58	4.25	4.82	3.50	2.94	2.68	
c_{v90} Root Time m^2/yr	-	-	22.32	22.93	17.71	20.23	13.65	12.27	11.05	
Voids Ratio	0.438	0.430	0.418	0.399	0.371	0.374	0.368	0.332	0.291	

Description
N76562 Stiff reddish brown slightly gravelly slightly sandy CLAY

Specimen Diameter	74.900	mm
Initial Height	18.870	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.467	

Initial Water Content	17.19	%
Final Water Content	15.97	%
Initial Saturation	97.58	%
Initial Bulk Density	2.12	Mg/m^3
Initial Dry Density	1.81	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

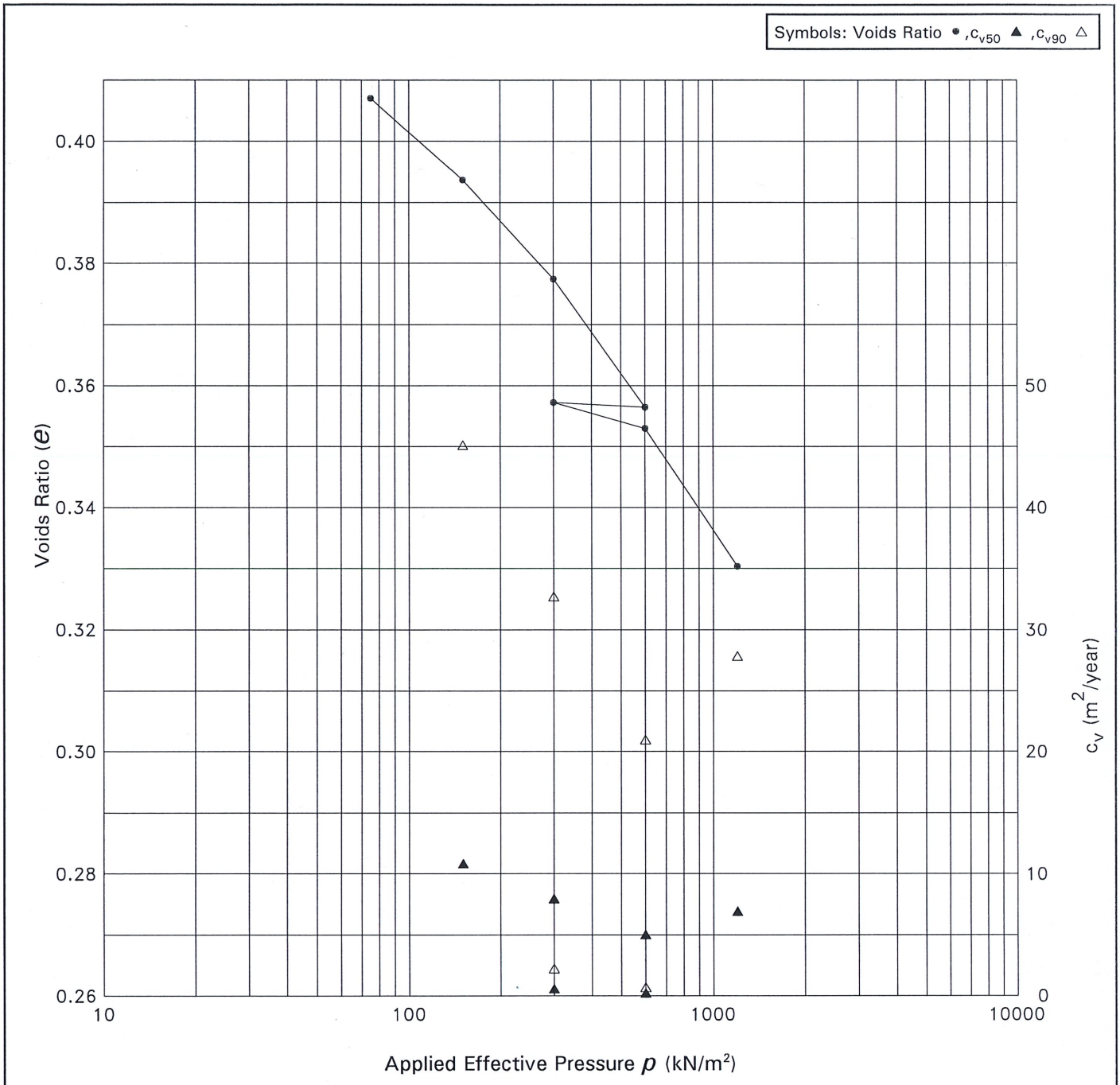
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH217
Sample Depth 7.40 - 7.85 m
Sample Type UT



Applied Pressure kN/m²	0-75	75-150	150-300	300-600	600-300	300-600	600-1200			
m_v m^2/MN	0.44	0.13	0.08	0.05	.00	0.01	0.03			
c_{v50} Log Time m^2/yr	-	10.84	7.96	5.00	0.56	0.22	6.93			
c_{v90} Root Time m^2/yr	-	45.11	32.72	20.97	2.23	0.69	27.84			
Voids Ratio	0.407	0.394	0.377	0.356	0.357	0.353	0.330			

Description
N76565 Soft to firm brown sandy slightly gravelly clayey SILT

Specimen Diameter	74.550	mm
Initial Height	18.730	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.455	

Initial Water Content	19.70	%
Final Water Content	16.33	%
Initial Saturation	100	%
Initial Bulk Density	2.18	Mg/m³
Initial Dry Density	1.82	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

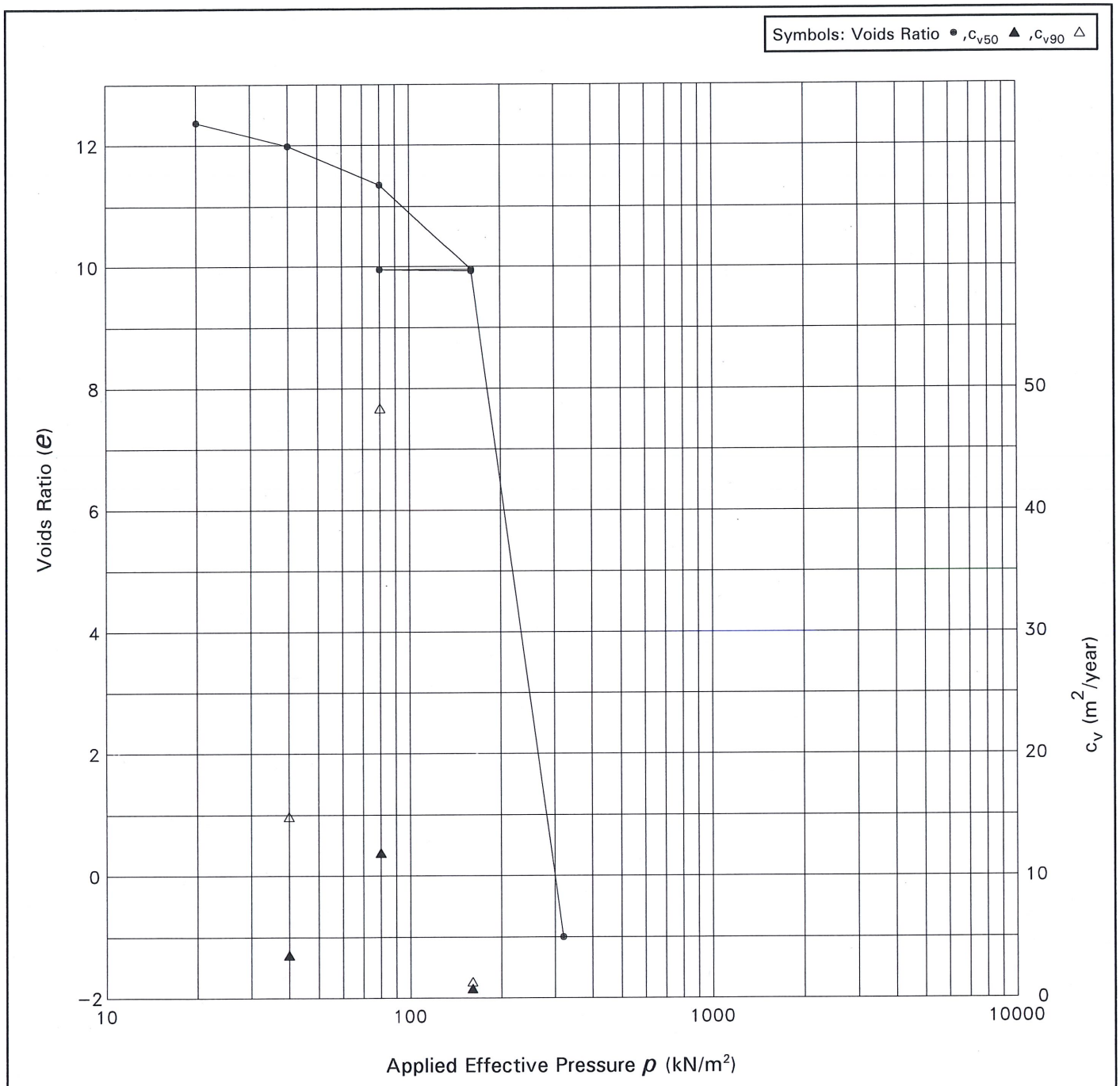
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH219
Sample Depth 2.00 - 2.45 m
Sample Type UT



Applied Pressure kN/m²	0-20	20-40	40-80	80-160	160-80	80-160	160-320			
m_v m^2/MN	2.53	1.43	1.22	1.41	-.00	0.03	6.25			
c_{v50} Log Time m^2/yr	-	3.53	11.88	0.77	-	-	-			
c_{v90} Root Time m^2/yr	-	14.86	48.38	1.33	-	-	-			
Voids Ratio	12.368	11.985	11.349	9.953	9.952	9.929	-1.000			

Description
Very Soft Dark Brown Organic PEAT

Specimen Diameter	74.720	mm
Initial Height	18.710	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	13.081	

Initial Water Content	441.13	%
Final Water Content	347.60	%
Initial Saturation	89.36	%
Initial Bulk Density	1.02	Mg/m^3
Initial Dry Density	0.19	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

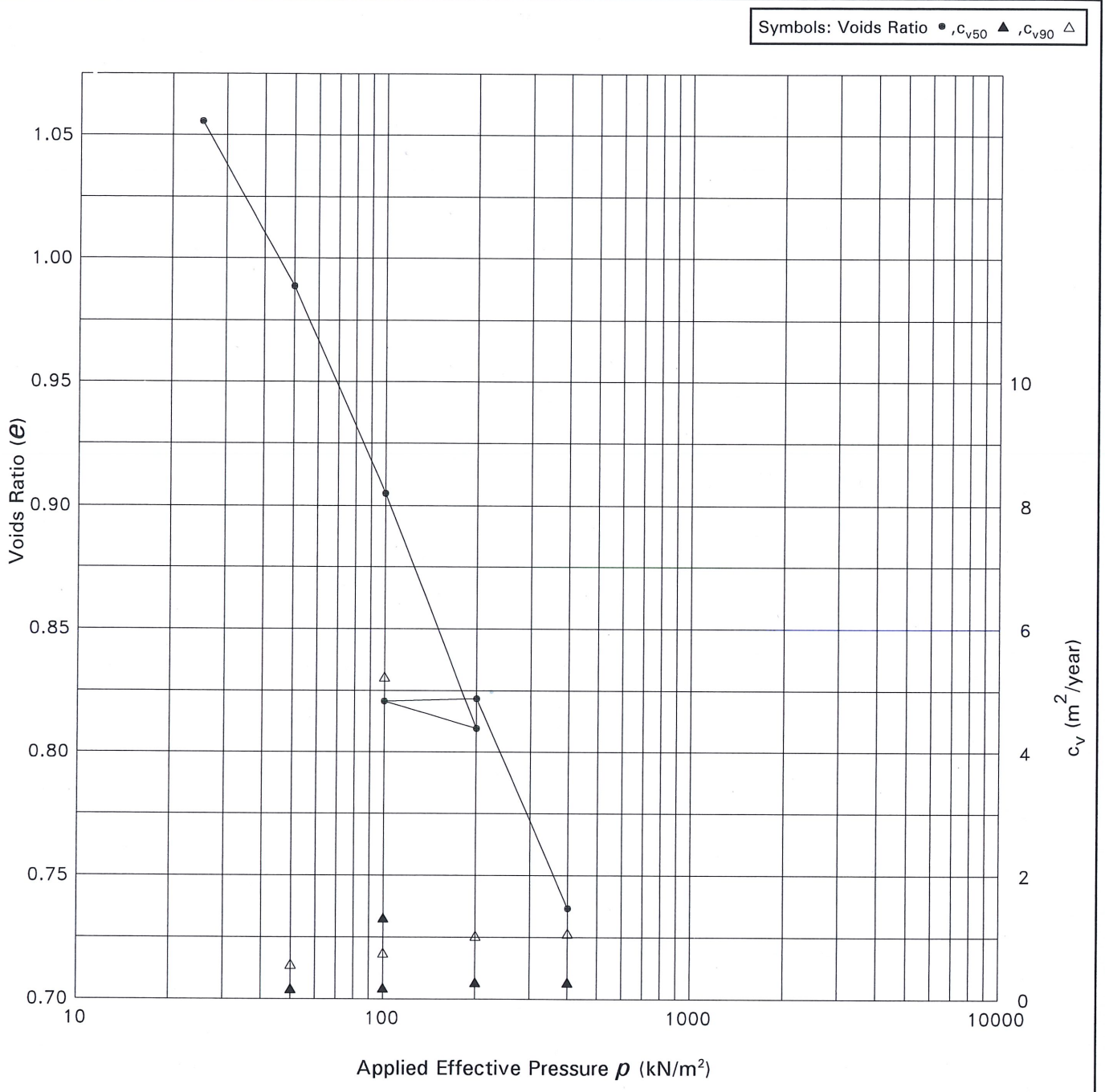
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH219
Sample Depth 4.00 - 4.45 m
Sample Type UT



Applied Pressure kN/m²	0-25	25-50	50-100	100-200	200-100	100-200	200-400			
m_v m^2/MN	4.19	1.30	0.84	0.50	0.06	-0.01	0.23			
c_{v50} Log Time m^2/yr	-	0.16	0.18	0.27	1.31	-	0.27			
c_{v90} Root Time m^2/yr	-	0.56	0.74	1.02	5.22	-	1.06			
Voids Ratio	1.056	0.989	0.905	0.810	0.821	0.822	0.737			

Description
N75950 Very soft grey CLAY

Specimen Diameter	74.550	mm
Initial Height	18.800	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	1.296	

Initial Water Content	50.39	%
Final Water Content	30.36	%
Initial Saturation	100	%
Initial Bulk Density	1.74	Mg/m^3
Initial Dry Density	1.15	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

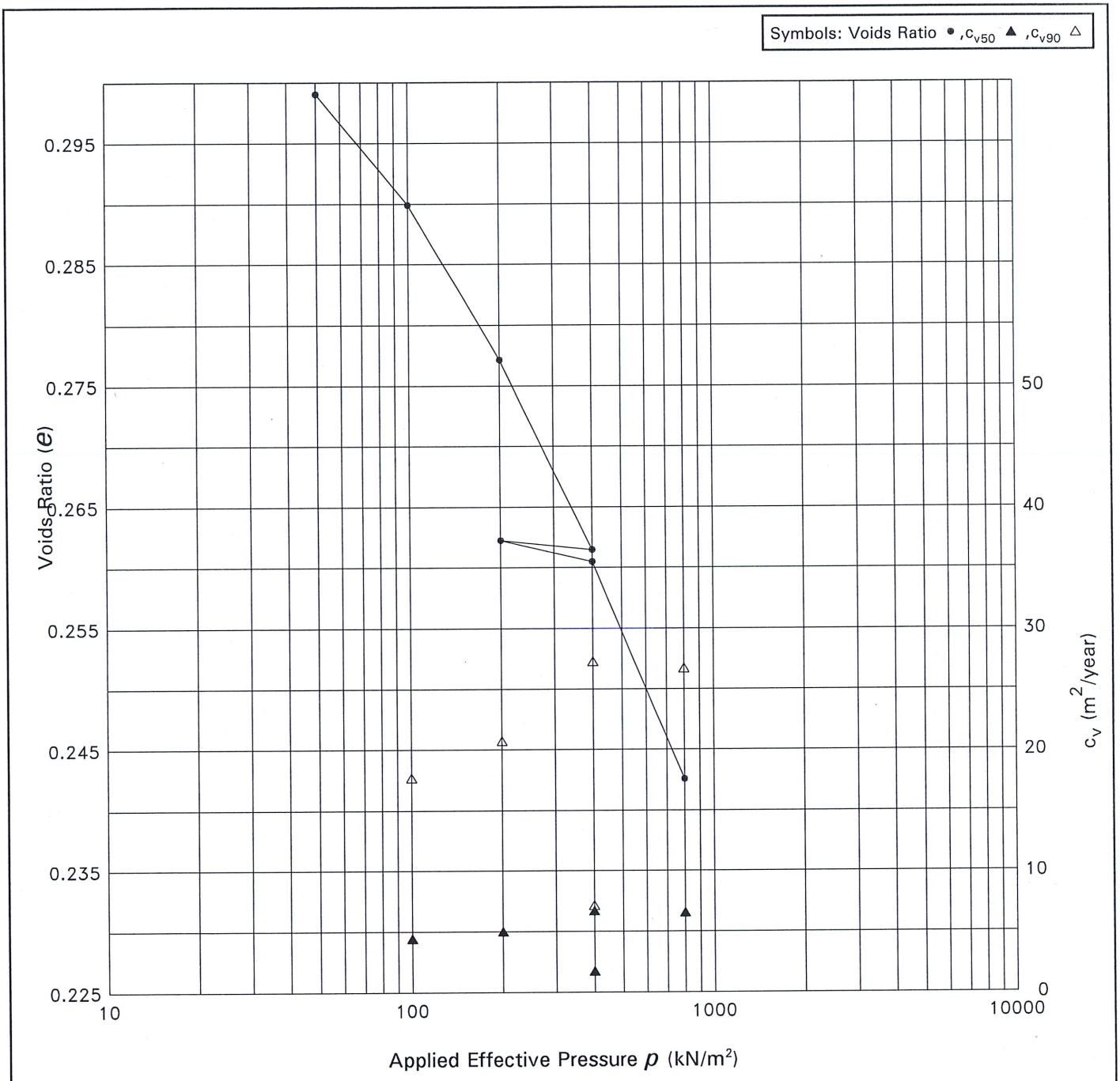
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH221
Sample Depth 3.20 - 3.65 m
Sample Type UT



Applied Pressure kN/m²	0-50	50-100	100-200	200-400	400-200	200-400	400-800			
m_v m²/MN	0.42	0.14	0.10	0.06	.00	0.01	0.04			
c_{v50} Log Time m²/yr	-	4.42	4.99	6.69	-	1.73	6.55			
c_{v90} Root Time m²/yr	-	17.71	20.72	27.27	-	7.15	26.71			
Voids Ratio	0.299	0.290	0.277	0.261	0.262	0.260	0.243			

Description
N76389 Firm brown slightly gravelly CLAY

Specimen Diameter	74.540	mm
Initial Height	18.900	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.327	

Initial Water Content	14.01	%
Final Water Content	12.14	%
Initial Saturation	100	%
Initial Bulk Density	2.28	Mg/m³
Initial Dry Density	2.00	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

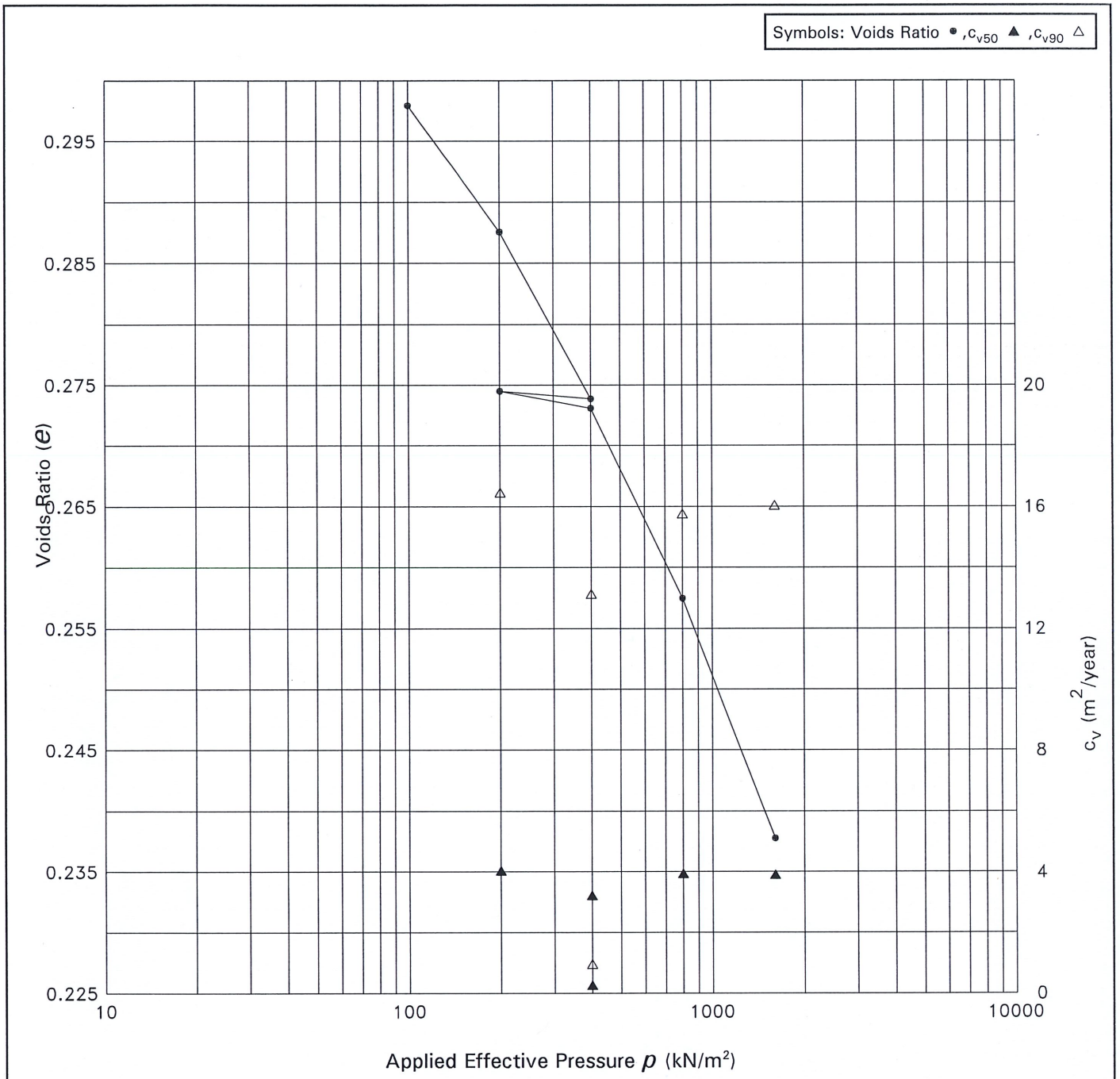
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LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A55 junction 15 & 16 Improvements

Client Ramboll UK limited

Project No PN193981
Borehole BH221
Sample Depth 8.00 - 8.45 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-200	200-400	400-800	800-1600			
m_v m²/MN	0.27	0.08	0.05	.00	0.01	0.03	0.02			
c_{v50} Log Time m²/yr	-	4.03	3.21	-	0.26	3.94	3.90			
c_{v90} Root Time m²/yr	-	16.46	13.13	-	0.96	15.76	16.04			
Voids Ratio	0.298	0.288	0.274	0.274	0.273	0.257	0.238			

Description
N76392 Stiff brown slightly gravelly CLAY

Specimen Diameter	74.930	mm
Initial Height	18.890	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.334	

Initial Water Content	13.63	%
Final Water Content	11.98	%
Initial Saturation	100	%
Initial Bulk Density	2.26	Mg/m³
Initial Dry Density	1.99	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

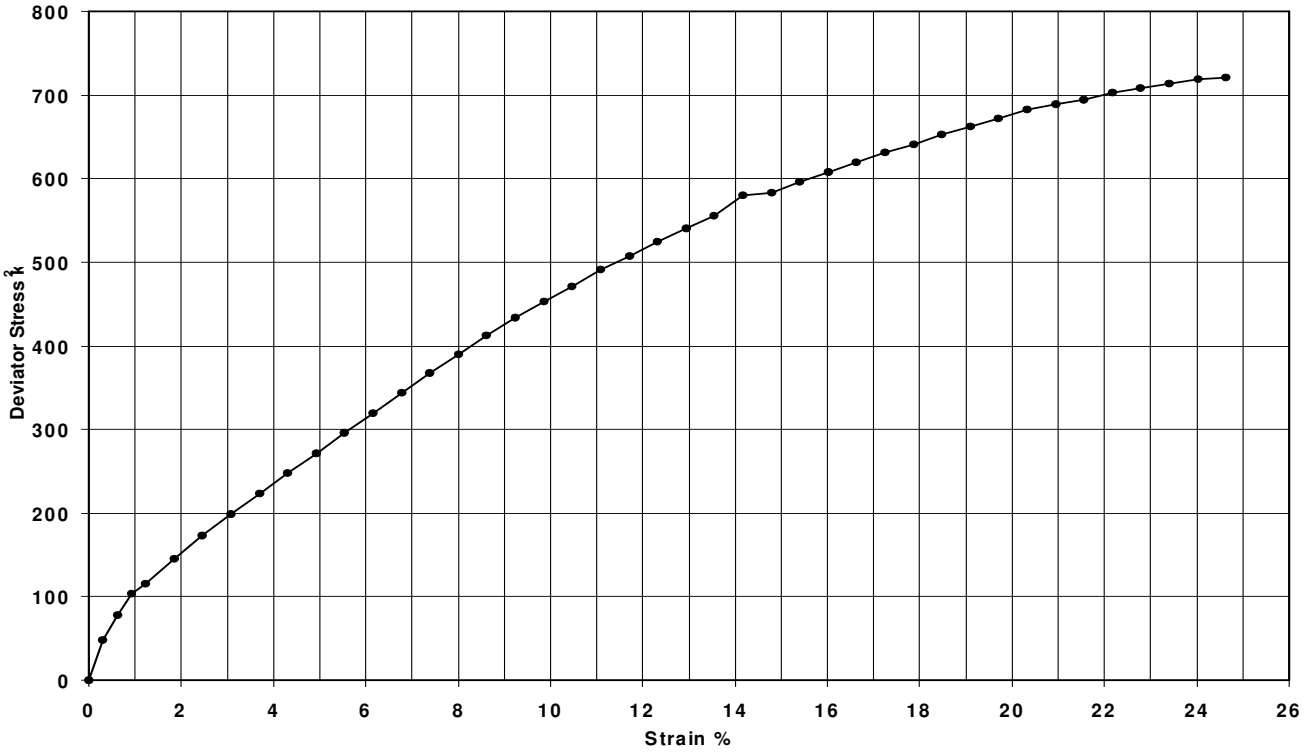
Hole BH102
Sample Depth 21.40-21.65m
Sample Type C
Sample Ref N76147

Sample Description

The following samples were combined to perform this test:

Very stiff extremely high strength slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



	Stage 1	Stage 2	Stage 3
Sample Condition	Undisturbed		
Orientation of sample	Vertical		
Initial Diameter (mm)	102.46		
Initial Length (mm)	162.32		
Initial Water Content (%)	14.7		
Initial Bulk Density (Mg/m³)	2.24		
Initial Dry Density (Mg/m³)	1.95		
Particle Density (Mg/m³)			
Cell Pressure (kPa)	400		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)	0.30 / 1.34		
Rate of Strain (%/min)	1.95		
Corrected Deviator Stress (kPa)	721		
Undrained Shear Strength (kPa)	361		
Strain at Failure (%)	25 (excess)		
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.3	48.1	12.9	540.6
0.6	77.9	13.6	555.2
0.9	103.2	14.2	580.3
1.2	115.0	14.8	583.1
1.8	144.8	15.4	595.8
2.5	172.9	16.0	607.5
3.1	198.2	16.6	619.5
3.7	223.4	17.2	630.9
4.3	247.4	17.9	640.9
4.9	271.7	18.5	652.6
5.5	296.0	19.1	662.0
6.2	319.6	19.7	671.5
6.8	344.3	20.3	682.1
7.4	367.3	20.9	689.3
8.0	389.5	21.6	694.7
8.6	411.8	22.2	703.3
9.2	433.7	22.8	708.2
9.9	452.6	23.4	713.6
10.5	471.6	24.0	719.2
11.1	490.9	24.6	721.1
11.7	507.2		
12.3	524.0		

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

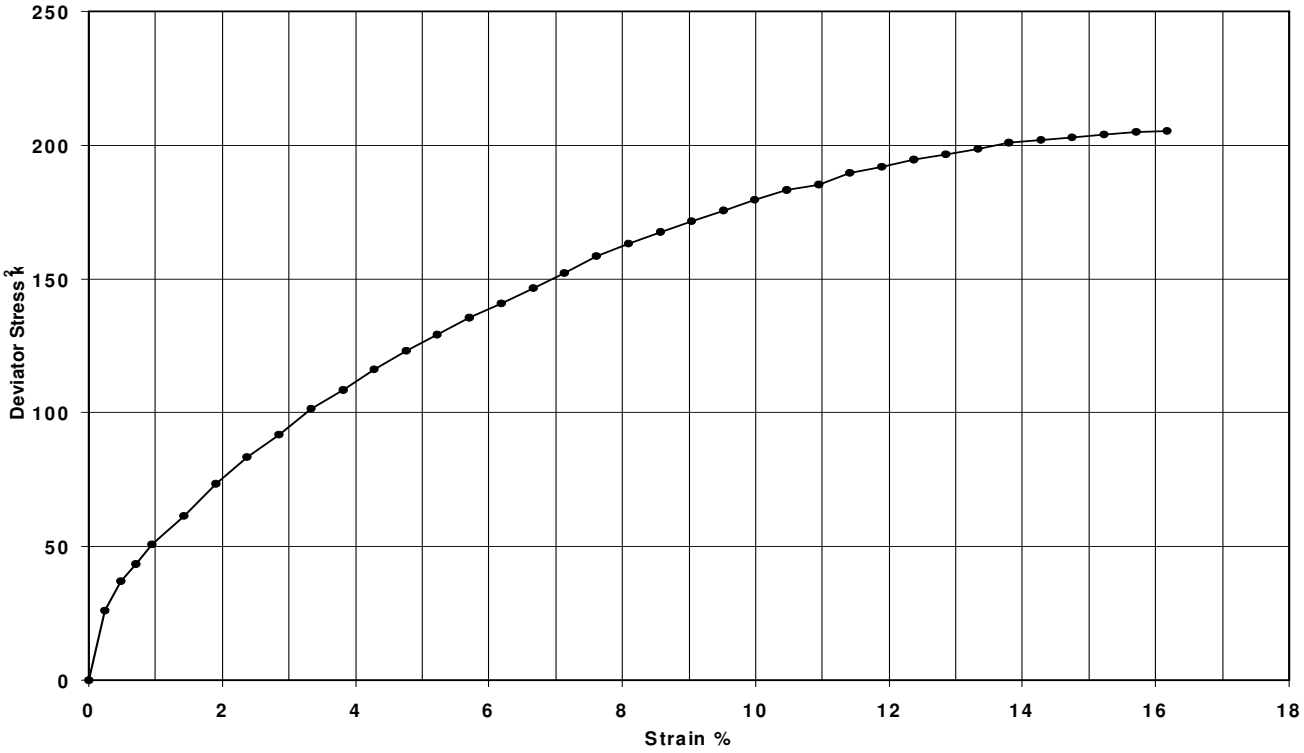
Hole	BH102
Sample Depth	25.90-26.25m
Sample Type	C
Sample Ref	N76148

Sample Description

The following samples were combined to perform this test:

Stiff high strength brown slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	103.92		
Initial Length	(mm)	210.13		
Initial Water Content	(%)	21.0		
Initial Bulk Density	(Mg/m³)	2.07		
Initial Dry Density	(Mg/m³)	1.71		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	475		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.93		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	205		
Undrained Shear Strength	(kPa)	103		
Strain at Failure	(%)	16.2		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	26.1	10.0	179.6
0.5	37.1	10.5	183.2
0.7	43.3	10.9	185.3
1.0	50.8	11.4	189.7
1.4	61.4	11.9	192.0
1.9	73.5	12.4	194.5
2.4	83.4	12.8	196.7
2.9	91.6	13.3	198.5
3.3	101.6	13.8	200.8
3.8	108.4	14.3	202.0
4.3	116.1	14.8	202.9
4.8	123.1	15.2	204.0
5.2	129.3	15.7	204.8
5.7	135.6	16.2	205.1
6.2	140.9		
6.7	146.5		
7.1	152.3		
7.6	158.4		
8.1	163.1		
8.6	167.6		
9.0	171.6		
9.5	175.5		

Remarks

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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

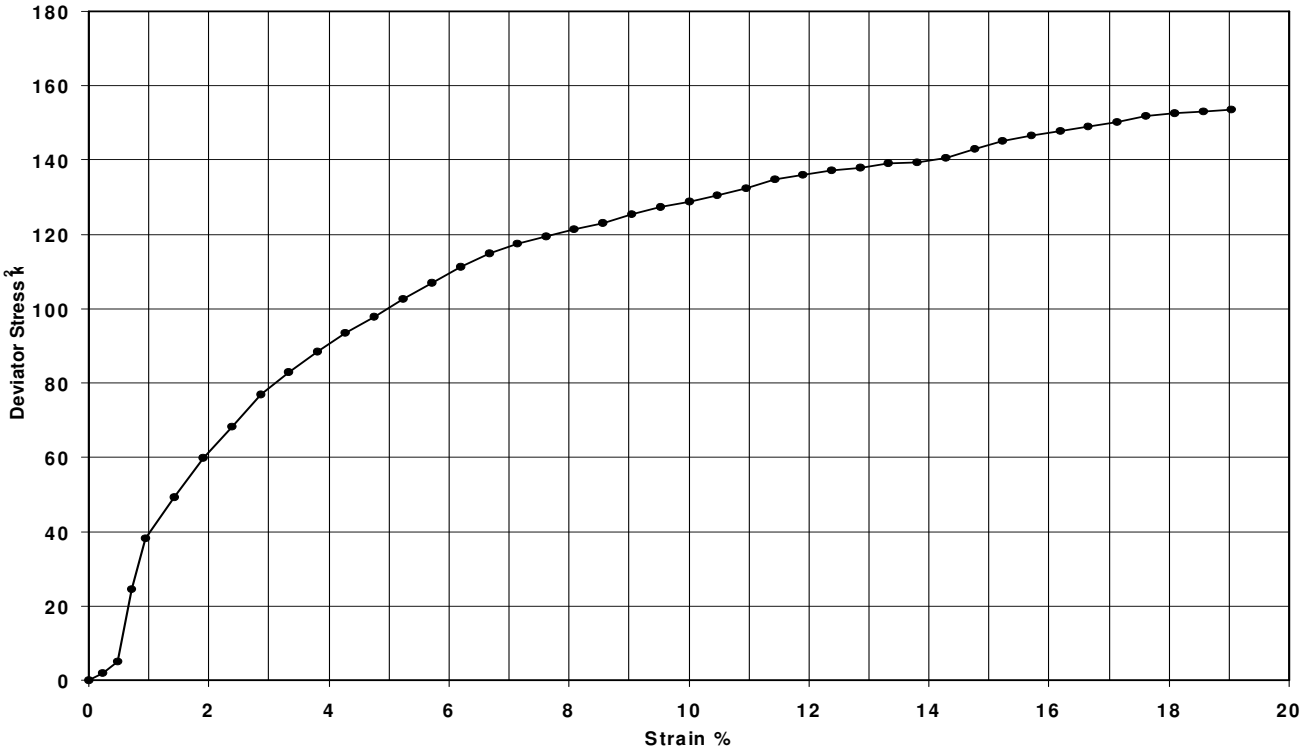
Hole BH102
Sample Depth 32.40-32.70m
Sample Type C
Sample Ref N76149

Sample Description

The following samples were combined to perform this test:

Stiff high strength brown mottled grey slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	103.44		
Initial Length	(mm)	210.05		
Initial Water Content	(%)	20.2		
Initial Bulk Density	(Mg/m³)	2.12		
Initial Dry Density	(Mg/m³)	1.76		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	600		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 1.05		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	154		
Undrained Shear Strength	(kPa)	77		
Strain at Failure	(%)	19 (excess)		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	1.9	10.0	128.8
0.5	5.2	10.5	130.5
0.7	24.5	10.9	132.5
1.0	38.3	11.4	134.7
1.4	49.3	11.9	136.1
1.9	60.0	12.4	137.3
2.4	68.3	12.9	138.0
2.9	76.9	13.3	139.1
3.3	82.9	13.8	139.4
3.8	88.4	14.3	140.6
4.3	93.4	14.8	143.1
4.8	97.7	15.2	145.1
5.2	102.6	15.7	146.5
5.7	107.0	16.2	147.9
6.2	111.3	16.7	149.1
6.7	114.8	17.1	150.2
7.1	117.4	17.6	151.8
7.6	119.3	18.1	152.7
8.1	121.3	18.6	153.2
8.6	123.1	19.0	153.6
9.0	125.5		
9.5	127.4		

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

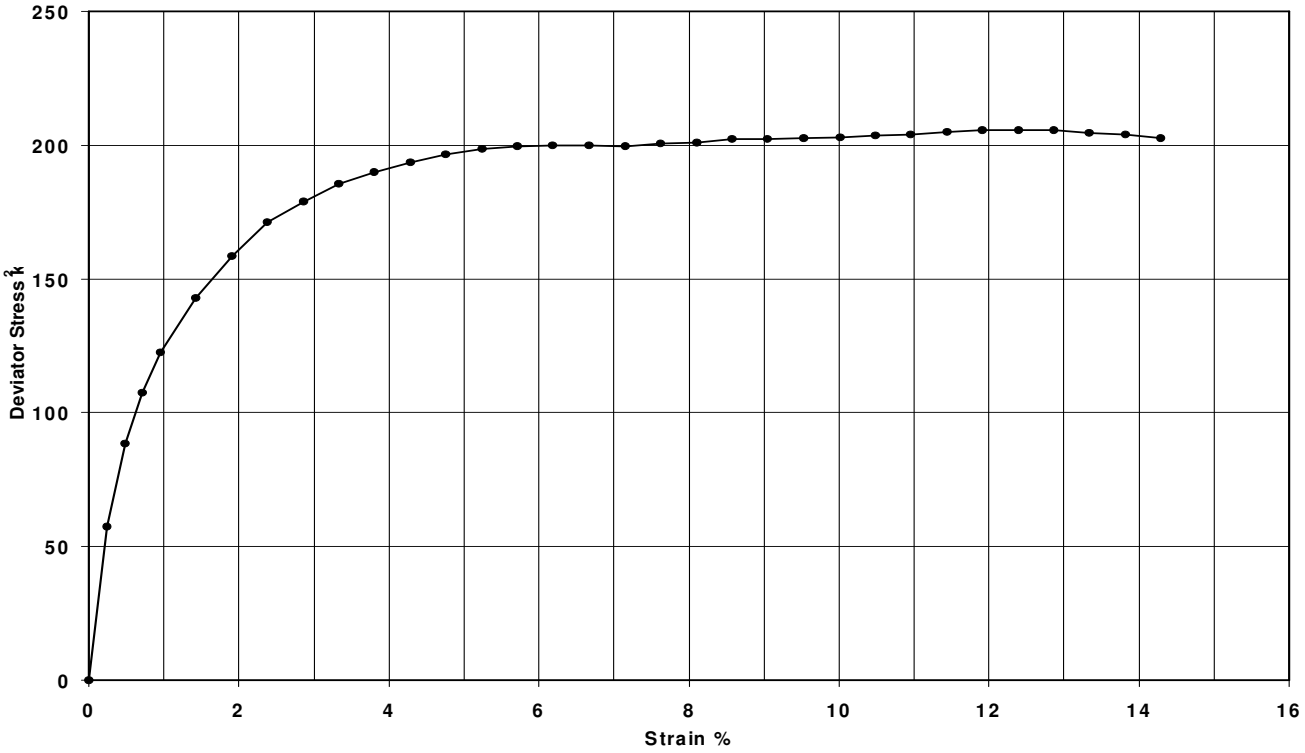
Hole	BH102
Sample Depth	33.90-34.25m
Sample Type	C
Sample Ref	N76150

Sample Description

The following samples were combined to perform this test:

Stiff high strength brown slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	102.93		
Initial Length	(mm)	209.88		
Initial Water Content	(%)	26.5		
Initial Bulk Density	(Mg/m³)	2.02		
Initial Dry Density	(Mg/m³)	1.60		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	600		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.78		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	206		
Undrained Shear Strength	(kPa)	103		
Strain at Failure	(%)	12.4		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	57.3	10.0	203.0
0.5	88.3	10.5	203.6
0.7	107.6	11.0	204.0
1.0	122.4	11.4	204.8
1.4	142.8	11.9	205.5
1.9	158.5	12.4	205.7
2.4	171.2	12.9	205.6
2.9	178.7	13.3	204.8
3.3	185.7	13.8	203.8
3.8	190.1	14.3	202.7
4.3	193.7		
4.8	196.6		
5.2	198.7		
5.7	199.6		
6.2	199.9		
6.7	199.8		
7.1	199.6		
7.6	200.7		
8.1	201.0		
8.6	202.2		
9.1	202.2		
9.5	202.4		

Remarks

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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

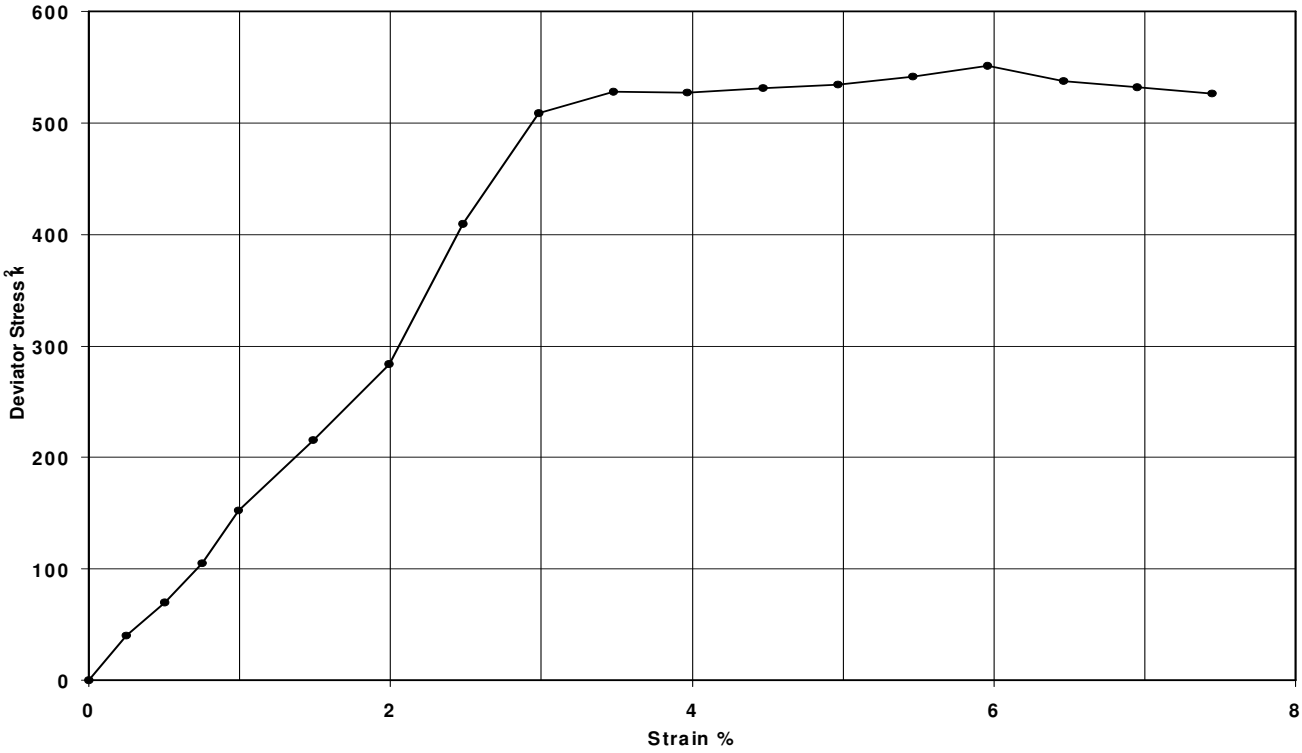
Hole BH104
Sample Depth 2.00-2.45m
Sample Type B
Sample Ref N76177

Sample Description

Soft grey slightly gravelly sandy CLAY.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.05		
Initial Length	(mm)	201.34		
Initial Water Content	(%)	12.4		
Initial Bulk Density	(Mg/m³)	1.86		
Initial Dry Density	(Mg/m³)	1.65		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	50		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.40		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	551		
Undrained Shear Strength	(kPa)	276		
Strain at Failure	(%)	6.0		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Brittle		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	39.7		
0.5	69.9		
0.7	105.0		
1.0	152.5		
1.5	215.5		
2.0	283.8		
2.5	409.2		
3.0	508.5		
3.5	527.9		
4.0	527.2		
4.5	530.8		
5.0	534.4		
5.5	541.2		
6.0	551.0		
6.5	537.6		
7.0	531.6		
7.5	525.9		

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

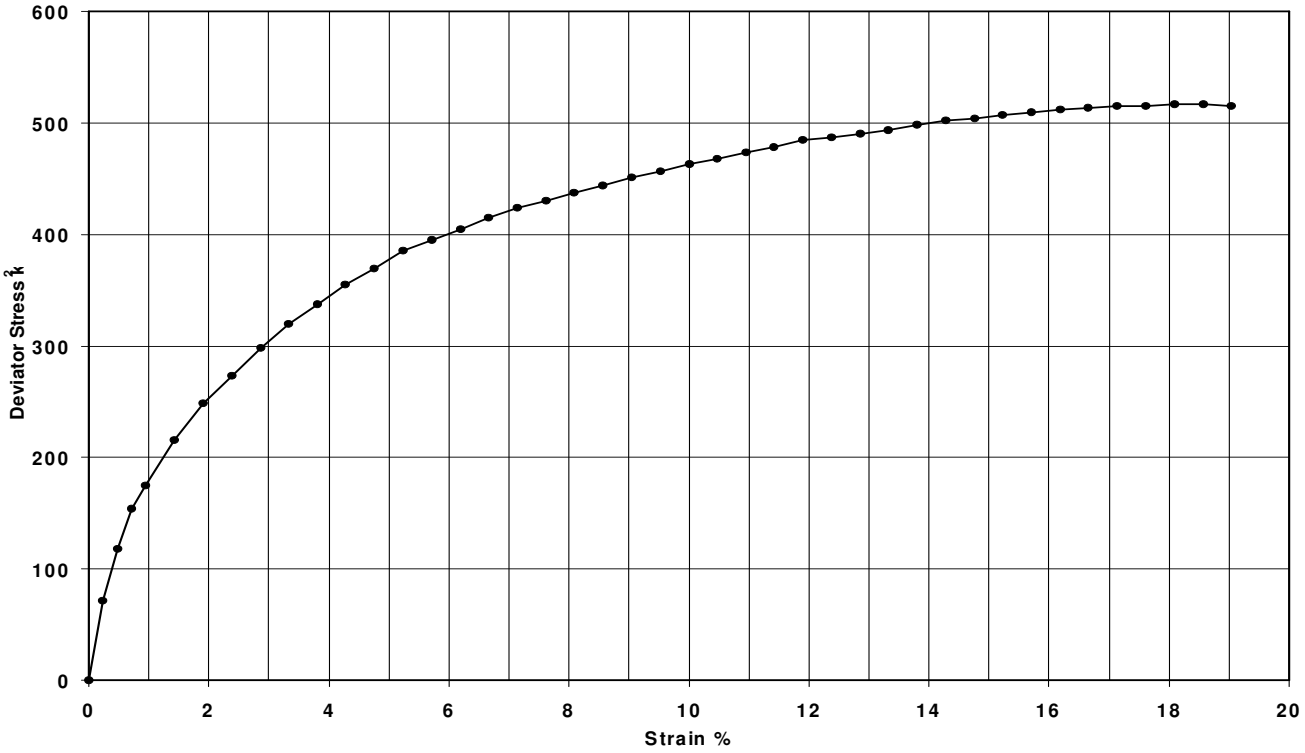
Hole BH104
Sample Depth 14.40-14.67m
Sample Type C
Sample Ref N76181

Sample Description

The following samples were combined to perform this test:

Very stiff very high strength brown slightly sandy gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	103.02		
Initial Length	(mm)	210.07		
Initial Water Content	(%)	13.0		
Initial Bulk Density	(Mg/m³)	2.29		
Initial Dry Density	(Mg/m³)	2.03		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	250		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 1.00		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	517		
Undrained Shear Strength	(kPa)	258		
Strain at Failure	(%)	18.6		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	71.2	10.0	462.7
0.5	117.6	10.5	468.2
0.7	153.8	10.9	473.4
1.0	174.6	11.4	478.5
1.4	215.7	11.9	484.5
1.9	248.3	12.4	486.8
2.4	273.5	12.9	490.6
2.9	298.0	13.3	493.8
3.3	319.6	13.8	498.5
3.8	337.6	14.3	501.9
4.3	355.2	14.8	503.8
4.8	369.3	15.2	507.0
5.2	385.0	15.7	509.3
5.7	395.0	16.2	511.6
6.2	404.8	16.7	513.7
6.7	414.9	17.1	514.8
7.1	424.1	17.6	515.1
7.6	429.9	18.1	516.5
8.1	437.3	18.6	516.8
8.6	444.2	19.0	515.3
9.0	450.8		
9.5	456.4		

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH104
Sample Depth 19.20-19.40m
Sample Type C
Sample Ref N76182

Sample Description

Grey very sandy clayey GRAVEL.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	9.4		
Initial Bulk Density (Mg/m^3)	2.41		
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	350		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Insufficient sample in tube for test.

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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

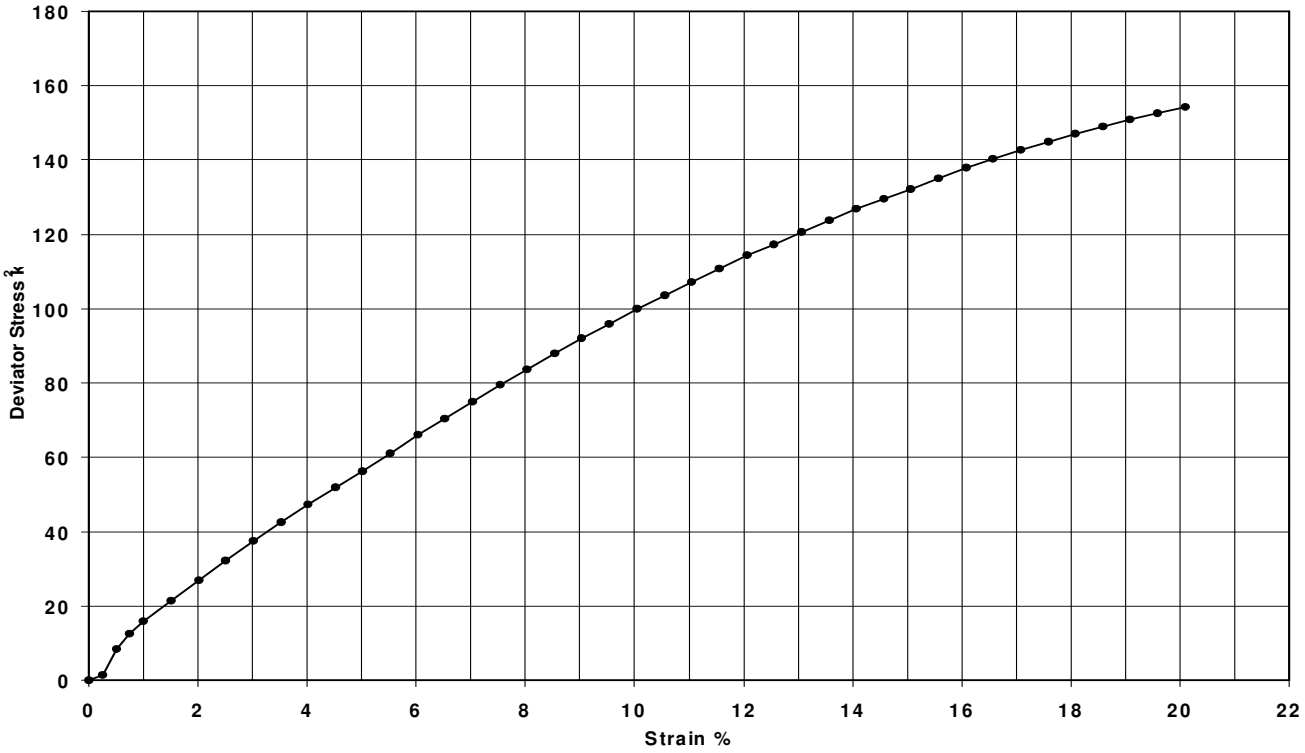
Hole BH201
Sample Depth 2.00-2.45m
Sample Type B
Sample Ref N76317

Sample Description

The following samples were combined to perform this test:

Firm to stiff high strength grey slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



	Stage 1	Stage 2	Stage 3
Sample Condition	Remoulded		
Orientation of sample	Vertical		
Initial Diameter (mm)	99.98		
Initial Length (mm)	199.02		
Initial Water Content (%)	11.5		
Initial Bulk Density (Mg/m³)	2.31		
Initial Dry Density (Mg/m³)	2.07		
Particle Density (Mg/m³)			
Cell Pressure (kPa)	50		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)	0.30 / 1.14		
Rate of Strain (%/min)	1.95		
Corrected Deviator Stress (kPa)	154		
Undrained Shear Strength (kPa)	77		
Strain at Failure (%)	20 (excess)		
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.3	1.3	10.6	103.6
0.5	8.4	11.1	107.2
0.8	12.5	11.6	110.7
1.0	15.8	12.1	114.5
1.5	21.5	12.6	117.4
2.0	26.9	13.1	120.6
2.5	32.1	13.6	123.7
3.0	37.6	14.1	126.8
3.5	42.6	14.6	129.4
4.0	47.3	15.1	132.3
4.5	51.8	15.6	135.1
5.0	56.3	16.1	137.9
5.5	61.1	16.6	140.3
6.0	66.0	17.1	142.7
6.5	70.5	17.6	144.9
7.0	75.0	18.1	147.1
7.5	79.5	18.6	148.9
8.0	83.5	19.1	150.8
8.5	87.9	19.6	152.6
9.0	91.9	20.1	154.3
9.5	96.0		
10.0	99.9		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

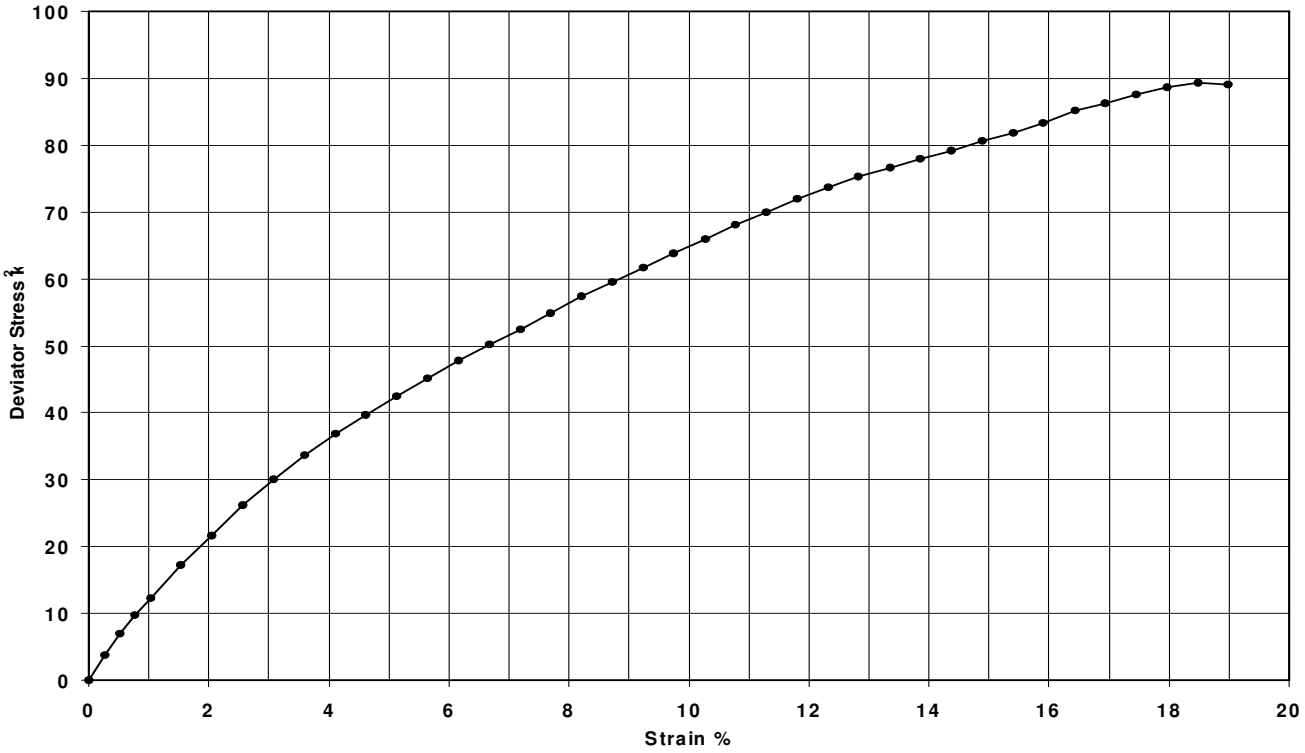
Hole	BH202
Sample Depth	2.00-2.45m
Sample Type	B
Sample Ref	N76320

Sample Description

The following samples were combined to perform this test:

Firm medium strength grey slightly sandy gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.64		
Initial Length	(mm)	194.81		
Initial Water Content	(%)	10.2		
Initial Bulk Density	(Mg/m³)	2.33		
Initial Dry Density	(Mg/m³)	2.11		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	50		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 1.02		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	89		
Undrained Shear Strength	(kPa)	45		
Strain at Failure	(%)	18.5		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.3	3.7	10.8	68.1
0.5	6.9	11.3	70.0
0.8	9.7	11.8	72.0
1.0	12.3	12.3	73.7
1.5	17.2	12.8	75.3
2.1	21.6	13.3	76.6
2.6	26.2	13.9	78.0
3.1	30.0	14.4	79.2
3.6	33.7	14.9	80.6
4.1	36.8	15.4	81.8
4.6	39.7	15.9	83.3
5.1	42.4	16.4	85.2
5.6	45.2	16.9	86.2
6.2	47.8	17.5	87.6
6.7	50.2	18.0	88.7
7.2	52.5	18.5	89.4
7.7	54.8	19.0	89.0
8.2	57.4		
8.7	59.5		
9.2	61.7		
9.8	63.9		
10.3	66.0		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

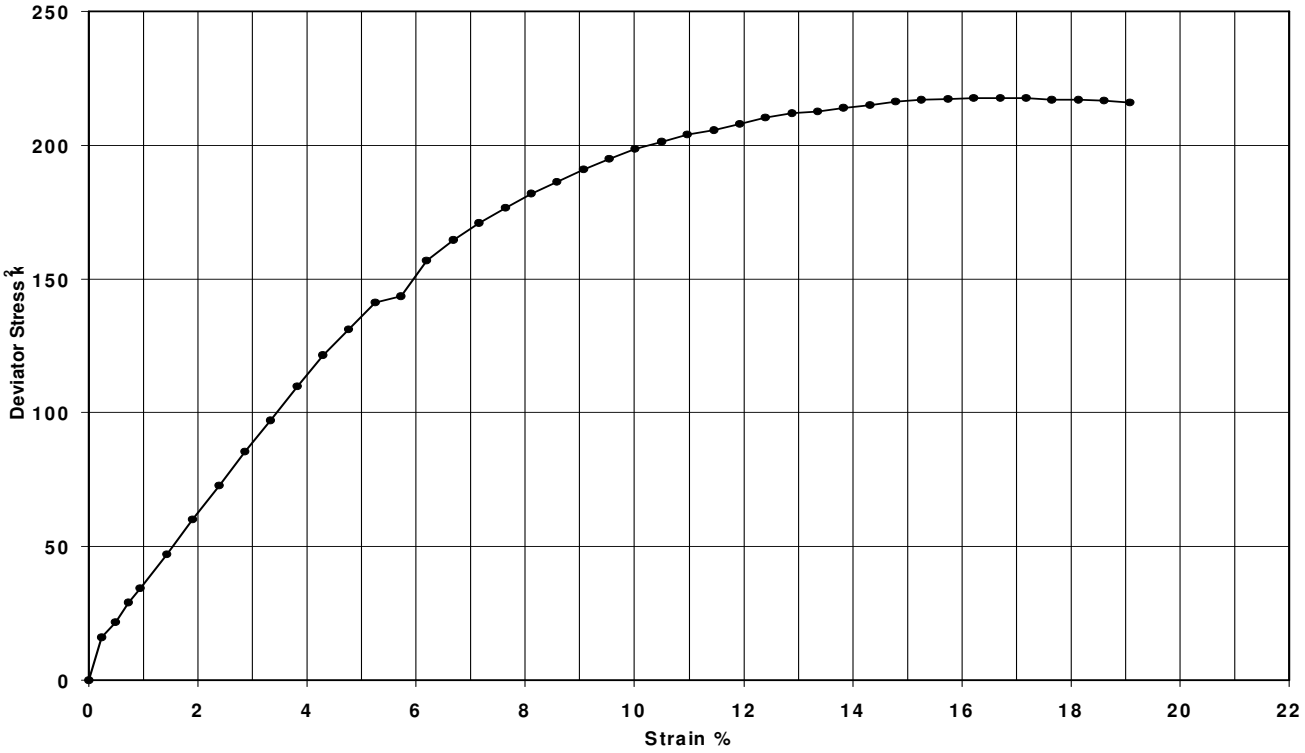
Hole BH202
Sample Depth 5.00-5.45m
Sample Type UT
Sample Ref N76322

Sample Description

The following samples were combined to perform this test:

Stiff high strength yellowish brown slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	103.24		
Initial Length	(mm)	209.51		
Initial Water Content	(%)	19.3		
Initial Bulk Density	(Mg/m³)	2.27		
Initial Dry Density	(Mg/m³)	1.90		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	100		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.94		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	218		
Undrained Shear Strength	(kPa)	109		
Strain at Failure	(%)	17.2		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	16.1	10.0	198.5
0.5	21.7	10.5	201.4
0.7	29.0	11.0	203.8
1.0	34.3	11.5	205.8
1.4	47.2	11.9	207.9
1.9	60.1	12.4	210.4
2.4	72.6	12.9	211.8
2.9	85.3	13.4	212.7
3.3	97.3	13.8	214.0
3.8	109.7	14.3	215.0
4.3	121.5	14.8	216.2
4.8	131.1	15.3	216.8
5.3	141.2	15.8	217.3
5.7	143.5	16.2	217.5
6.2	156.9	16.7	217.6
6.7	164.4	17.2	217.6
7.2	171.0	17.7	217.1
7.6	176.7	18.1	216.8
8.1	182.0	18.6	216.8
8.6	186.3	19.1	216.0
9.1	190.9		
9.5	194.8		

Remarks AGS

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

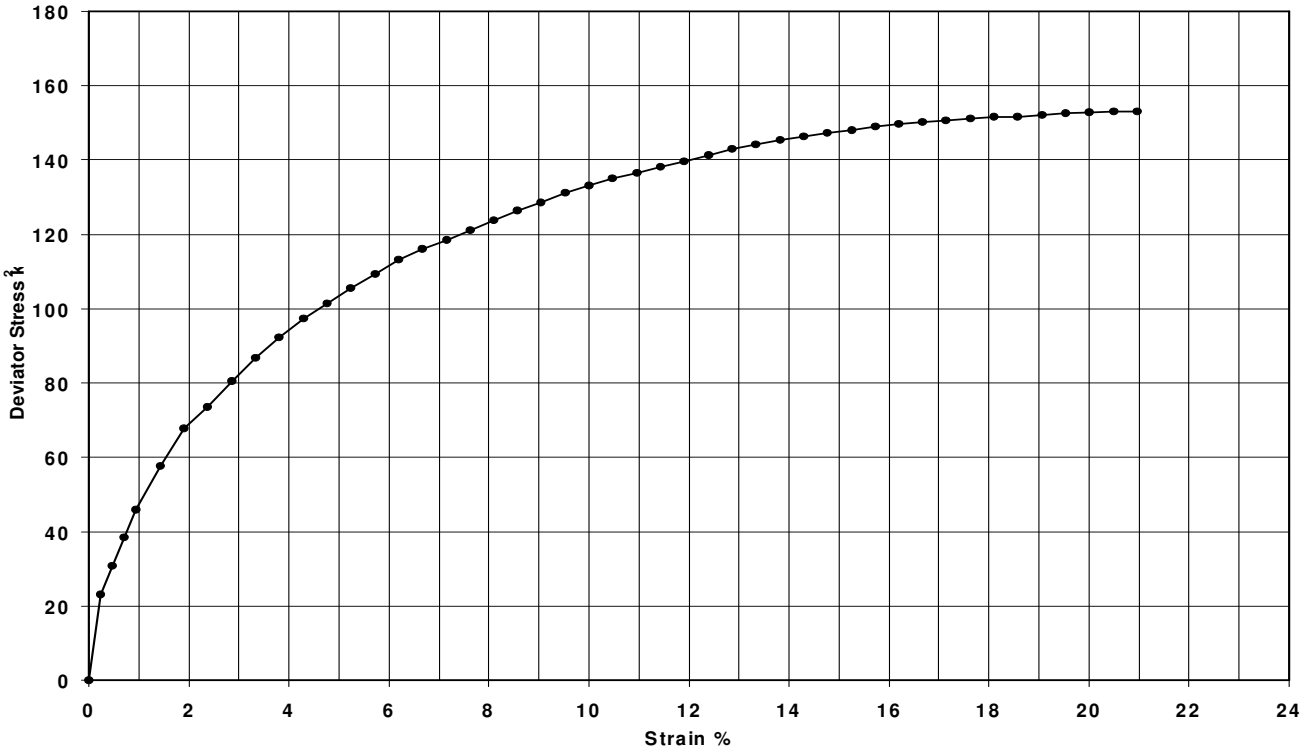
Hole BH203
Sample Depth 4.00-4.45m
Sample Type UT
Sample Ref N75938

Sample Description

The following samples were combined to perform this test:

Stiff high strength brown slightly sandy slightly gravelly CLAY.

BS EN ISO 17892-8:2018



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	104.05		
Initial Length	(mm)	209.86		
Initial Water Content	(%)	9.7		
Initial Bulk Density	(Mg/m³)	2.26		
Initial Dry Density	(Mg/m³)	2.06		
Particle Density	(Mg/m³)	2.65 Assumed		
Cell Pressure	(kPa)	80		
'Specimen Height' at start of Shearing Stage	(mm)	209.80		
Membrane Thickness/Correction	(mm/kPa)			
Rate of Strain	(%/min)	2.0		
Corrected Deviator Stress	(kPa)	153		
Undrained Shear Strength	(kPa)	76		
Strain at Failure	(%)	20.0		
Failure Zone Water Content	(%)	15.4		
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	23.1	10.0	133.0
0.5	30.9	10.5	135.2
0.7	38.4	11.0	136.6
1.0	45.9	11.4	138.1
1.4	57.6	11.9	139.7
1.9	67.8	12.4	141.4
2.4	73.6	12.9	142.9
2.9	80.5	13.3	144.3
3.3	86.7	13.8	145.3
3.8	92.4	14.3	146.5
4.3	97.3	14.8	147.3
4.8	101.4	15.2	148.1
5.2	105.6	15.7	149.0
5.7	109.4	16.2	149.7
6.2	113.2	16.7	150.3
6.7	116.0	17.2	150.7
7.1	118.5	17.6	151.1
7.6	121.0	18.1	151.6
8.1	123.7	18.6	151.8
8.6	126.4	19.1	152.2
9.1	128.5	19.5	152.6
9.5	131.2	20.0	152.9

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

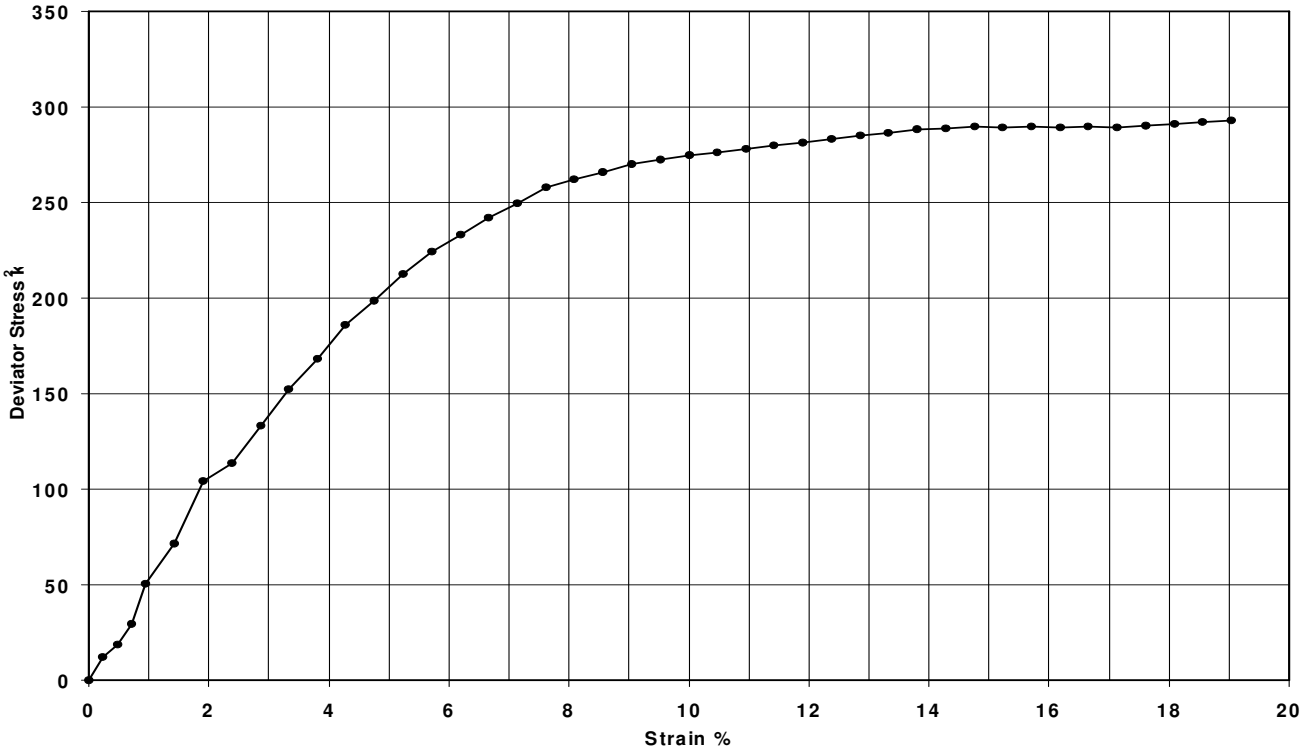
Hole	BH204A
Sample Depth	8.00-8.45m
Sample Type	UT
Sample Ref	N75992

Sample Description

The following samples were combined to perform this test:

Stiff high strength grey slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	102.18		
Initial Length	(mm)	210.08		
Initial Water Content	(%)	19.3		
Initial Bulk Density	(Mg/m³)	2.16		
Initial Dry Density	(Mg/m³)	1.81		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	150		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 1.06		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	293		
Undrained Shear Strength	(kPa)	146		
Strain at Failure	(%)	19 (excess)		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	12.3	10.0	274.9
0.5	18.8	10.5	276.0
0.7	29.6	10.9	278.0
1.0	50.4	11.4	279.8
1.4	71.3	11.9	281.2
1.9	104.4	12.4	283.2
2.4	113.6	12.9	285.2
2.9	133.2	13.3	286.5
3.3	152.1	13.8	288.2
3.8	168.4	14.3	288.9
4.3	185.8	14.8	289.6
4.8	198.7	15.2	289.3
5.2	212.6	15.7	289.5
5.7	224.4	16.2	289.3
6.2	233.3	16.7	289.9
6.7	242.0	17.1	289.5
7.1	249.3	17.6	290.3
7.6	258.1	18.1	291.3
8.1	262.0	18.6	292.3
8.6	266.1	19.0	292.9
9.0	270.3		
9.5	272.5		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH207
Sample Depth 3.00-3.45m
Sample Type UT
Sample Ref N76035

Sample Description

Very stiff grey slightly sandy gravelly CLAY.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	11.3		
Initial Bulk Density (Mg/m^3)	2.43		
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	60		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Insufficient sample in tube for test.

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

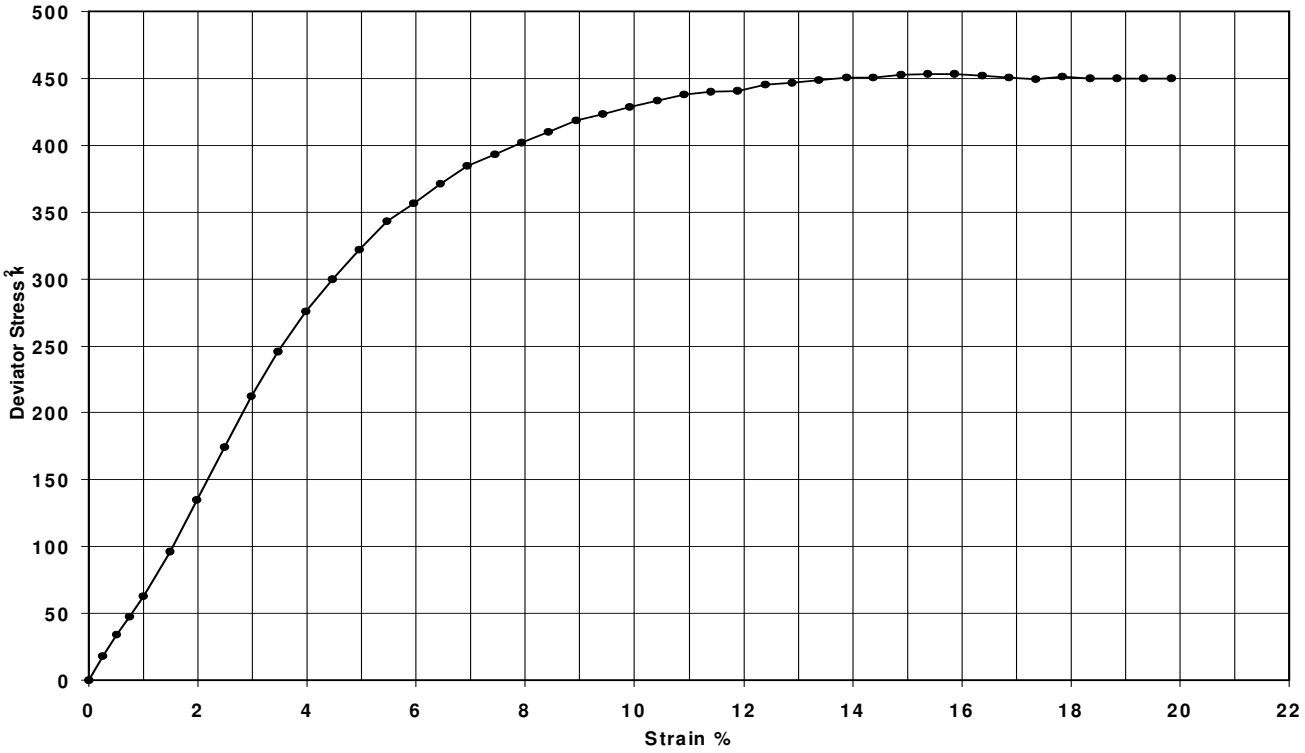
Hole	BH209
Sample Depth	3.00-3.45m
Sample Type	B
Sample Ref	N76184

Sample Description

The following samples were combined to perform this test:

Soft bluish grey slightly sandy gravelly CLAY.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.02		
Initial Length	(mm)	201.63		
Initial Water Content	(%)	9.4		
Initial Bulk Density	(Mg/m³)	2.30		
Initial Dry Density	(Mg/m³)	2.10		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	50		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.97		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	453		
Undrained Shear Strength	(kPa)	227		
Strain at Failure	(%)	15.9		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	17.9	10.4	433.2
0.5	34.0	10.9	437.6
0.7	47.3	11.4	440.1
1.0	62.8	11.9	440.8
1.5	95.8	12.4	444.9
2.0	135.2	12.9	446.9
2.5	174.5	13.4	448.8
3.0	212.5	13.9	450.8
3.5	245.5	14.4	450.3
4.0	275.9	14.9	452.4
4.5	299.5	15.4	453.2
5.0	321.5	15.9	453.2
5.5	342.9	16.4	451.8
6.0	356.7	16.9	450.5
6.4	371.4	17.4	449.1
6.9	384.8	17.9	451.0
7.4	393.2	18.4	449.9
7.9	401.7	18.8	449.7
8.4	409.8	19.3	450.1
8.9	418.6	19.8	449.6
9.4	423.4		
9.9	428.3		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

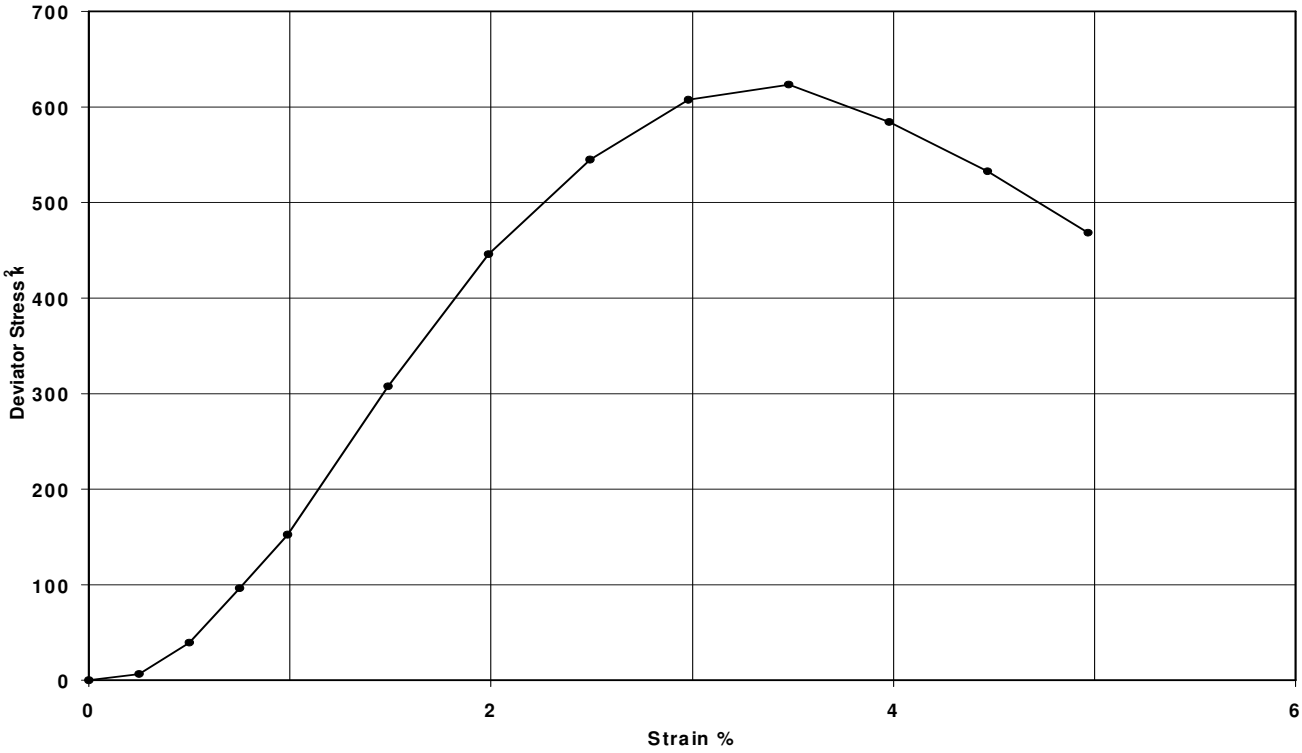
Hole	BH210
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	N76186

Sample Description

The following samples were combined to perform this test:

MADE GROUND: Soft brown slightly gravelly sandy clay.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.02		
Initial Length	(mm)	201.14		
Initial Water Content	(%)	10.5		
Initial Bulk Density	(Mg/m³)	2.28		
Initial Dry Density	(Mg/m³)	2.06		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	50		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.28		
Rate of Strain	(%/min)	1.95		
Corrected Deviator Stress	(kPa)	624		
Undrained Shear Strength	(kPa)	312		
Strain at Failure	(%)	3.5		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Brittle		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	6.7		
0.5	39.7		
0.7	96.7		
1.0	152.6		
1.5	307.9		
2.0	446.2		
2.5	544.8		
3.0	607.8		
3.5	623.8		
4.0	583.7		
4.5	532.4		
5.0	468.0		

Remarks

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH210
Sample Depth 2.00-2.45m
Sample Type UT
Sample Ref N76187

Sample Description

The following samples were combined to perform this test:

MADE GROUND: Soft very low strength brown mottled grey slightly sandy gravelly clay.

BS1377 Part 8 1990 : Clause 8.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	40.8		
Initial Bulk Density (Mg/m^3)	1.84		
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	40		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Insufficient sample in tube for test.

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH210
Sample Depth 5.00-5.45m
Sample Type UT
Sample Ref N76190

Sample Description

The following samples were combined to perform this test:

Firm medium strength laminated brown slightly sandy CLAY.

BS1377 Part 8 1990 : Clause 8.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	20.4		
Initial Bulk Density (Mg/m^3)	2.04		
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	90		
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Insufficient sample i tube for test.

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

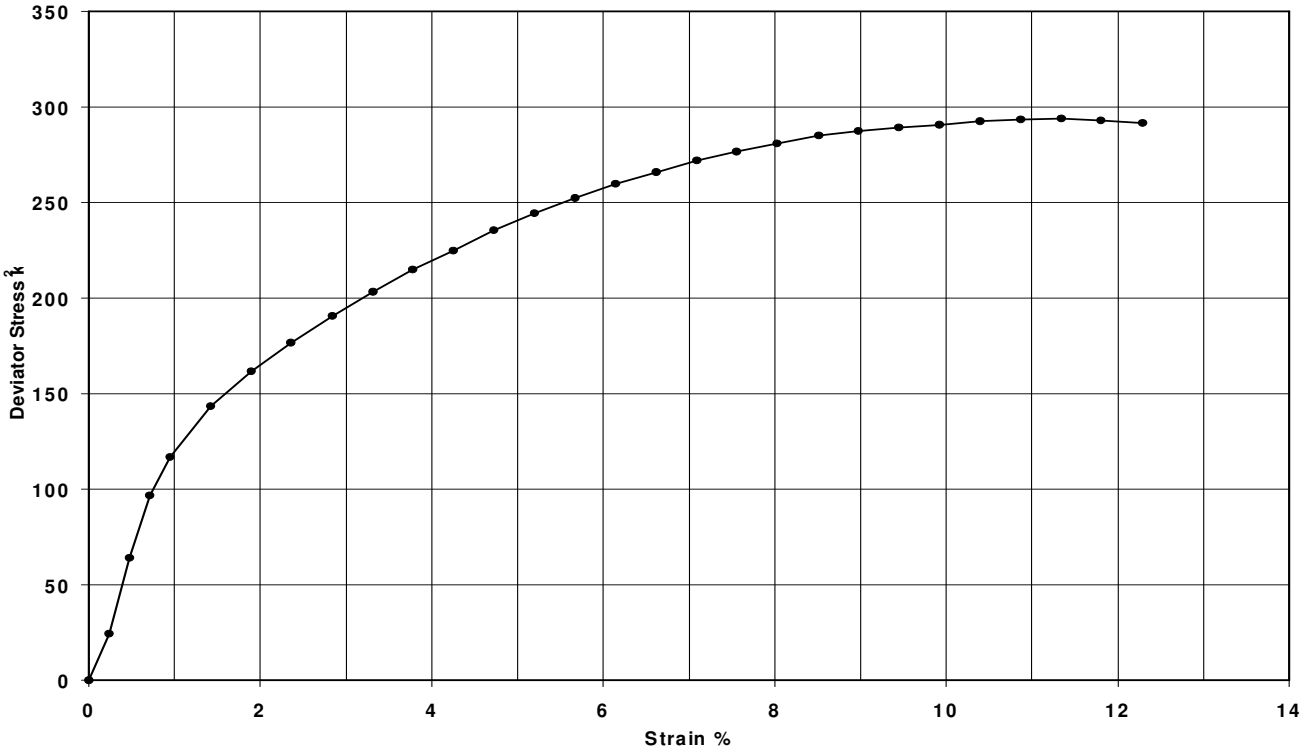
Hole BH212
Sample Depth 2.00-2.45m
Sample Type UT
Sample Ref N76554

Sample Description

The following samples were combined to perform this test:

Stiff high strength brown slightly gravelly CLAY.

BS EN ISO 17892-8:2018



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	101.08		
Initial Length	(mm)	211.62		
Initial Water Content	(%)	14.4		
Initial Bulk Density	(Mg/m^3)	2.05		
Initial Dry Density	(Mg/m^3)	1.79		
Particle Density	(Mg/m^3)	2.65 Assumed		
Cell Pressure	(kPa)	50		
'Specimen Height' at start of Shearing Stage	(mm)	211.60		
Membrane Thickness/Correction	(mm/kPa)			
Rate of Strain	(%/min)	1.3		
Corrected Deviator Stress	(kPa)	294		
Undrained Shear Strength	(kPa)	147		
Strain at Failure	(%)	11.3		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2
0.2	24.3	9.9	290.7
0.5	64.2	10.4	292.4
0.7	96.9	10.9	293.5
0.9	116.7	11.3	293.8
1.4	143.3	11.8	293.2
1.9	161.5	12.3	291.6
2.4	176.5		
2.8	190.7		
3.3	203.2		
3.8	214.9		
4.3	224.9		
4.7	235.4		
5.2	244.2		
5.7	252.5		
6.1	259.7		
6.6	265.9		
7.1	271.8		
7.6	276.8		
8.0	280.9		
8.5	285.2		
9.0	287.5		
9.5	289.1		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH216A
Sample Depth 5.00-5.45m
Sample Type UT
Sample Ref N75945

Sample Description

The following samples were combined to perform this test:

Stiff brown slightly sandy slightly gravelly CLAY.

BS1377 Part 8 1990 : Clause 9.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	18.5	18.5	18.5
Initial Bulk Density (Mg/m^3)	2.16	2.16	2.16
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	50	100	200
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Due to voids in sample.

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GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

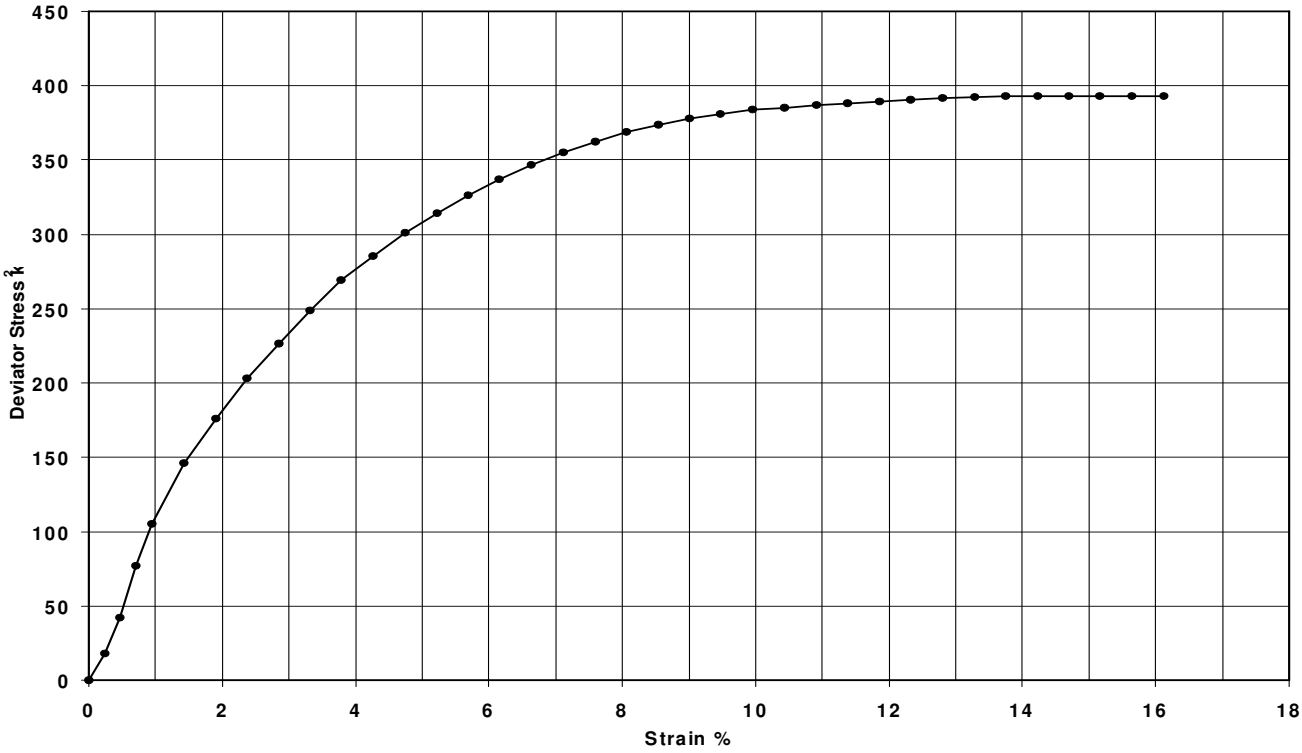
Hole BH217
Sample Depth 3.20-3.65m
Sample Type UT
Sample Ref N76562

Sample Description

The following samples were combined to perform this test:

Stiff very high strength brown slightly gravelly sandy CLAY.

BS EN ISO 17892-8:2018



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	101.19		
Initial Length	(mm)	210.88		
Initial Water Content	(%)	16.2		
Initial Bulk Density	(Mg/m³)	2.10		
Initial Dry Density	(Mg/m³)	1.81		
Particle Density	(Mg/m³)	2.65 Assumed		
Cell Pressure	(kPa)	75		
'Specimen Height' at start of Shearing Stage	(mm)	210.83		
Membrane Thickness/Correction	(mm/kPa)			
Rate of Strain	(%/min)	1.0		
Corrected Deviator Stress	(kPa)	393		
Undrained Shear Strength	(kPa)	197		
Strain at Failure	(%)	15.2		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	18.0	10.0	383.6
0.5	42.2	10.4	385.4
0.7	76.9	10.9	386.7
0.9	105.2	11.4	387.9
1.4	146.2	11.9	389.3
1.9	175.8	12.3	390.6
2.4	203.2	12.8	391.5
2.8	226.4	13.3	392.3
3.3	248.9	13.8	392.9
3.8	268.9	14.2	392.8
4.3	285.1	14.7	393.0
4.7	300.7	15.2	393.1
5.2	314.3	15.6	393.0
5.7	326.3	16.1	393.0
6.2	337.1		
6.6	346.7		
7.1	354.9		
7.6	362.5		
8.1	369.0		
8.5	373.8		
9.0	377.7		
9.5	381.1		

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

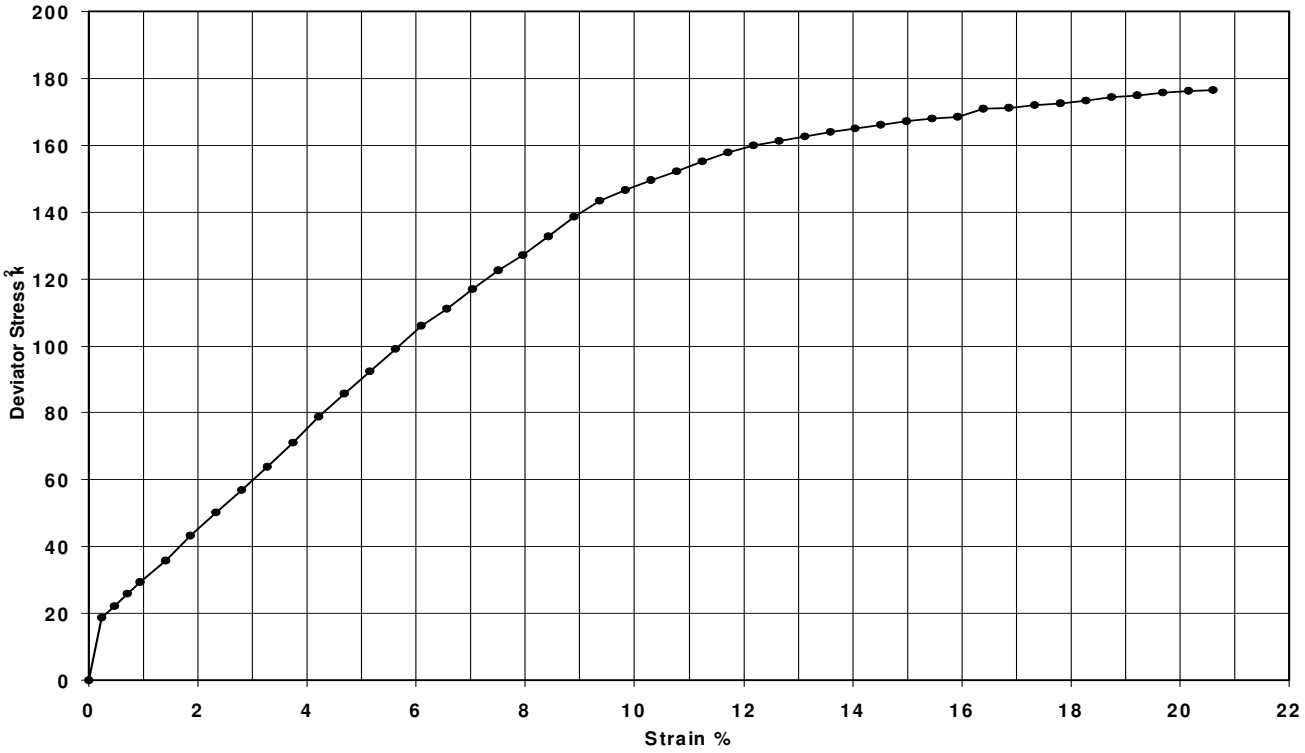
Hole	BH217
Sample Depth	7.40-7.85m
Sample Type	UT
Sample Ref	N76565

Sample Description

The following samples were combined to perform this test:

Stiff high strength greyish brown slightly gravelly CLAY.

BS EN ISO 17892-8:2018



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	101.50		
Initial Length	(mm)	213.45		
Initial Water Content	(%)	15.4		
Initial Bulk Density	(Mg/m^3)	2.12		
Initial Dry Density	(Mg/m^3)	1.84		
Particle Density	(Mg/m^3)	2.65 Assumed		
Cell Pressure	(kPa)	100		
'Specimen Height' at start of Shearing Stage	(mm)	213.44		
Membrane Thickness/Correction	(mm/kPa)			
Rate of Strain	(%/min)	1.3		
Corrected Deviator Stress	(kPa)	176		
Undrained Shear Strength	(kPa)	88		
Strain at Failure	(%)	20 (excess)		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2
0.2	18.7	9.8	146.7
0.5	22.3	10.3	149.5
0.7	25.8	10.8	152.1
0.9	29.4	11.2	155.2
1.4	35.9	11.7	157.9
1.9	43.2	12.2	160.0
2.3	50.2	12.6	161.2
2.8	57.0	13.1	162.5
3.3	63.8	13.6	163.9
3.7	71.1	14.1	165.0
4.2	78.8	14.5	166.1
4.7	85.6	15.0	167.2
5.2	92.4	15.5	167.9
5.6	99.2	15.9	168.6
6.1	106.0	16.4	170.8
6.6	111.1	16.9	171.3
7.0	117.0	17.3	171.9
7.5	122.5	17.8	172.6
8.0	127.2	18.3	173.4
8.4	132.7	18.7	174.3
8.9	138.5	19.2	174.9
9.4	143.3	19.7	175.6

Remarks

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH219
Sample Depth 4.00-4.45m
Sample Type UT
Sample Ref N75950

Sample Description

Very soft bluish grey slightly gravelly CLAY.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	49.5	49.5	49.5
Initial Bulk Density (Mg/m^3)			
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	40	80	160
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST= Sample collapsed upon extrusion.

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A55 JUNCTIONS 15 AND 16 IMPROVEMENTS

Project No: PN193981

Hole BH220A
Sample Depth 6.50-6.95m
Sample Type UT
Sample Ref N76161

Sample Description

The following samples were combined to perform this test:

Very stiff medium strength greyish brown slightly sandy slightly gravelly CLAY.

BS EN ISO 17892-8:2018

	Stage 1	Stage 2	Stage 3
Sample Condition	Not suitable for tes		
Orientation of sample	Vertical		
Initial Diameter (mm)			
Initial Length (mm)			
Initial Water Content (%)	13.4	13.4	13.4
Initial Bulk Density (Mg/m^3)	2.19	2.19	2.19
Initial Dry Density (Mg/m^3)			
Particle Density (Mg/m^3)			
Cell Pressure (kPa)	50	100	200
'Specimen Height' at start of Shearing Stage (mm)			
Membrane Thickness/Correction (mm/kPa)			
Rate of Strain (%/min)			
Corrected Deviator Stress (kPa)			
Undrained Shear Strength (kPa)			
Strain at Failure (%)			
Failure Zone Water Content (%)			
Water Content (after test) (%)			
Mode of Failure	Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2

Remarks NST=Insufficient sample in tube for test.

30/08/2019

GEOTECHNICS

LABORATORY RESULTS - *Test Remarks*

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample				Laboratory Remark
Hole	Depth (Specimen Depth) m	Type	Sample Ref	
BH104	19.20-19.40 (19.20-19.40)	C	N76182	Quick Undrained Triaxial Test - NST= Insufficient sample in tube for test.
BH203	2.00-2.45 (2.00-2.45)	B	N75937	Atterberg Limit Test - 1-point cone
BH204A	2.00-2.45 (2.00-2.45)	B	N75990	Atterberg Limit Test - 1-point cone
BH207	3.00-3.45 (3.00-3.45)	UT	N76035	Quick Undrained Triaxial Test - NST= Insufficient sample in tube for test.
BH210	2.00-2.45 (2.00-2.45)	UT	N76187	Quick Undrained Triaxial Test - NST= Insufficient sample in tube for test.
BH210	5.00-5.45 (5.00-5.45)	UT	N76190	Quick Undrained Triaxial Test - NST= Insufficient sample i tube for test.
BH216A	5.00-5.45 (5.00-5.45)	UT	N75945	Quick Undrained Triaxial Test - NST= Due to voids in sample.
BH218	15.00-15.45 (15.00-15.45)	B	N75999	Atterberg Limit Test - 1-point cone
BH219	1.20-1.65 (1.20-1.65)	B	N75947	Atterberg Limit Test - 1-point cone
BH219	4.00-4.45 (4.00-4.45)	UT	N75950	Quick Undrained Triaxial Test - NST= Sample collapsed upon extrusion.

Remarks AGS

LABORATORY RESULTS - Test Remarks

Project A55 JUNCTIONS 15 AND 16 IMPROVEMENTS **Project No:** PN193981

Sample				Laboratory Remark
Hole	Depth (Specimen Depth) m	Type	Sample Ref	
BH220A	6.50-6.95 (6.50-6.95)	UT	N76161	Quick Undrained Triaxial Test - NST=Insufficient sample in tube for test.
TP212	1.00 (1.00)	D	N76017	Atterberg Limit Test - 1-point cone

Remarks

GEOTECHNICS
geotechnical and geoenvironmental specialists

LABORATORY REPORT

4043

Contract Number: PSL19/4118

Report Date: 19 July 2019

Client's Reference: PY190310

Client Name: Geotechnics Coventry
203 Torrington Avenue
Tile Hill
Coventry
CV4 9UT

For the attention of: Stephane Schiano

Contract Title: A1 (M) J47 Upgrade

Date Received: 5/7/2019
Date Commenced: 5/7/2019
Date Completed: 11/7/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
R Berriman (Quality Manager)

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S Eyre (Senior Technician)
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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

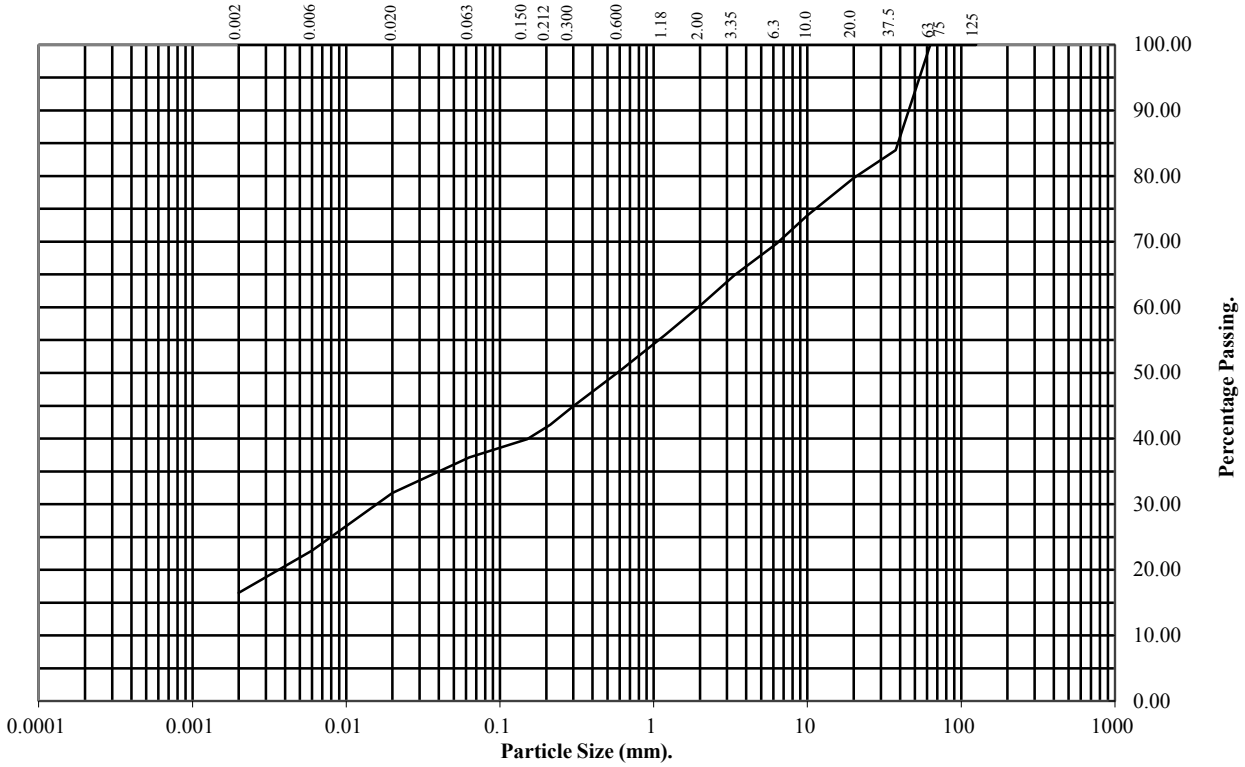
Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH107A	N76279	B	1.20	1.65	Firm brown slightly sandy gravelly CLAY.
BH107A	N76282	B	5.00	5.45	Firm to stiff grey slightly sandy gravelly CLAY.
BH107A	N76283	B	7.50	7.95	Firm to stiff grey slightly sandy slightly gravelly CLAY.
BH110	N76284	B	1.20	1.65	Soft brown slightly sandy gravelly CLAY.
BH110	N76285	B	3.00	3.45	Firm brown slightly sandy slightly gravelly CLAY.
BH208	N76292	B	3.00	3.45	Stiff brown sandy gravelly CLAY.

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH107A**	**Top Depth (m):**	**1.20**
Sample Number:	**N76279**	**Base Depth(m):**	**1.65**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	84
20	80
10	74
6.3	70
3.35	65
2	60
1.18	56
0.6	50
0.3	45
0.212	42
0.15	40
0.063	37

Particle Diameter	Percentage Passing
0.02	32
0.006	23
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	40
Sand	23
Silt	21
Clay	16

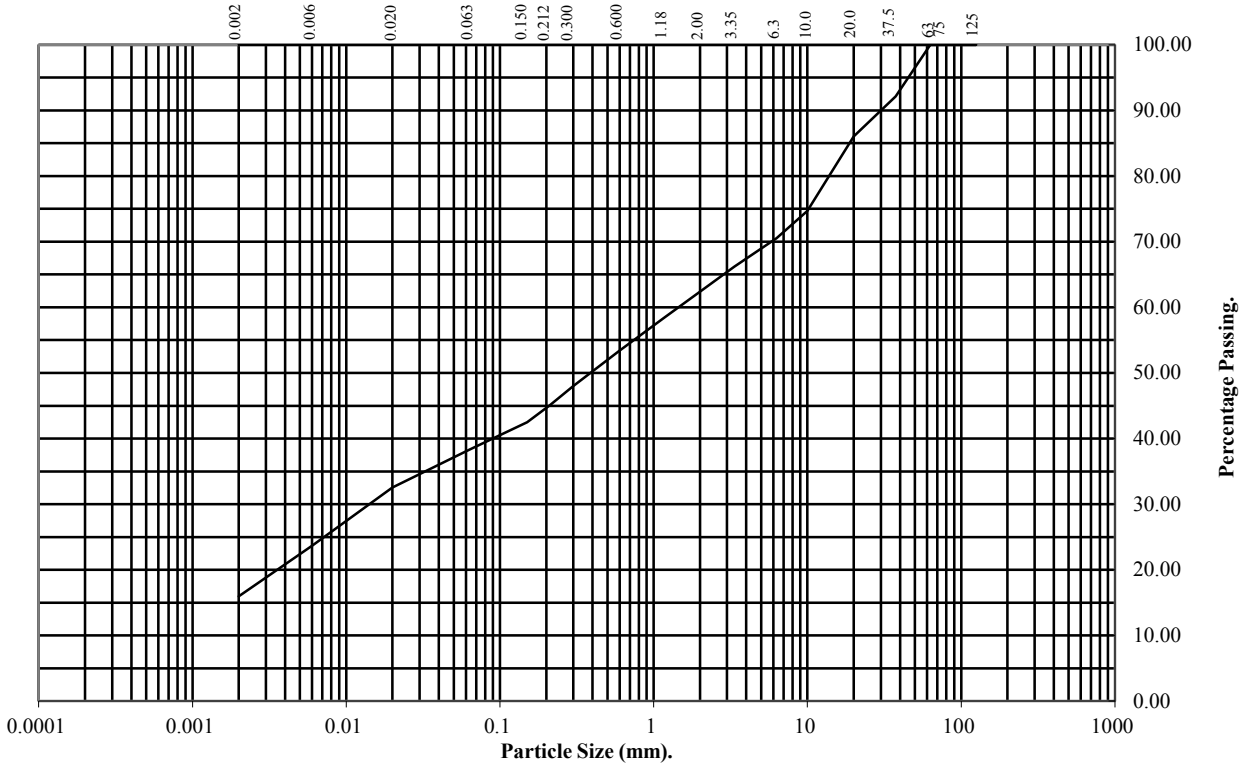
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH107A**	**Top Depth (m):**	**5.00**
Sample Number:	**N76282**	**Base Depth(m):**	**5.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	86
10	75
6.3	71
3.35	66
2	62
1.18	58
0.6	53
0.3	48
0.212	45
0.15	42
0.063	38

Particle Diameter	Percentage Passing
0.02	33
0.006	24
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	38
Sand	24
Silt	22
Clay	16

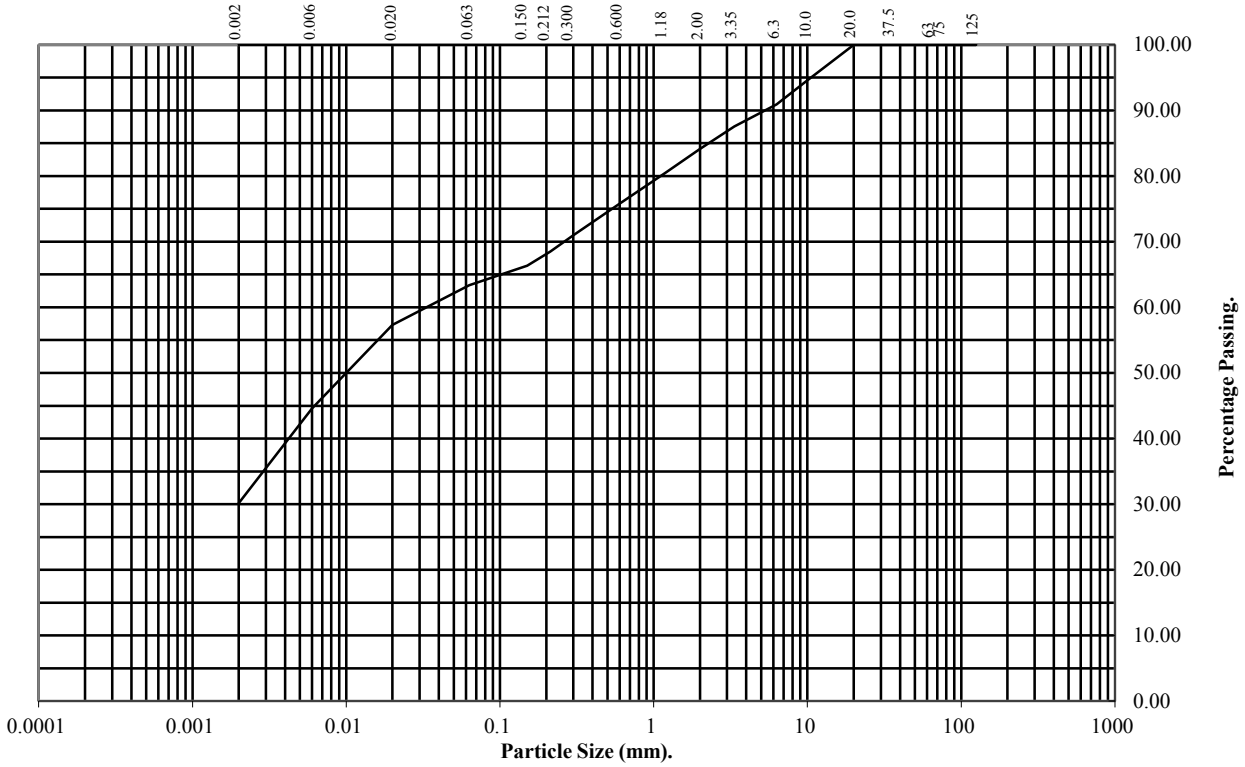
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH107A**	**Top Depth (m):**	**7.50**
Sample Number:	**N76283**	**Base Depth(m):**	**7.95**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	95
6.3	91
3.35	88
2	84
1.18	80
0.6	76
0.3	71
0.212	68
0.15	66
0.063	63

Particle Diameter	Percentage Passing
0.02	57
0.006	45
0.002	30

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	21
Silt	33
Clay	30

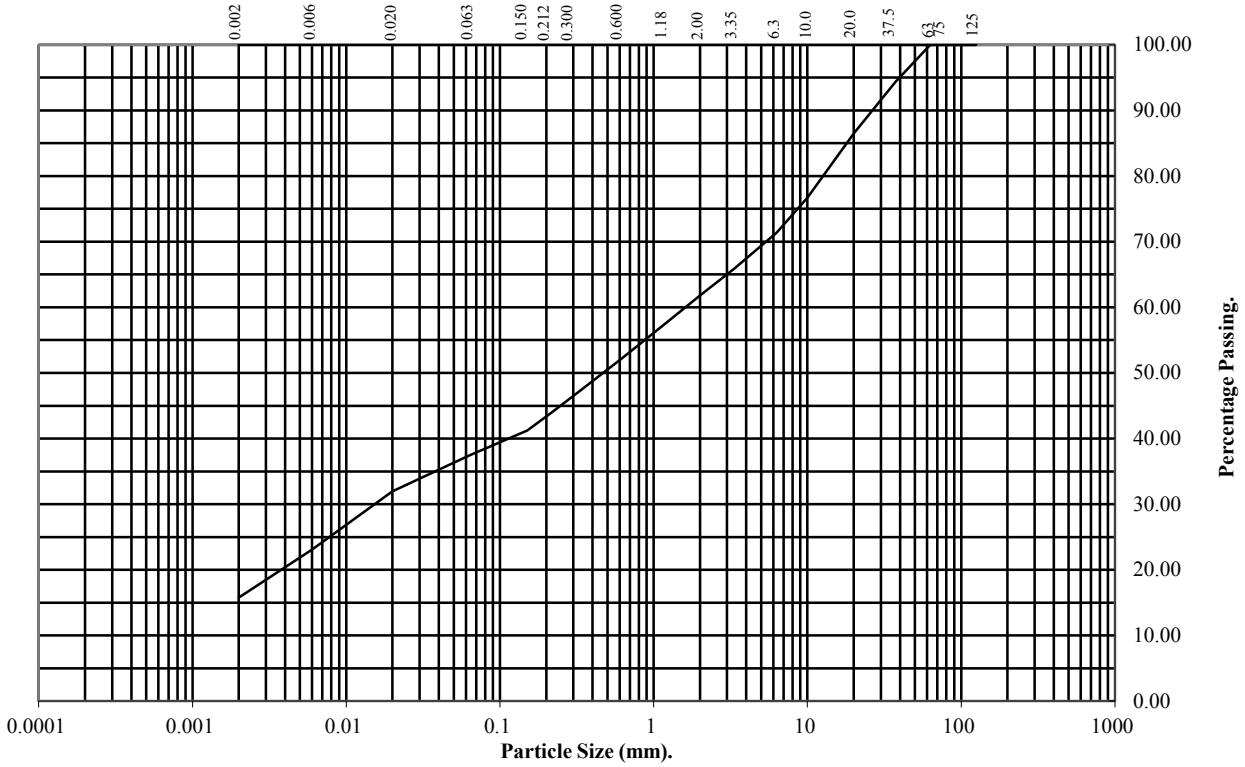
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH110**	**Top Depth (m):**	**1.20**
Sample Number:	**N76284**	**Base Depth(m):**	**1.65**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	86
10	77
6.3	71
3.35	66
2	62
1.18	57
0.6	52
0.3	46
0.212	44
0.15	41
0.063	37

Particle Diameter	Percentage Passing
0.02	32
0.006	23
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	38
Sand	25
Silt	21
Clay	16

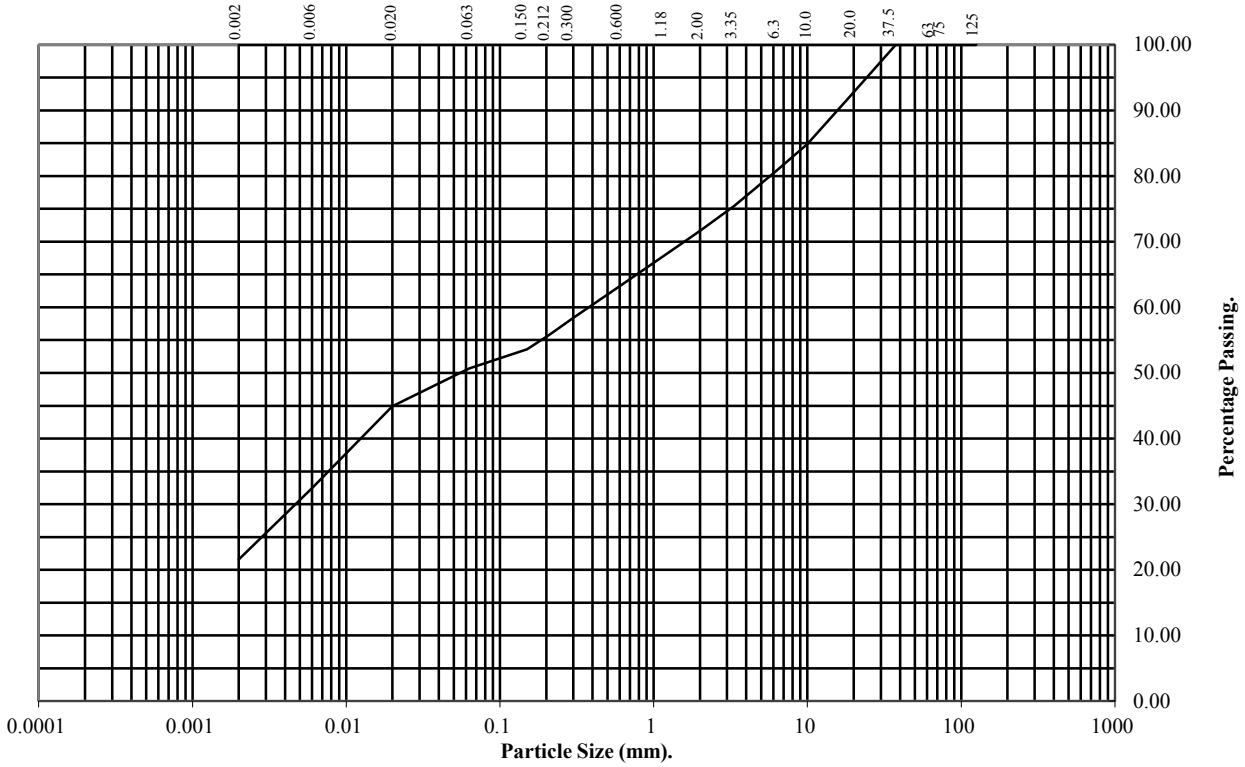
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH110**	**Top Depth (m):**	**3.00**
Sample Number:	**N76285**	**Base Depth(m):**	**3.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	85
6.3	81
3.35	75
2	72
1.18	68
0.6	63
0.3	58
0.212	56
0.15	54
0.063	51

Particle Diameter	Percentage Passing
0.02	45
0.006	32
0.002	22

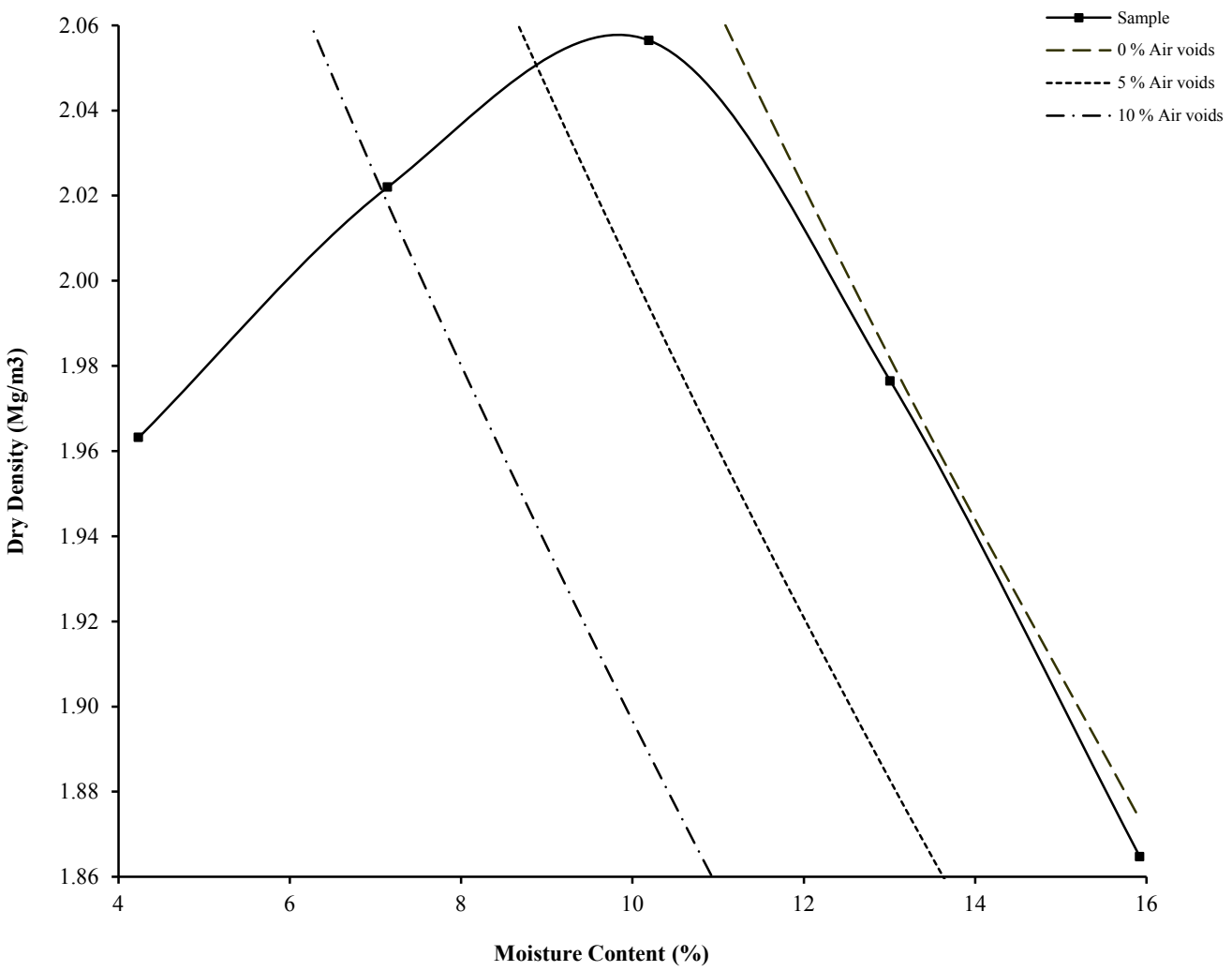
Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	21
Silt	29
Clay	22

Remarks:
See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : 1990

Hole Number:	**BH107A**	**Top Depth (m) :**	**1.20**
Sample Number:	**N76279**	**Base Depth (m) :**	**1.65**
Sample Type:	**B**		

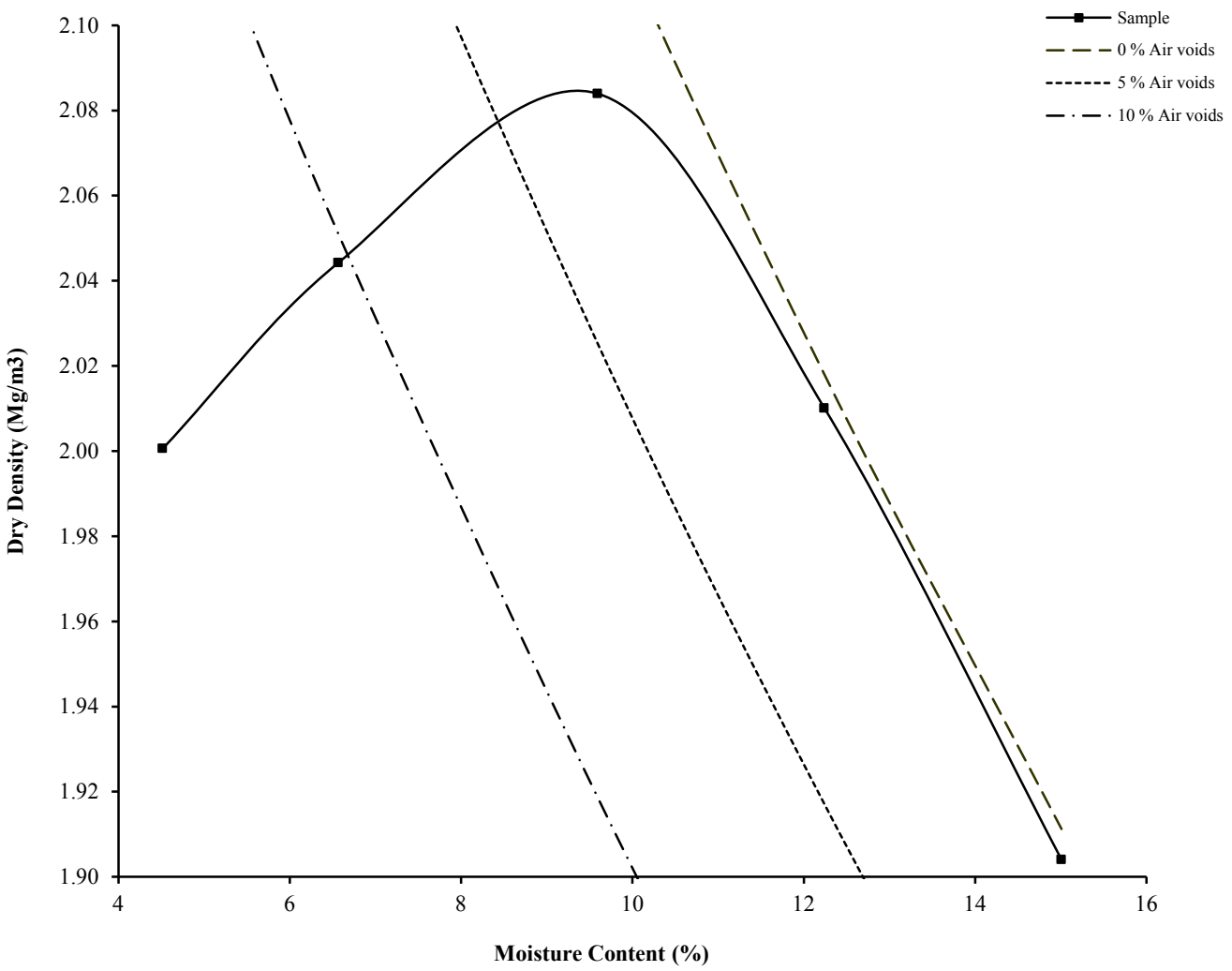


Initial Moisture Content:		16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		16
Maximum Dry Density (Mg/m3):		2.06	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions.					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number:	**BH107A**	**Top Depth (m) :**	**5.00**
Sample Number:	**N76282**	**Base Depth (m) :**	**5.45**
Sample Type:	**B**		

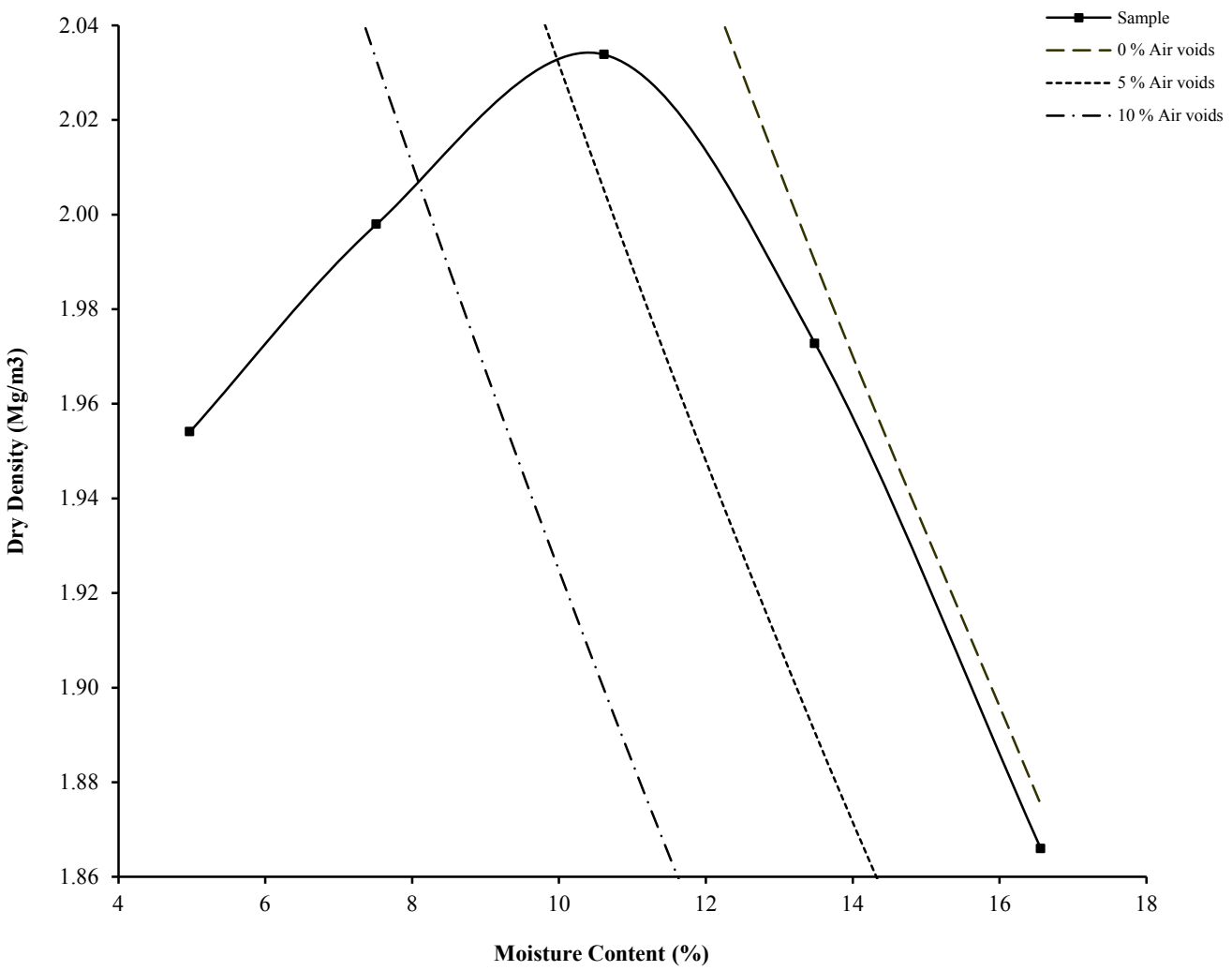


Initial Moisture Content:		15	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		8
Maximum Dry Density (Mg/m3):		2.08	Material Retained on 20.0 mm Test Sieve (%):		6
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions.					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number:	**BH107A**	**Top Depth (m) :**	**7.50**
Sample Number:	**N76283**	**Base Depth (m) :**	**7.95**
Sample Type:	**B**		

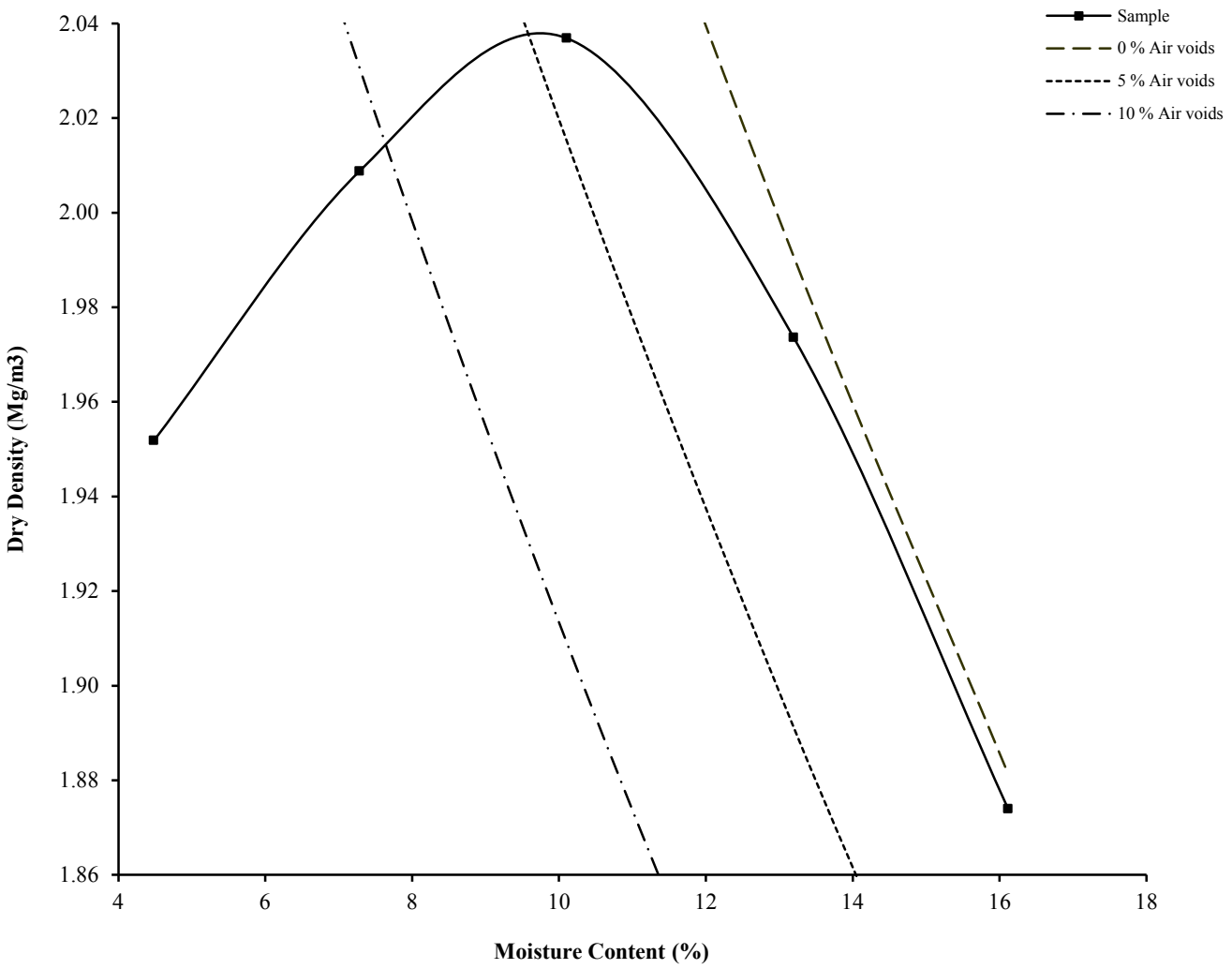


Initial Moisture Content:		17	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.72	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.03	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions.					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number:	**BH110**	**Top Depth (m) :**	**1.20**
Sample Number:	**N76284**	**Base Depth (m) :**	**1.65**
Sample Type:	**B**		

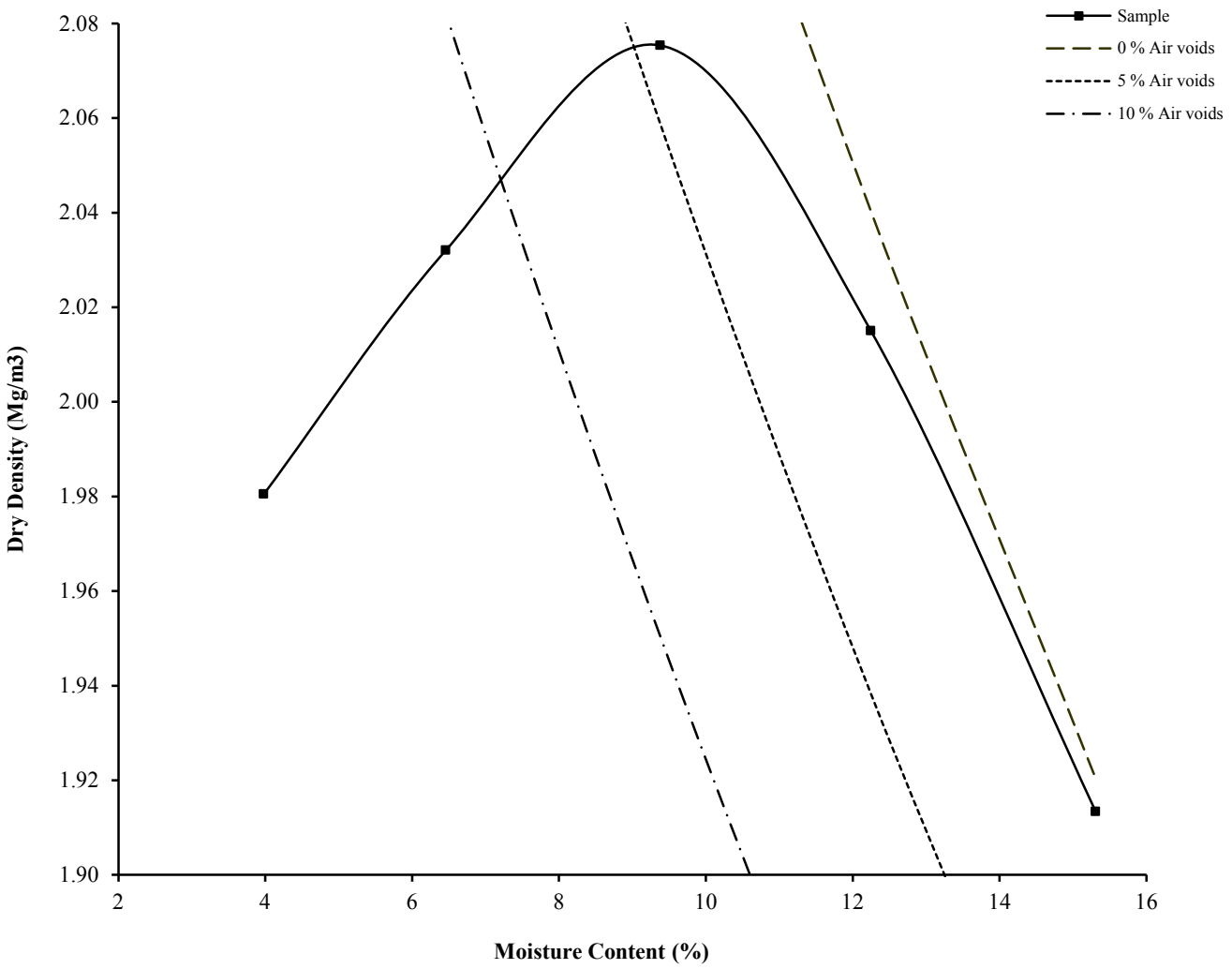


Initial Moisture Content:		16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.70	Assumed	Material Retained on 37.5 mm Test Sieve (%):		6
Maximum Dry Density (Mg/m3):		2.04	Material Retained on 20.0 mm Test Sieve (%):		8
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions.					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number:	**BH110**	**Top Depth (m) :**	**3.00**
Sample Number:	**N76285**	**Base Depth (m) :**	**3.45**
Sample Type:	**B**		

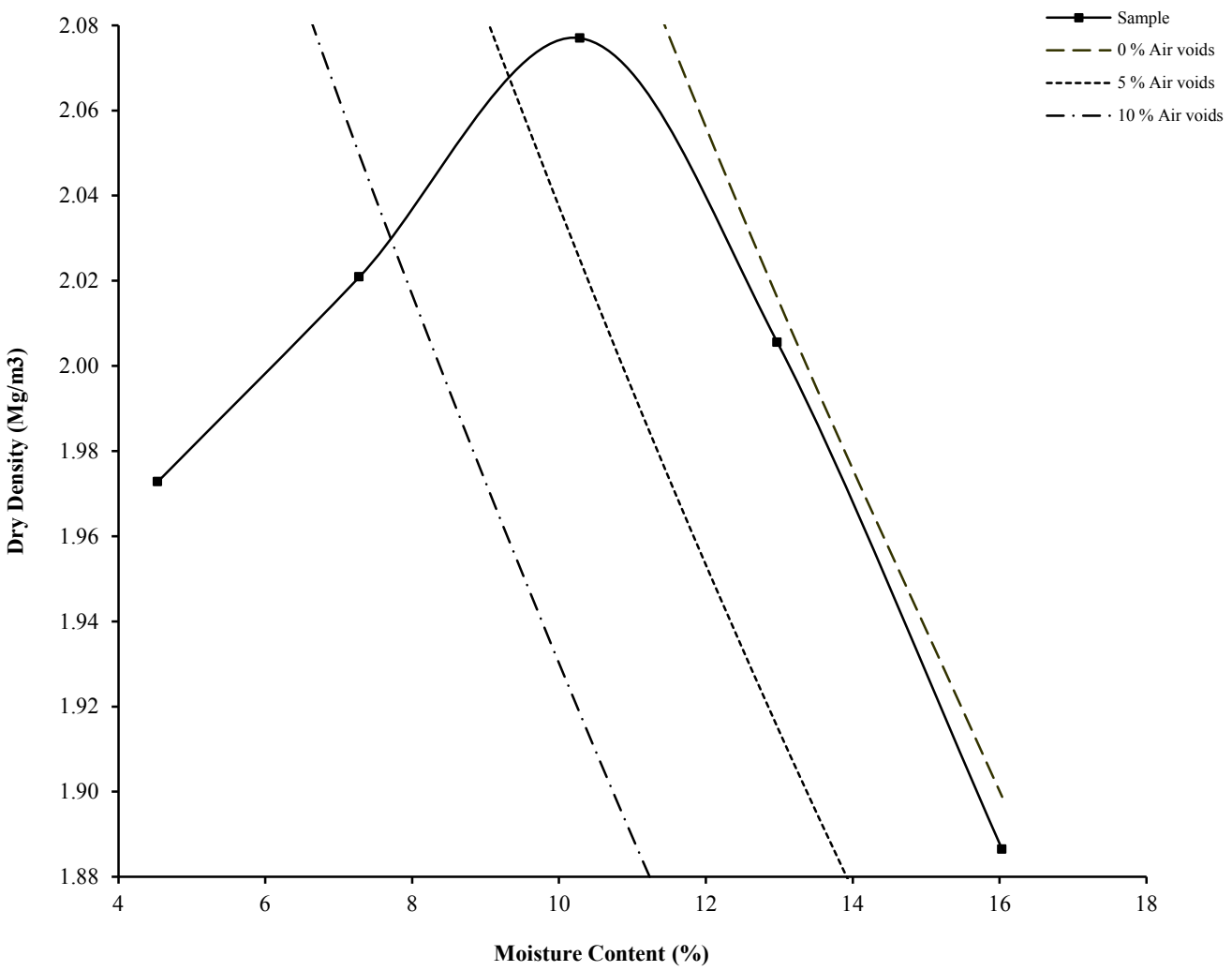


Initial Moisture Content:		15	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.72	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.08	Material Retained on 20.0 mm Test Sieve (%):		7
Optimum Moisture Content (%):		9			
Remarks See summary of soil descriptions.					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : 1990

Hole Number:	**BH208**	**Top Depth (m) :**	**3.00**
Sample Number:	**N76292**	**Base Depth (m) :**	**3.45**
Sample Type:	**B**		



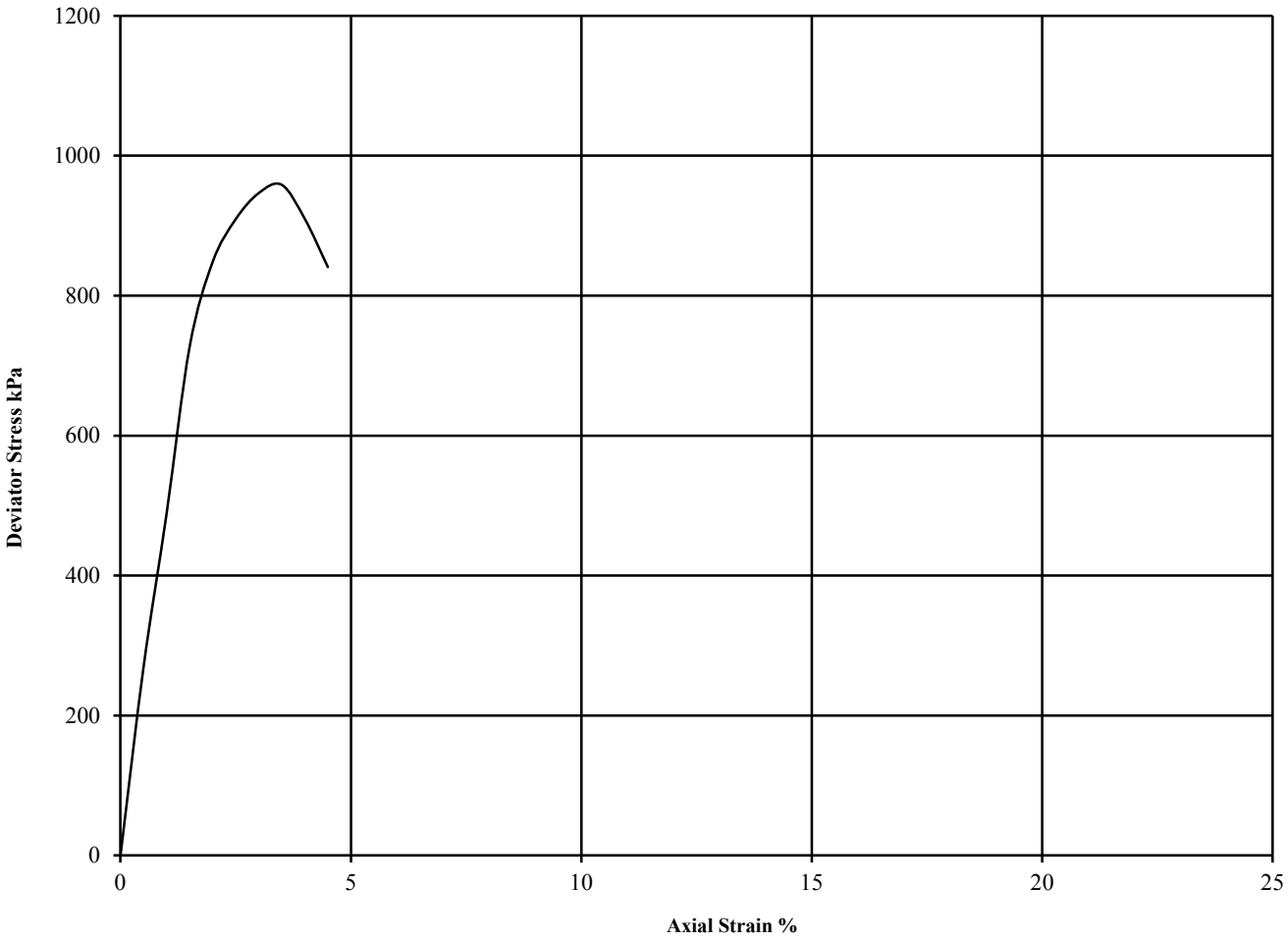
Initial Moisture Content:		16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.73	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.08	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions.					

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH107A**	**Top Depth (m):**	**1.20**
Sample Number:	**N76279**	**Base Depth (m):**	**1.65**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded with 4.5kg effort Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	10	2.28	2.07	50	958	479	3.5	Brittle	See summary of soil descriptions

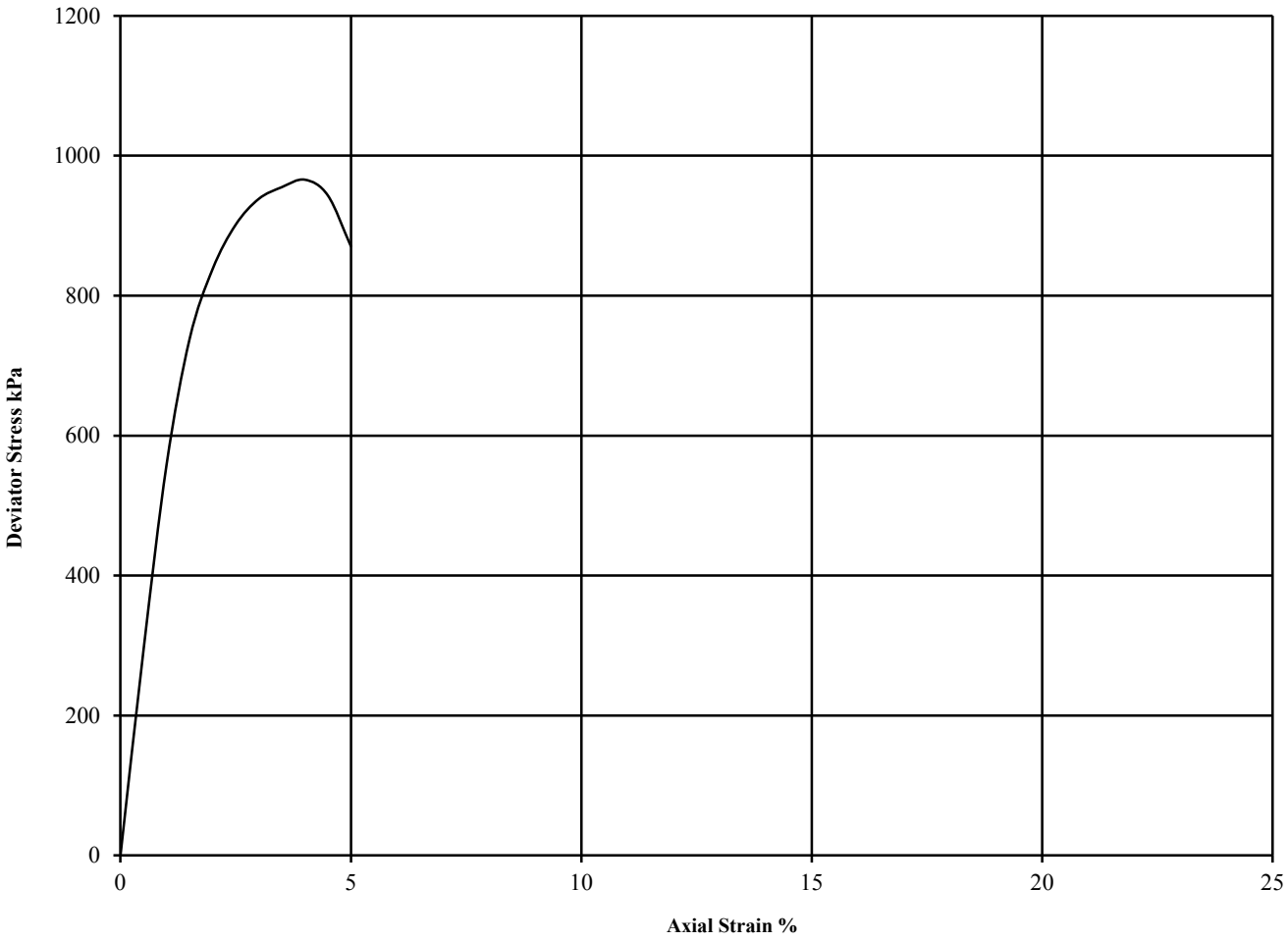
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A55 Jct 15&16 Improvements**	**Contract No: PSL19/4118** **Client Ref: PN193981**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH107A**	**Top Depth (m):**	**5.00**
Sample Number:	**N76282**	**Base Depth (m):**	**5.45**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded with 4.5kg effort Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	10	2.29	2.09	50	966	483	4.0	Brittle	See summary of soil descriptions

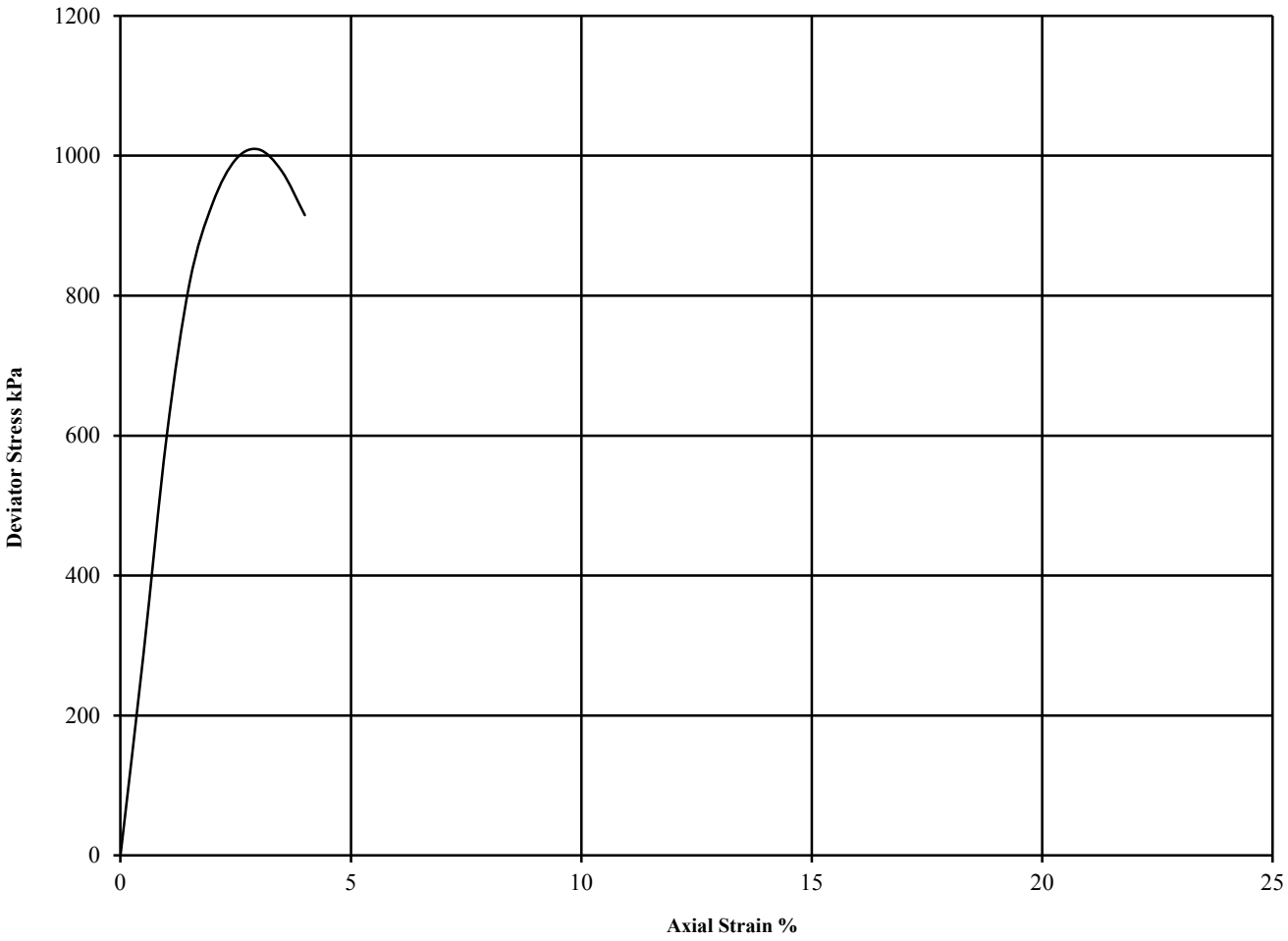
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A55 Jct 15&16 Improvements**	**Contract No: PSL19/4118** **Client Ref: PN193981**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH107A**	**Top Depth (m):**	**7.50**
Sample Number:	**N76283**	**Base Depth (m):**	**7.95**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded with 4.5kg effort Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	11	2.26	2.04	50	1009	504	3.0	Brittle	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

A55 Jct 15&16 Improvements

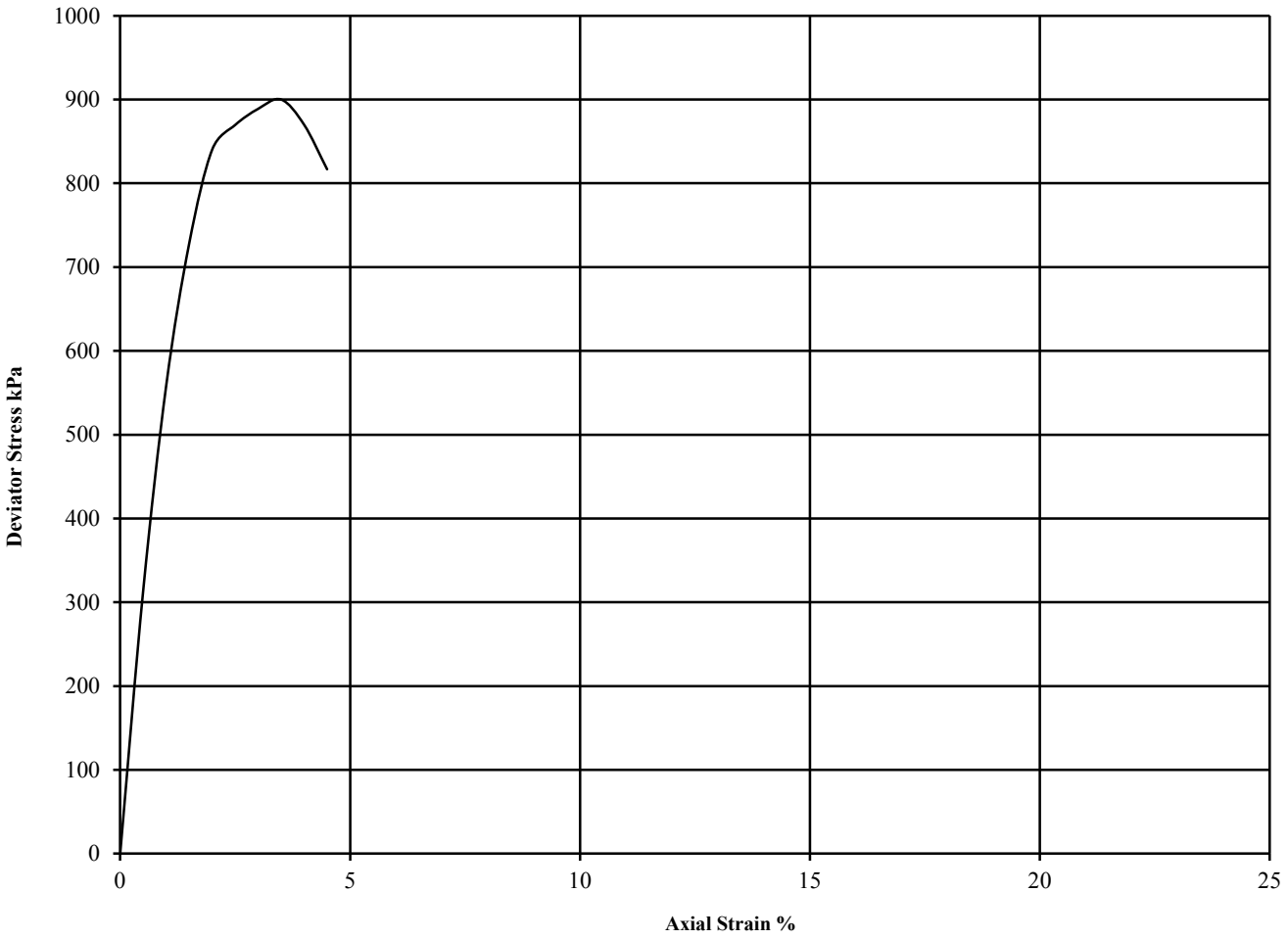
Contract No:
PSL19/4118
Client Ref:
PN193981

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH110**	**Top Depth (m):**	**1.20**
Sample Number:	**N76284**	**Base Depth (m):**	**1.65**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded with 4.5kg effort Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	10	2.25	2.04	50	900	450	3.5	Brittle	See summary of soil descriptions

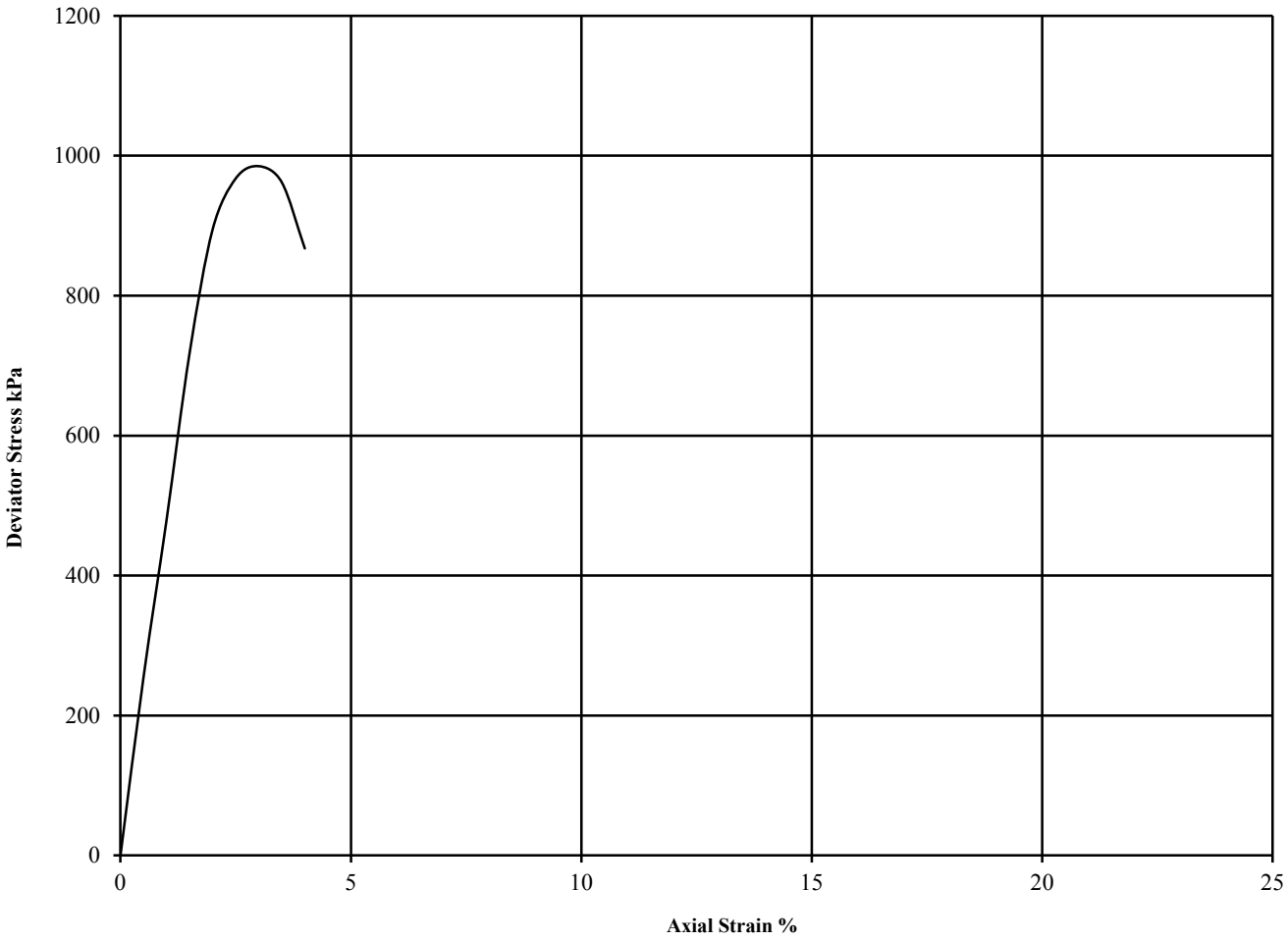
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A55 Jct 15&16 Improvements**	**Contract No:** PSL19/4118 **Client Ref:** PN193981

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH110**	**Top Depth (m):**	**3.00**
Sample Number:	**N76285**	**Base Depth (m):**	**3.45**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Disturbed Sample Remoulded with 4.5kg effort Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	9.2	2.27	2.08	50	985	493	3.0	Brittle	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

A55 Jct 15&16 Improvements

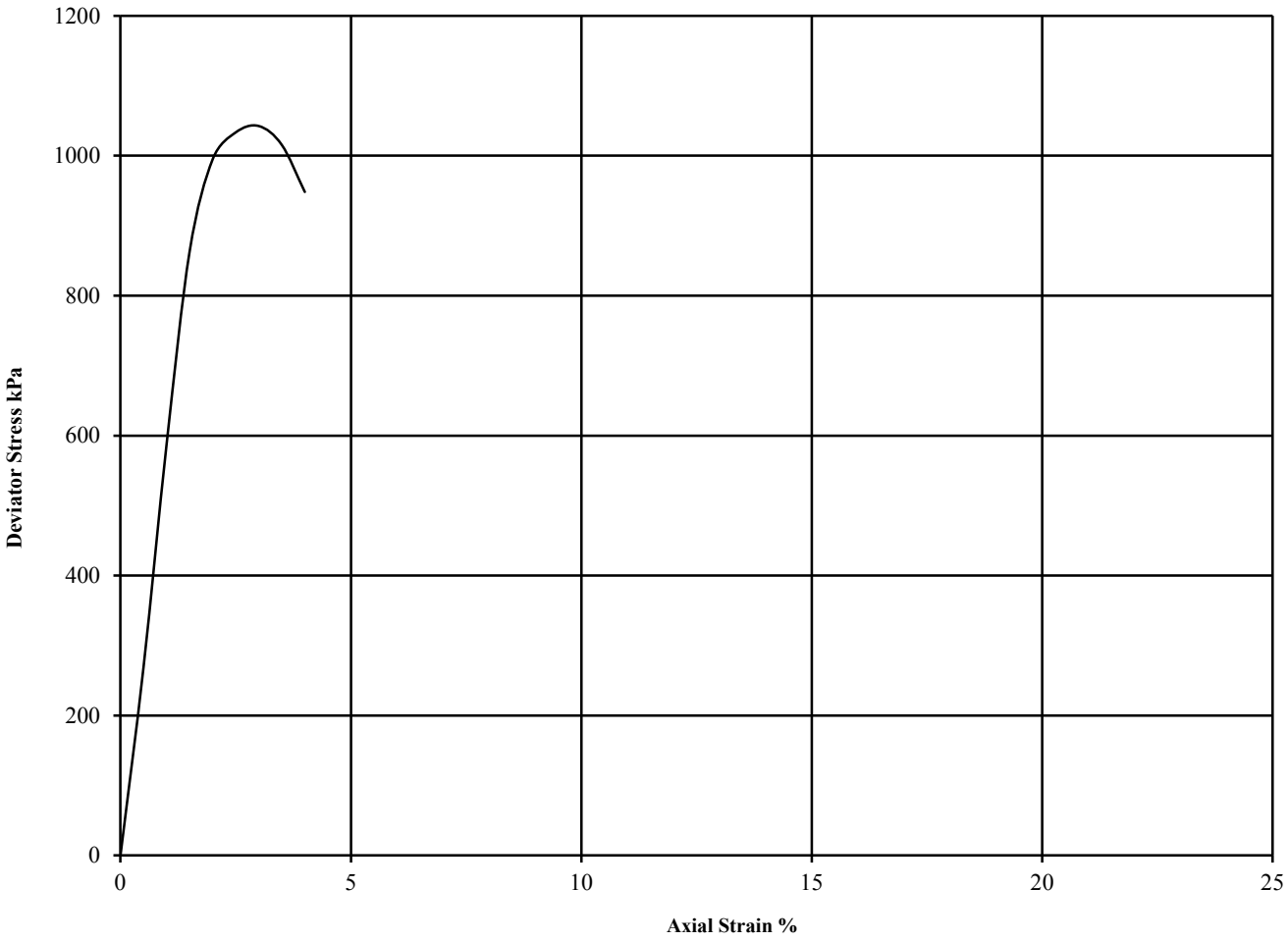
Contract No:
PSL19/4118
Client Ref:
PN193981

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH208**	**Top Depth (m):**	**3.00**
Sample Number:	**N76292**	**Base Depth (m):**	**3.45**
Sample Type	**B**		



Diameter (mm):		100	Height (mm):		200	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.37
1	10	2.27	2.07	50	1042	521	3.0	Brittle	See summary of soil descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	**A55 Jct 15&16 Improvements**	**Contract No: PSL19/4118** **Client Ref: PN193981**

STRUCTURAL SOILS LTD

TEST REPORT

Report No. 748937R.01(00) 1774

Date	28-June-2019	Contract	A55 Junctions 15 and 16 Improvement Scheme

Client Geotechnics Limited
Address The Geotechnical Centre
203 Torrington Avenue
Tile Hill
Coventry
CV4 9UT
For the Attention of Stephan Schiano

Samples submitted by client	11-June-2019	Client Reference	PN193981
Testing Started	11-June-2019	Client Order No.	AUTH-OL21563
Testing Completed	28-June-2019	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

6.01 Consolidated undrained triaxial compression with pore pressure measurement 38mm specimens BS1377:Part 8:1990,clause 7

* This clause of BS1377 is no longer the most up to date method due to the publication of ISO17892

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of .
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Structural Soils Ltd 1a Princess Street Bedminster Bristol BS3 4AG Tel.0117 9471000. e-mail dimitris.xirouchakis@soils.co.uk

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **28/06/2019 10:04:20**.

Testing reported after this date is not covered by this Verification Certificate.

A. D. Frost

Approved Signatory
Alan Frost (Deputy Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

	Contract:	Job No:
STRUCTURAL SOILS LTD	**A55 Junctions 15 and 16 Improvement Scheme**	**748937**

AGS

GINT_LIBRARY_V8_07.GLB | LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 748937.GPJ - v8_07.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 28/06/19 - 10:04 | AF3 |

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **BH219** Sample Ref : Sample Type : **U** Depth (m) : **2.18**

Nominal Sample Diameter (mm) : **38.0** Nominal Sample Height (mm) : **76.0**

Drainage : **Radial + 1 End** Sample Condition : **Undisturbed**

Description : **Brown fibrous PEAT**

	SPECIMEN NUMBER	1	2	3
PROPERTIES	Initial Moisture Content (%)	**639**	**453**	**426**
	Initial Bulk Density (Mg/m^3)	**1.07**	**1.03**	**1.05**
	Initial Dry Density (Mg/m^3)	**0.14**	**0.19**	**0.20**
	Final Moisture Content (%)	**585**	**369**	**302**
	Final Bulk Density (Mg/m^3)	**1.07**	**1.03**	**1.09**
	Final Dry Density (Mg/m^3)	**0.16**	**0.22**	**0.27**
SATURATION	Final Back Pressure (kPa)	**340**	**360**	**370**
	Cell Pressure Increment (kPa)	**20**	**40**	**50**
	Pore Pressure Increment (kPa)	**20**	**40**	**50**
	Final Pore Pressure Ratio - B Value	**1.00**	**1.00**	**1.00**
CONSOLIDATION	Cell Pressure (kPa)	**360**	**400**	**450**
	Back Pressure (kPa)	**340**	**360**	**370**
	Effective Cell Pressure (kPa)	**20**	**40**	**80**
	Initial Volume (cm^3)	**83.13**	**85.02**	**84.13**
	Final Volume (cm^3)	**76.60**	**72.28**	**61.75**
	Change in Volume (cm^3)	**6.53**	**12.74**	**22.38**
COMPRESSION	Cell Pressure (kPa)	**360**	**400**	**450**
	Initial Pore Water Pressure (kPa)	**340.0**	**360.1**	**370.5**
	Strain Rate (mm/min)	**0.0034**	**0.0033**	**0.0032**
	Axial Strain at Failure (%)	**13.34**	**15.20**	**11.47**
	Time to Failure (hrs)	**48.0**	**55.0**	**41.0**
	Deviator Stress at Failure (kPa)	**24.5**	**44.7**	**83.2**
	Pore Pressure at Failure (kPa)	**356.7**	**394.3**	**438.4**
	Effective Major Principal Stress (kPa)	**27.8**	**50.4**	**94.8**
	Effective Minor Principal Stress (kPa)	**3.3**	**5.7**	**11.6**
	Effective Principal Stress Ratio	**8.42**	**8.84**	**8.17**
	Pore Pressure Coefficient - A_f	**0.68**	**0.77**	**0.82**

Effective Cohesion (kPa) : **1** Angle of Shear Resistance (degs) : **50.5**

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D.Frost	**ALAN FROST**	**28/06/19**

Contract	Job No
A55 Junctions 15 and 16 Improvement Scheme	**748937**

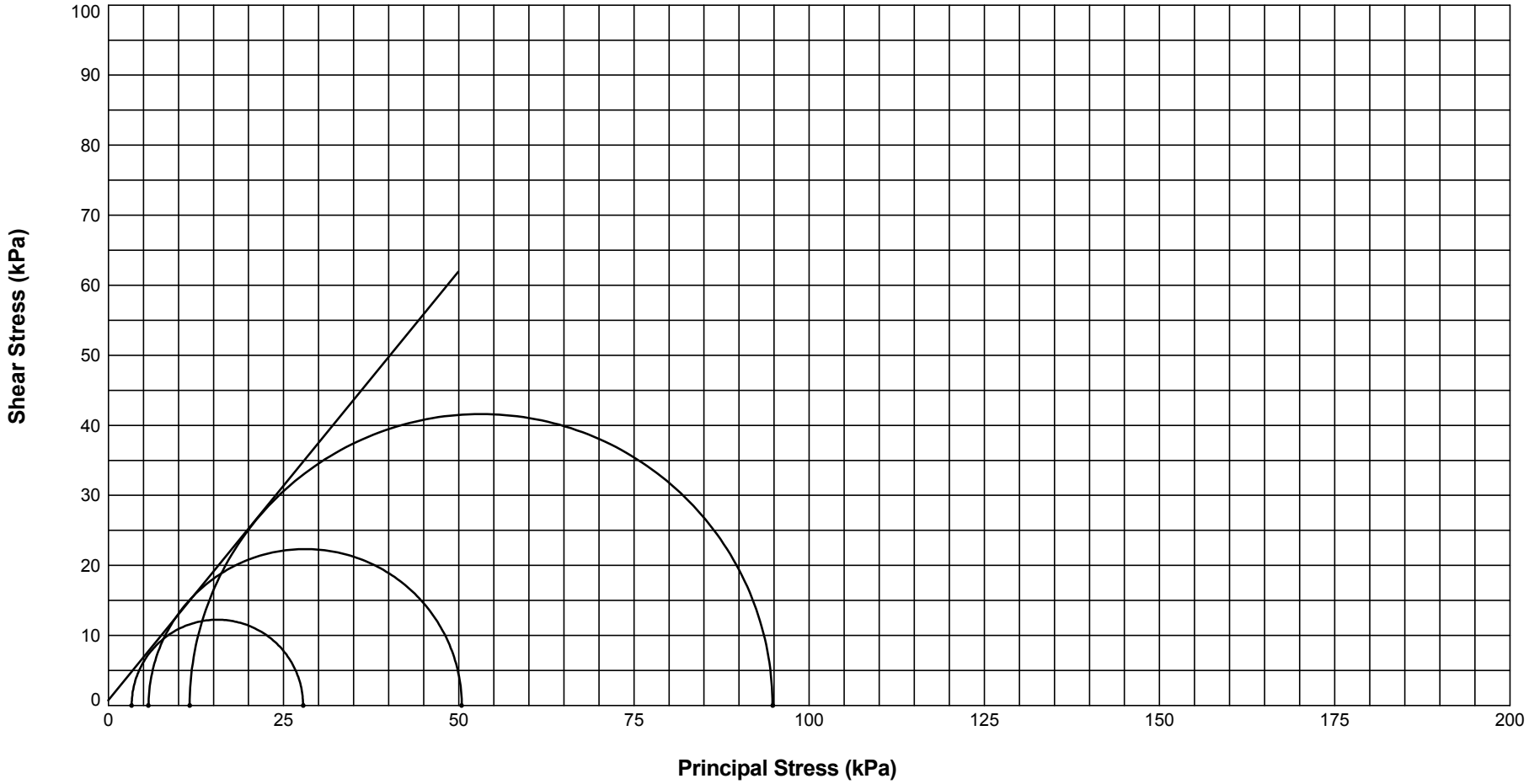
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Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 28/06/19 - 09:58 | AF3 |

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - EFFECTIVE STRESS 2 MOHR CIRCS - A4L | 748937.GPJ - v8_07.
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

In accordance with BS1377:Part 8:1990

Borehole : **BH219** Sample Ref : Sample Type : **U** Depth (m) : **2.18**



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date	Contract Ref:
A.D. Frost	**ALAN FROST**	**28.06.19**	**748937**

Contract

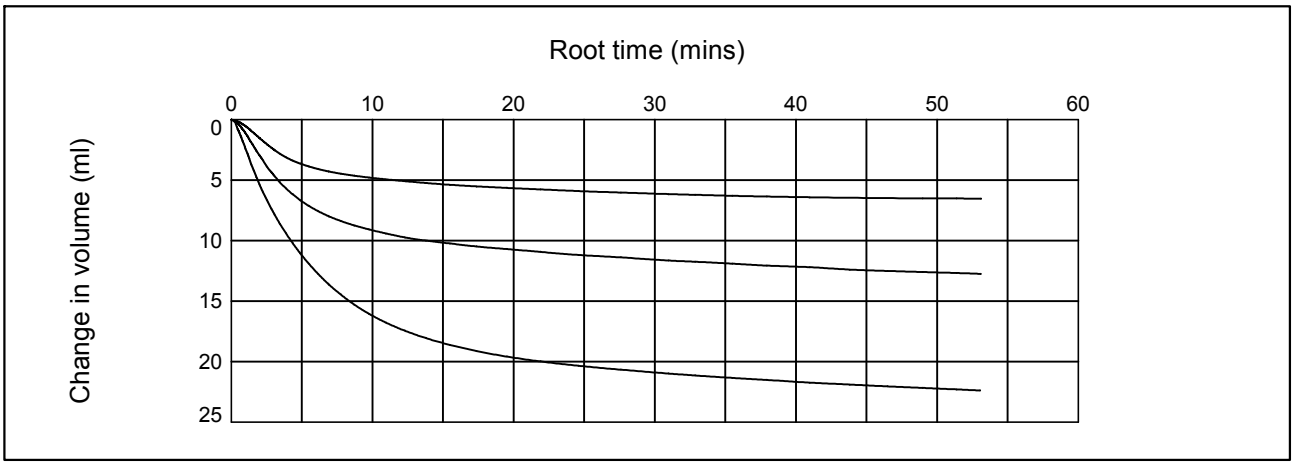
A55 Junctions 15 and 16 Improvement Scheme

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

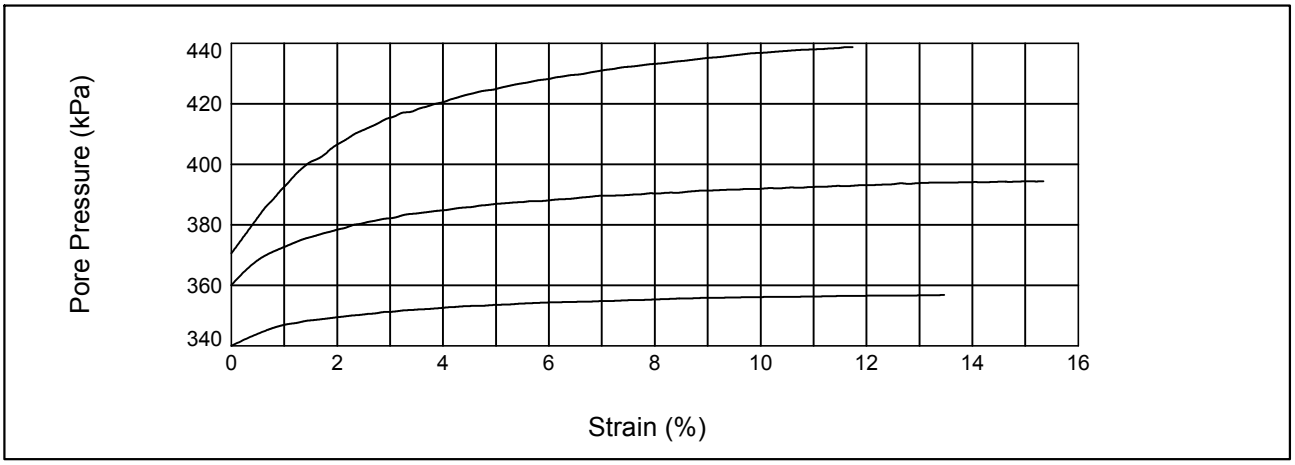
In accordance with BS1377:Part 8:1990

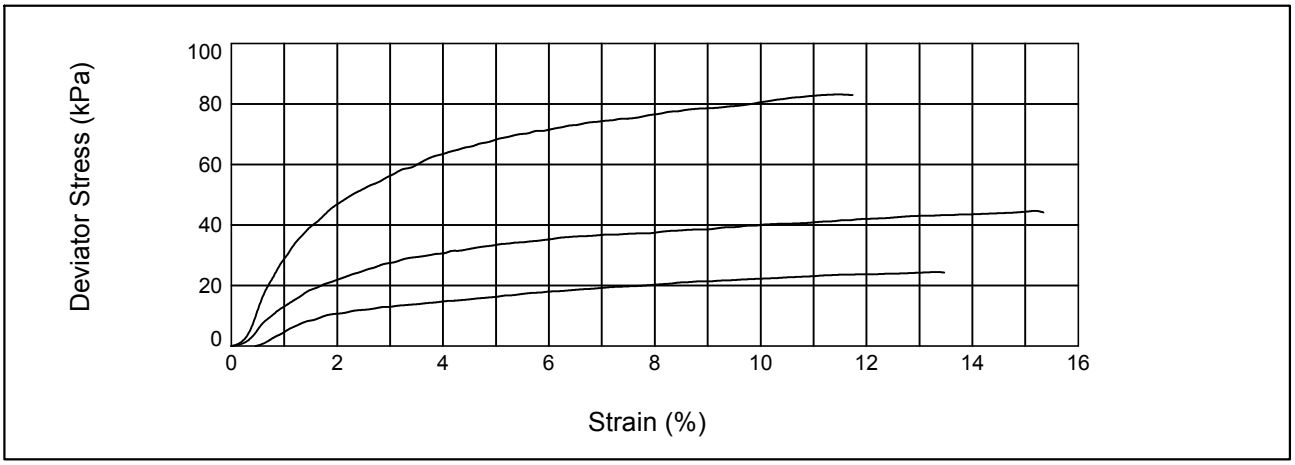
Borehole: **BH219** Sample Ref: **-** Sample Type: **U** Depth (m): **2.18**

CONSOLIDATION STAGE



SHEAR STAGE





STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	A.D. Frost	**ALAN FROST**	**28/06/19**
	Contract **A55 Junctions 15 and 16 Improvement Scheme**		Contract Ref: **748937**

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - EFFECTIVE STRESS 3.3 CU - A4P | 748937.GPJ - v8_07.
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
								Mean after prep.							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Diameter (mm)	Height (mm)	H/D Ratio	Load at Failure (kN)	UCS (MPa) 3 sig. fig.	Failure Sketch	D. Tested	Remarks
BH109	-	30.07-30.36	Weak, lineated, black and dark grey SLATE. Slightly weathered. Presence of veins of calcium carbonate, up to 3 mm, along the sample.	1.8	97.8	2.62	2.57	86.10	229.70	2.7	10.1	1.73		08/02/19	Failed on weakness plane

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are not met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 10/07/2019

Project Number:

GEO / 29519

Project Name:

A55 JUNCTIONS 15 AND 16 IMPROVEMENTS GI
PN193981

GEOLABS®

UKAS TESTING 1982

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH109
Sample Ref.:	-
Depth (m):	30.07-30.36

Description:
Weak, lineated, black and dark grey SLATE. Slightly weathered. Presence of veins of calcium carbonate, up to 3 mm, along the sample.

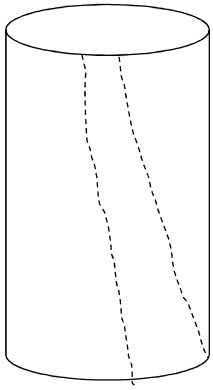
Diameter	86.10 mm
Height	229.70 mm
Bulk Density	2.62 Mg/m³
Dry Density	2.57 Mg/m³
Water Content	1.8 %

Degree of Saturation: 97.8 % Specific Gravity: 2.7 Mg/m³ (Assumed)

LF0879C (1000kN) compression frame used

Failure Sketch

Mode of failure: Axial splitting



Solid lines for material failures.
Dashed lines for apparent weakness failure.

Angle of foliation/Horizontal: 85°
Angle of shear plane/Horizontal: 85°

Date tested: 08/02/2019

Test results

Unconfined Compressive Strength	1.73 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a

Sample type	**C**

Remarks: Failed on weakness plane

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 10/07/2019

Project Number:

GEO / 29519

Project Name:

A55 JUNCTIONS 15 AND 16 IMPROVEMENTS GI
PN193981

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UKAS TESTING 1982

Certificate of Analysis

Certificate Number 19-16119

27-Aug-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-16119

Client Reference PN193981

Order No AUTH-OL22421

Contract Title A55 Junctions 15 and 16 Improvements

Description 2 Soil samples.

Date Received 20-Aug-19

Date Started 20-Aug-19

Date Completed 27-Aug-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-16119
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1550211	1550212
			Sample ID	BH212	BH217
			Depth	0.30-1.00	0.40-0.90
			Other ID		
			Sample Type	B	B
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	7.8	7.8
Organic matter	DETSC 2002#	0.1	%	0.2	1.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	13	16

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-16119
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1550211	BH212 0.30-1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	
1550212	BH217 0.40-0.90 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), Organic Matter (Manual) (28 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-15353

15-Aug-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-15353

Client Reference PN193981

Order No AUTH-OL22316

Contract Title A55 Junctions 15 and 16 Improvements

Description 2 Soil samples.

Date Received 09-Aug-19

Date Started 09-Aug-19

Date Completed 15-Aug-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-15353
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1544638	1544639
			Sample ID	BH105	BH105
			Depth	0.20-0.50	1.00-1.20
			Other ID		
			Sample Type	B	B
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	8.9	7.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	100

Information in Support of the Analytical Results

Our Ref 19-15353
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1544638	BH105 0.20-0.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1544639	BH105 1.00-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-15352

15-Aug-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-15352

Client Reference PN193981

Order No AUTH-OL22321

Contract Title A55 Junctions 15 and 16 Improvements

Description 4 Soil samples.

Date Received 09-Aug-19

Date Started 09-Aug-19

Date Completed 15-Aug-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-15352
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1544634	1544635	1544636	1544637
			Sample ID	TP207	TP207	TP208	TP208
			Depth	0.20-0.50	0.80	0.20-0.50	0.65
			Other ID				
			Sample Type	B	B	B	B
			Sampling Date	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Inorganics							
pH	DETSC 2008#		pH	7.8	8.8	10.5	9.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	23	42	42	12

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-15352
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1544634	TP207 0.20-0.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1544635	TP207 0.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1544636	TP208 0.20-0.50 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1544637	TP208 0.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-14564

02-Aug-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-14564

Client Reference PN193981

Order No AUTH-OL22201

Contract Title A55 Junctions 15 and 16 Improvements

Description 4 Soil samples.

Date Received 31-Jul-19

Date Started 31-Jul-19

Date Completed 02-Aug-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
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Summary of Chemical Analysis
Soil Samples

Our Ref 19-14564
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1539830	1539831	1539832	1539833
			Sample ID	BH106	BH106	BH106	BH108
			Depth	10.20	2.00-2.45	5.45-6.50	0.30-1.20
			Other ID				
			Sample Type	B	B	D	B
			Sampling Date	30/07/19	30/07/19	30/07/19	30/07/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Inorganics							
pH	DETSC 2008#		pH		8.8	7.7	8.2
Organic matter	DETSC 2002#	0.1	%	4.4			
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l		24	650	88

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-14564
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1539830	BH106 10.20 SOIL	30/07/19	PT 1L		
1539831	BH106 2.00-2.45 SOIL	30/07/19	PT 1L		
1539832	BH106 5.45-6.50 SOIL	30/07/19	PT 1L		
1539833	BH108 0.30-1.20 SOIL	30/07/19	PT 1L		

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-14065

26-Jul-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-14065

Client Reference PN193981

Order No OL22106

Contract Title A55 Junctions 15 And 16 Improvements

Description One Soil sample.

Date Received 24-Jul-19

Date Started 24-Jul-19

Date Completed 26-Jul-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-14065
Client Ref PN193981
Contract Title A55 Junctions 15 And 16 Improvements

Lab No	1536621
Sample ID	BH221
Depth	0.60-1.20
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Inorganics				
pH	DETSC 2008#		pH	7.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	18

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-14065
Client Ref PN193981
Contract A55 Junctions 15 And 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1536621	BH221 0.60-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-13774

25-Jul-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-13774

Client Reference PN193981

Order No OL22049

Contract Title A55 Junctions 15 and 16 Improvements

Description 3 Soil samples.

Date Received 19-Jul-19

Date Started 19-Jul-19

Date Completed 25-Jul-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-13774
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

Lab No	1534334	1534335
Sample ID	BH109	BH114A
Depth	0.60-1.20	0.50-1.00
Other ID		
Sample Type	SOIL	SOIL
Sampling Date	n/s	n/s
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Inorganics					
pH	DETSC 2008#		pH	8.3	8.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	130	18

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-13774
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1534336	BH114A 1.00-1.20	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-13774
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1534334	BH109 0.60-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1534335	BH114A 0.50-1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1534336	BH114A 1.00-1.20 SOIL		PT 1L		

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-13762

23-Jul-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-13762

Client Reference PN193981

Order No OL22050

Contract Title A55 Junctions 15 and 16 Improvements

Description 2 Soil samples.

Date Received 19-Jul-19

Date Started 19-Jul-19

Date Completed 23-Jul-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-13762
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1534305	1534306
			Sample ID	BH201	BHWS101
			Depth	0.70-1.20	1.20-1.65
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	8.2	9.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	25	10

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-13762
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1534305	BH201 0.70-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1534306	BHWS101 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-12876

12-Jul-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-12876

Client Reference PN193981

Order No AUTH-OL21914

Contract Title A55 Junctions 15 and 16 Improvements

Description 5 Soil samples.

Date Received 08-Jul-19

Date Started 08-Jul-19

Date Completed 12-Jul-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-12876
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1528331	1528332	1528333	1528334	1528335
			Sample ID	BH107A	BH111	BH111	BH114	BH114
			Depth	4.00-4.45	0.20-1.20	1.60-1.80	1.20-1.65	3.00-3.45
			Other ID					
			Sample Type	D	D	D	B	B
			Sampling Date	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Inorganics								
pH	DETSC 2008#			7.8	7.8	6.9	8.6	
Organic matter	DETSC 2002#	0.1	%					6.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	16	19	31	320	

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-12876
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1528331	BH107A 4.00-4.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1528332	BH111 0.20-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1528333	BH111 1.60-1.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1528334	BH114 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1528335	BH114 3.00-3.45 SOIL		PT 1L	Sample date not supplied, Organic Matter (Manual) (28 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-12068

02-Jul-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-12068

Client Reference PN193981

Order No OL21813

Contract Title A55 Junctions 15 and 16 Improvements

Description One Soil sample.

Date Received 27-Jun-19

Date Started 27-Jun-19

Date Completed 02-Jul-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-12068
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

Lab No	1522946
Sample ID	BH209
Depth	1.20-1.65
Other ID	
Sample Type	SOIL
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Inorganics				
pH	DETSC 2008#			8.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1200

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-12068
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1522946	BH209 1.20-1.65 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

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Soil Analysis Notes

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Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-11820

28-Jun-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-11820

Client Reference PN193981

Order No AUTH-OL21775

Contract Title A55 Junctions 15 and 16 Improvements

Description 6 Soil samples.

Date Received 24-Jun-19

Date Started 24-Jun-19

Date Completed 28-Jun-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
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Summary of Chemical Analysis
Soil Samples

Our Ref 19-11820
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1521237	1521238	1521239	1521240
			Sample ID	BH101	BH220	BH216A	BH219
			Depth	1.20-1.65	2.00-2.45	0.50	3.00-3.45
			Other ID				
			Sample Type	B	B	B	B
			Sampling Date	21/06/19	21/06/19	21/06/19	21/06/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Inorganics							
Loss on Ignition at 440oC	DETSC 2003#	0.01	%				11
pH	DETSC 2008#			7.9	7.6	8.2	
Organic matter	DETSC 2002#	0.1	%				8.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	230	16	< 10	
Sulphur as S, Total	DETSC 2320	0.01	%	0.09	< 0.01	< 0.01	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.20	0.02	0.02	

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-11820
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1521235	TP211 0.00-1.00	SOIL	NAD	none	Jordan Eadington
1521236	TP211 1.00-2.00	SOIL	NAD	none	Jordan Eadington
1521237	BH101 1.20-1.65	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-11820
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1521235	TP211 0.00-1.00 SOIL	21/06/19	PT 1L		
1521236	TP211 1.00-2.00 SOIL	21/06/19	PT 1L		
1521237	BH101 1.20-1.65 SOIL	21/06/19	PT 1L		
1521238	BH220 2.00-2.45 SOIL	21/06/19	PT 1L		
1521239	BH216A 0.50 SOIL	21/06/19	PT 1L		
1521240	BH219 3.00-3.45 SOIL	21/06/19	PT 1L		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-11365
	24-Jun-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-11365
Client Reference	PN193981
Order No	OL21677
Contract Title	A55 Junctions 15 and 16
Description	One Soil sample.
Date Received	18-Jun-19
Date Started	18-Jun-19
Date Completed	24-Jun-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
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Summary of Chemical Analysis
Soil Samples

Our Ref 19-11365
Client Ref PN193981
Contract Title A55 Junctions 15 and 16

Lab No	1518003
Sample ID	BH216
Depth	0.50
Other ID	
Sample Type	D
Sampling Date	13/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
Inorganics				
pH	DETSC 2008#			7.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	12
Sulphur as S, Total	DETSC 2320	0.01	%	0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-11365
Client Ref PN193981
Contract A55 Junctions 15 and 16

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1518003	BH216 0.50 SOIL	13/06/19	PT 1L		

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-11362

21-Jun-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-11362

Client Reference PN193981

Order No OL21676

Contract Title A55 Junctions 15 and 16

Description 2 Soil samples.

Date Received 18-Jun-19

Date Started 18-Jun-19

Date Completed 21-Jun-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

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Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-11362
Client Ref PN193981
Contract Title A55 Junctions 15 and 16

			Lab No	1517999	1518000
			Sample ID	TP201	TP203
			Depth	1.00-2.00	3.00
			Other ID		
			Sample Type	B	D
			Sampling Date	13/06/19	13/06/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#			7.6	6.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	23	62

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-11362
Client Ref PN193981
Contract A55 Junctions 15 and 16

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1517999	TP201 1.00-2.00 SOIL	13/06/19	PT 1L		
1518000	TP203 3.00 SOIL	13/06/19	PT 1L		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-11359-1
	24-Jun-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-11359-1
Client Reference	PN193981
Order No	OL21690
Contract Title	A55 Junctions 15 and 16
Description	3 Soil samples.
Date Received	18-Jun-19
Date Started	18-Jun-19
Date Completed	24-Jun-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-11359, amendments.** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

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Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-11359-1
Client Ref PN193981
Contract Title A55 Junctions 15 and 16

			Lab No	1517985	1517986	1517987
			Sample ID	BH102	BH205C	BH102
			Depth	1.10-1.55	1.20-1.65	2.50
			Other ID			
			Sample Type	D	D	D
			Sampling Date	13/06/19	13/06/19	13/06/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Inorganics						
pH	DETSC 2008#			12.1	8.5	
Organic matter	DETSC 2002#	0.1	%			3.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	44	
Sulphur as S, Total	DETSC 2320	0.01	%	0.20	0.02	
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.29	0.02	

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-11359-1
Client Ref PN193981
Contract A55 Junctions 15 and 16

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1517985	BH102 1.10-1.55 SOIL	13/06/19	PT 1L		
1517986	BH205C 1.20-1.65 SOIL	13/06/19	PT 1L		
1517987	BH102 2.50 SOIL	13/06/19	PT 1L		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-20036
	15-Oct-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-20036
Client Reference	PN193981
Order No	AUTH-OL23076
Contract Title	A55 Junctions 15 and 16 Improvements
Description	2 Soil samples.
Date Received	07-Oct-19
Date Started	07-Oct-19
Date Completed	15-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-20036
Client Ref PN193981
Contract Title A55 Junctions 15 and 16 Improvements

			Lab No	1576788	1576789
			Sample ID	BH214	BH215
			Depth	0.70-1.20	0.50-1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008#		pH	7.7	7.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	15	12

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-20036
Client Ref PN193981
Contract A55 Junctions 15 and 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1576788	BH214 0.70-1.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1576789	BH215 0.50-1.00 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

APPENDIX 12

Laboratory Test Results - Contamination (Soil/Rock)

Certificate of Analysis

Certificate Number 19-09691-1

29-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-09691-1

Client Reference PN193981

Order No ON21436

Contract Title A55 Junction 15 & 16 Improvements

Description 5 Soil samples.

Date Received 23-May-19

Date Started 23-May-19

Date Completed 29-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-09691, amedments.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

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Adam Fenwick
Contracts Manager

UKAS TESTING
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Summary of Chemical Analysis

Soil Samples

Our Ref 19-09691-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1505843	1505844	1505845	1505846	1505847
			Sample ID	BH203	BH204A	BH204A	BH216A	BH219
			Depth	0.50	0.25	1.00	0.50	0.10
			Other ID					
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	13/05/19	16/05/19	16/05/19	15/05/19	15/05/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	8.5	7.3	11	5.4	9.2
Barium	DETSC 2301#	1.5	mg/kg	48	45	35	24	73
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.1	0.1	< 0.1	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	42	25	7.7	15	14
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	25	29	14	9.3	20
Lead	DETSC 2301#	0.3	mg/kg	29	17	39	7.1	27
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Nickel	DETSC 2301#	1	mg/kg	29	19	5.8	14	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	76	43	10	19	21
Zinc	DETSC 2301#	1	mg/kg	81	63	66	29	86
Inorganics								
pH	DETSC 2008#		pH	7.3	8.3	8.7	8.1	7.9
Total Organic Carbon	DETSC 2084#	0.5	%	0.6	< 0.5	0.7	0.7	1.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	12	< 10	< 10	12	< 10
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	26	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	26	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	26	< 10	< 10	< 10
PAHs								
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-09691-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1505843	1505844	1505845	1505846	1505847
			Sample ID	BH203	BH204A	BH204A	BH216A	BH219
			Depth	0.50	0.25	1.00	0.50	0.10
			Other ID					
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	13/05/19	16/05/19	16/05/19	15/05/19	15/05/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Information in Support of the Analytical Results

Our Ref 19-09691-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1505843	BH203 0.50 SOIL	13/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1505844	BH204A 0.25 SOIL	16/05/19	GJ 250ml, GJ 60ml, PT 1L		
1505845	BH204A 1.00 SOIL	16/05/19	GJ 250ml, GJ 60ml, PT 1L		
1505846	BH216A 0.50 SOIL	15/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1505847	BH219 0.10 SOIL	15/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-09837-1
	29-Oct-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-09837-1
Client Reference	PN193981
Order No	ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	One Soil sample.
Date Received	28-May-19
Date Started	28-May-19
Date Completed	29-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-09837, amendments.** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-09837-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1506980
Sample ID	BH218
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	17/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	25
Barium	DETSC 2301#	1.5	mg/kg	90
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.6
Chromium III	DETSC 2301*	0.15	mg/kg	37
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	41
Lead	DETSC 2301#	0.3	mg/kg	210
Mercury	DETSC 2325#	0.05	mg/kg	0.05
Nickel	DETSC 2301#	1	mg/kg	34
Selenium	DETSC 2301#	0.5	mg/kg	1.2
Vanadium	DETSC 2301#	0.8	mg/kg	44
Zinc	DETSC 2301#	1	mg/kg	130
Inorganics				
pH	DETSC 2008#		pH	7.4
Total Organic Carbon	DETSC 2084#	0.5	%	1.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	79
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-09837-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1506980
Sample ID	BH218
Depth	0.25
Other ID	
Sample Type	SOIL
Sampling Date	17/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6

Information in Support of the Analytical Results

Our Ref 19-09837-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1506980	BH218 0.25 SOIL	17/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-10132-1

29-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-10132-1

Client Reference PN193981

Order No ON21436

Contract Title A55 Junction 15 & 16 Improvements

Description 9 Soil samples, 4 Leachate samples.

Date Received 30-May-19

Date Started 30-May-19

Date Completed 29-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-10132, amendments.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1508666	1508667	1508668	1508669	1508670	1508671
			Sample ID	TP203	TP203	TP204	TP206	TP206	TP210
			Depth	0.20	1.00	0.20	0.20	1.00	0.50
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	22/05/19	22/05/19	23/05/19	23/05/19	23/05/19	21/05/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	12	14	12	15	12	10
Barium	DETSC 2301#	1.5	mg/kg	74	76	70	100	110	57
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	0.3	0.3	0.3	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2	0.2	0.3	0.2	0.3
Chromium III	DETSC 2301*	0.15	mg/kg	27	32	27	30	36	33
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	30	30	25	25	28	26
Lead	DETSC 2301#	0.3	mg/kg	44	650	51	100	19	37
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.13	0.06	0.10	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	26	30	19	21	38	24
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	38	53	41	49	41	81
Zinc	DETSC 2301#	1	mg/kg	78	87	110	75	71	90
Inorganics									
pH	DETSC 2008#		pH	7.3	7.7	7.1	6.3	7.3	7.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.1	0.7	3.8	3.2	0.8	0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	25	24	17	16	15	34
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	0.98
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1508666	1508667	1508668	1508669	1508670	1508671
				Sample ID	TP203	TP203	TP204	TP206	TP206	TP210
				Depth	0.20	1.00	0.20	0.20	1.00	0.50
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/05/19	22/05/19	23/05/19	23/05/19	23/05/19	21/05/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.2	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	0.1	0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	0.2	0.2	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	2.4	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1508672	1508673	1508674
			Sample ID	TP210A	TP211	TP211
			Depth	0.50	0.20	1.00
			Other ID			
			Sample Type	ES	ES	ES
			Sampling Date	21/05/19	22/05/19	22/05/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	12	60	66
Barium	DETSC 2301#	1.5	mg/kg	55	370	430
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	0.7	1.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.7	1.2
Chromium III	DETSC 2301*	0.15	mg/kg	32	25	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26	220	250
Lead	DETSC 2301#	0.3	mg/kg	29	660	660
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	3.5	1.3
Nickel	DETSC 2301#	1	mg/kg	25	52	59
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	73	66	71
Zinc	DETSC 2301#	1	mg/kg	100	360	540
Inorganics						
pH	DETSC 2008#		pH	7.4	6.9	7.6
Total Organic Carbon	DETSC 2084#	0.5	%	< 0.5	20	21
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	11	66	28
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 1.0
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 1.0

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1508672	1508673	1508674
			Sample ID	TP210A	TP211	TP211
			Depth	0.50	0.20	1.00
			Other ID			
			Sample Type	ES	ES	ES
			Sampling Date	21/05/19	22/05/19	22/05/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 1.0
Fluorene	DETSC 3301	0.1	mg/kg	0.1	0.1	< 1.0
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 1.0
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 1.0
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	< 1.0
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	< 1.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 1.0
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 1.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 1.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 1.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 1.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3	< 1.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 1.0
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	< 1.0
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	4.1	< 16.0

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1508675	1508676	1508677	1508678
			Sample ID	TP203	TP203	TP206	TP211
			Depth	0.20	1.00	1.00	0.20
			Other ID				
			Sample Type	ES	ES	ES	ES
			Sampling Date	22/05/19	22/05/19	23/05/19	22/05/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Preparation							
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y	Y	Y
Metals							
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17	< 0.17	< 0.17	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	< 0.16	0.48	0.36	< 0.16
Barium, Dissolved	DETSC 2306	0.26	ug/l	< 0.26	4.3	< 0.26	< 0.26
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12	< 12	< 12	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	1.3	< 0.4	< 0.4
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	0.28	< 0.25	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6	< 0.6	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3	< 1.3	< 1.3
Inorganics							
Conductivity	DETSC 2009	1	uS/cm	110	48.5	25.7	95.5
pH	DETSC 2008		pH	7.1	7.2	7.1	6.9
Hardness	DETSC 2303	0.1	mg/l	1.96	43.0	14.9	4.80
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	< 0.015	< 0.015	0.97
Sulphate as SO4	DETSC 2055	0.1	mg/l	2.2	3.2	2.4	4.0
Total Organic Carbon	DETSC 2085	1	mg/l	8.8	8.3	30	13
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1508675	1508676	1508677	1508678
			Sample ID	TP203	TP203	TP206	TP211
			Depth	0.20	1.00	1.00	0.20
			Other ID				
			Sample Type	ES	ES	ES	ES
			Sampling Date	22/05/19	22/05/19	23/05/19	22/05/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
PAHs							
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.02	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.02	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10132-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1508666	TP203 0.20	SOIL	NAD	none	Paul Nicholson
1508667	TP203 1.00	SOIL	NAD	none	Paul Nicholson
1508668	TP204 0.20	SOIL	NAD	none	Paul Nicholson
1508669	TP206 0.20	SOIL	NAD	none	Paul Nicholson
1508670	TP206 1.00	SOIL	NAD	none	Paul Nicholson
1508671	TP210 0.50	SOIL	NAD	none	Paul Nicholson
1508672	TP210A 0.50	SOIL	NAD	none	Paul Nicholson
1508673	TP211 0.20	SOIL	NAD	none	Paul Nicholson
1508674	TP211 1.00	SOIL	NAD	none	Paul Nicholson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10132-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1508666	TP203 0.20 SOIL	22/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508667	TP203 1.00 SOIL	22/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508668	TP204 0.20 SOIL	23/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508669	TP206 0.20 SOIL	23/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508670	TP206 1.00 SOIL	23/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508671	TP210 0.50 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508672	TP210A 0.50 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508673	TP211 0.20 SOIL	22/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508674	TP211 1.00 SOIL	22/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1508675	TP203 0.20 LEACHATE	22/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508676	TP203 1.00 LEACHATE	22/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508677	TP206 1.00 LEACHATE	23/05/19	GJ 250ml, GJ 60ml, PT 1L		
1508678	TP211 0.20 LEACHATE	22/05/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-10294-1
	29-Oct-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-10294-1
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	6 Soil samples, 2 Leachate samples.
Date Received	03-Jun-19
Date Started	03-Jun-19
Date Completed	29-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-10294, amendments.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Sample ID	Depth	Lab No	Completed	Matrix Description
BH109	0.2	1509969	10/06/2019	Grey sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
BH109	1	1509970	10/06/2019	Grey sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
BH205C	0.25	1509971	10/06/2019	Dark brown clayey SAND
BH205C	1	1509972	10/06/2019	Dark brown gravelly, sandy CLAY
BH213	0.2	1509973	10/06/2019	Dark brown clayey SAND including some rootlets
BH228	0.5	1509974	10/06/2019	Dark brown gravelly, clayey SAND

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1509969	1509970	1509971	1509972	1509973	1509974
			Sample ID	BH109	BH109	BH205C	BH205C	BH213	BH228
			Depth	0.20	1.00	0.25	1.00	0.20	0.50
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	23/05/19	23/05/19	21/05/19	21/05/19	21/05/19	21/05/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	9.1	11	11	5.7	9.6	8.9
Barium	DETSC 2301#	1.5	mg/kg	37	40	70	46	67	64
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	0.2	0.2	0.3	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.2	0.2	0.2	0.2	0.1
Chromium III	DETSC 2301*	0.15	mg/kg	27	20	28	59	25	36
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	18	26	24	21	19	17
Lead	DETSC 2301#	0.3	mg/kg	7.5	17	41	18	48	36
Mercury	DETSC 2325#	0.05	mg/kg	0.31	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Nickel	DETSC 2301#	1	mg/kg	27	21	19	30	14	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	22	24	67	58	40	81
Zinc	DETSC 2301#	1	mg/kg	58	130	96	79	67	80
Inorganics									
pH	DETSC 2008#		pH	9.1	8.5	7.0	8.6	6.5	7.3
Total Organic Carbon	DETSC 2084#	0.5	%	0.5	< 0.5	1.8	< 0.5	2.7	0.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	37	60	15	19	18	16
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	12	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	12	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	20	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	20	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	32	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1509969	1509970	1509971	1509972	1509973	1509974
			Sample ID	BH109	BH109	BH205C	BH205C	BH213	BH228
			Depth	0.20	1.00	0.25	1.00	0.20	0.50
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	23/05/19	23/05/19	21/05/19	21/05/19	21/05/19	21/05/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	0.3	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	0.2	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	0.4	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.3	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	1.8	2.1	< 1.6	< 1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1509975	1509976
			Sample ID	BH109	BH205C
			Depth	0.20	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	23/05/19	21/05/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y
Metals					
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17	0.21
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	4.0	0.49
Barium, Dissolved	DETSC 2306	0.26	ug/l	2.8	3.6
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	3.8	1.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.21
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02	0.03
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.27	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3
Inorganics					
Conductivity	DETSC 2009	1	uS/cm	82.3	76.9
pH	DETSC 2008		pH	8.9	8.2
Hardness	DETSC 2303	0.1	mg/l	25.0	23.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.052	3.3
Sulphate as SO4	DETSC 2055	0.1	mg/l	2.5	2.6
Total Organic Carbon	DETSC 2085	1	mg/l	4.6	3.8
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1509975	1509976
			Sample ID	BH109	BH205C
			Depth	0.20	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	23/05/19	21/05/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	0.01
Fluorene	DETSC 3304	0.01	ug/l	0.02	0.03
Phenanthrene	DETSC 3304	0.01	ug/l	0.13	0.06
Anthracene	DETSC 3304	0.01	ug/l	0.02	0.03
Fluoranthene	DETSC 3304	0.01	ug/l	0.10	0.06
Pyrene	DETSC 3304	0.01	ug/l	0.11	0.06
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.04	0.03
Chrysene	DETSC 3304	0.01	ug/l	0.09	0.04
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.03	0.05
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.03
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.01	0.05
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.01	0.05
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.02	0.06
PAH Total	DETSC 3304	0.2	ug/l	0.64	0.62

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10294-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1509969	BH109 0.20	SOIL	NAD	none	Jordan Eadington
1509970	BH109 1.00	SOIL	NAD	none	Jordan Eadington
1509972	BH205C 1.00	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10294-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1509969	BH109 0.20 SOIL	23/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1509970	BH109 1.00 SOIL	23/05/19	GJ 250ml x2, PT 1L	pH + Conductivity (7 days)	
1509971	BH205C 0.25 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1509972	BH205C 1.00 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1509973	BH213 0.20 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1509974	BH228 0.50 SOIL	21/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1509975	BH109 0.20 LEACHATE	23/05/19	GJ 250ml, GJ 60ml, PT 1L		
1509976	BH205C 1.00 LEACHATE	21/05/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number	19-10482-1	29-Oct-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ	
Our Reference	19-10482-1	
Client Reference	PN193981	
Order No	ON21436	
Contract Title	A55 Junction 15 & 16 Improvements	
Description	1 Soil sample, 1 Leachate sample.	
Date Received	05-Jun-19	
Date Started	05-Jun-19	
Date Completed	29-Oct-19	
Test Procedures	Identified by prefix DETSn (details on request).	
Notes	**This report supersedes 19-10482, amendments.** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.	

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Sample ID	Depth	Lab No	Completed	Matrix Description
BH102	1.10-1.55	1511168	11/06/2019	Brown gravelly, sandy CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1511168
Sample ID	BH102
Depth	1.10-1.55
Other ID	
Sample Type	SOIL
Sampling Date	21/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	6.9
Barium	DETSC 2301#	1.5	mg/kg	79
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	3.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	16
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	31
Lead	DETSC 2301#	0.3	mg/kg	32
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	22
Zinc	DETSC 2301#	1	mg/kg	62
Inorganics				
pH	DETSC 2008#		pH	11.6
Total Organic Carbon	DETSC 2084#	0.5	%	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1511168
Sample ID	BH102
Depth	1.10-1.55
Other ID	
Sample Type	SOIL
Sampling Date	21/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.2
Pyrene	DETSC 3301	0.1	mg/kg	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2
Chrysene	DETSC 3301	0.1	mg/kg	0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1511169
Sample ID	BH102
Depth	1.10-1.55
Other ID	
Sample Type	LEACHATE
Sampling Date	21/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y
Metals				
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.42
Barium, Dissolved	DETSC 2306	0.26	ug/l	28
Boron, Dissolved	DETSC 2306*	12	ug/l	70
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	6.4
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	4.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.14
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	1.4
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3
Inorganics				
Conductivity	DETSC 2009	1	uS/cm	889
pH	DETSC 2008		pH	11.0
Hardness	DETSC 2303	0.1	mg/l	87.4
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.047
Sulphate as SO4	DETSC 2055	0.1	mg/l	6.0
Total Organic Carbon	DETSC 2085	1	mg/l	5.2
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1511169
Sample ID	BH102
Depth	1.10-1.55
Other ID	
Sample Type	LEACHATE
Sampling Date	21/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10482-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1511168	BH102 1.10-1.55	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10482-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1511168	BH102 1.10-1.55 SOIL	21/05/19	GJ 250ml x2, GJ 60ml x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
1511169	BH102 1.10-1.55 LEACHATE	21/05/19	GJ 250ml x2, GJ 60ml x2		

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Certificate of Analysis

Certificate Number 19-10622-2

29-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-10622-2

Client Reference PN193981

Order No ON21436

Contract Title A55 Junction 15&16 Improvements

Description 9 Soil samples, 3 Leachate samples.

Date Received 06-Jun-19

Date Started 06-Jun-19

Date Completed 29-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-10622, amendments.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

				Lab No	1512323	1512324	1512325	1512326	1512327	1512328
				Sample ID	WS201	WS201	WS204	WS204	BH101	BH101
				Depth	0.50	2.00	1.00	3.00	0.20	1.00
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	30/05/19	30/05/19	30/05/19	30/05/19	28/05/19	28/05/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	5.3	6.9	11	11	9.9	1.1
Barium	DETSC 2301#	1.5	mg/kg	200	16	38	67	33	28
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2	0.3	0.8	0.3	0.7
Chromium III	DETSC 2301*	0.15	mg/kg	21	12	36	27	32	8.5
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	36	11	24	32	22	8.5
Lead	DETSC 2301#	0.3	mg/kg	39	12	20	44	33	24
Mercury	DETSC 2325#	0.05	mg/kg	0.13	< 0.05	0.07	0.06	0.10	< 0.05
Nickel	DETSC 2301#	1	mg/kg	25	5.1	29	18	24	5.2
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	82	15	66	53	67	16
Zinc	DETSC 2301#	1	mg/kg	92	42	88	110	150	66
Inorganics										
pH	DETSC 2008#		pH	7.6	9.0	7.8	7.9	7.8	8.4
Total Organic Carbon	DETSC 2084#	0.5	%	1.2	< 0.5	< 0.5	0.8	< 0.5	4.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	29	10	17	14	13	19
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	1.8
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	7.7	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	130	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	140	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	13	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	240	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	250	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	390	< 10
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

				Lab No	1512323	1512324	1512325	1512326	1512327	1512328
				Sample ID	WS201	WS201	WS204	WS204	BH101	BH101
				Depth	0.50	2.00	1.00	3.00	0.20	1.00
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	30/05/19	30/05/19	30/05/19	30/05/19	28/05/19	28/05/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Acenaphthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.1	< 0.1	0.2	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Phenanthrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.4
Anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.6	< 0.1	0.1	1.6
Pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.6	< 0.1	0.2	1.5
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.3	< 0.1	1.0	0.8
Chrysene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.3	< 0.1	1.4	0.8
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.2	< 0.1	1.7	0.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.2	< 0.1	1.3	0.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.4	< 0.1	< 0.1	0.7
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.3	< 0.1	< 0.1	0.6
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.5
PAH Total	DETSC 3301	1.6	mg/kg		< 1.6	< 1.6	3.3	< 1.6	6.3	8.2

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

			Lab No	1512329	1512330	1512331
			Sample ID	BH209	BH209	BH220A
			Depth	0.20	1.00	1.00
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	28/05/19	28/05/19	30/05/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	9.9	23	32
Barium	DETSC 2301#	1.5	mg/kg	79	250	90
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.6	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.3	0.3
Chromium III	DETSC 2301*	0.15	mg/kg	16	22	24
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	23	18	25
Lead	DETSC 2301#	0.3	mg/kg	57	28	27
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.06
Nickel	DETSC 2301#	1	mg/kg	16	22	25
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	4.5	1.2
Vanadium	DETSC 2301#	0.8	mg/kg	27	40	37
Zinc	DETSC 2301#	1	mg/kg	78	62	72
Inorganics						
pH	DETSC 2008#		pH	9.6	7.3	8.3
Total Organic Carbon	DETSC 2084#	0.5	%	2.3	1.1	< 0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160	13	31
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

			Lab No	1512329	1512330	1512331
			Sample ID	BH209	BH209	BH220A
			Depth	0.20	1.00	1.00
			Other ID			
			Sample Type	SOIL	SOIL	SOIL
			Sampling Date	28/05/19	28/05/19	30/05/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

	Lab No	1512332	1512333	1512334
	Sample ID	WS201	WS204	BH101
	Depth	0.50	1.00	0.20
	Other ID			
	Sample Type	LEACHATE	LEACHATE	LEACHATE
	Sampling Date	30/05/19	30/05/19	28/05/19
	Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y	Y
Metals						
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17	< 0.17	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.3	0.39	0.43
Barium, Dissolved	DETSC 2306	0.26	ug/l	3.8	3.2	19
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12	< 12	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.1	0.7	0.9
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.58	0.44	2.9
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	2.9	0.6	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	0.6	0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	9.3	3.2	2.3
Inorganics						
Conductivity	DETSC 2009	1	uS/cm	55.5	26.4	53.0
pH	DETSC 2008		pH	8.6	8.0	8.9
Hardness	DETSC 2303	0.1	mg/l	27.7	11.9	29.6
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.085	0.020	0.051
Sulphate as SO4	DETSC 2055	0.1	mg/l	2.0	1.7	2.9
Total Organic Carbon	DETSC 2085	1	mg/l	5.3	7.8	13
Petroleum Hydrocarbons						
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

	Lab No	1512332	1512333	1512334
	Sample ID	WS201	WS204	BH101
	Depth	0.50	1.00	0.20
	Other ID			
	Sample Type	LEACHATE	LEACHATE	LEACHATE
	Sampling Date	30/05/19	30/05/19	28/05/19
	Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.01	0.03	0.02
Pyrene	DETSC 3304	0.01	ug/l	< 0.01	0.02	0.02
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01	0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	0.02	0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.02	0.02
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	0.02	0.02
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	0.02	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	0.02	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10622-2
Client Ref PN193981
Contract Title A55 Junction 15&16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1512323	WS201 0.50	SOIL	NAD	none	Jordan Eadington
1512324	WS201 2.00	SOIL	NAD	none	Jordan Eadington
1512325	WS204 1.00	SOIL	NAD	none	Jordan Eadington
1512326	WS204 3.00	SOIL	NAD	none	Jordan Eadington
1512327	BH101 0.20	SOIL	NAD	none	Jordan Eadington
1512328	BH101 1.00	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10622-2
Client Ref PN193981
Contract A55 Junction 15&16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1512323	WS201 0.50 SOIL	30/05/19	GJ 250ml, GJ 60ml, PT 1L		
1512324	WS201 2.00 SOIL	30/05/19	GJ 250ml, GJ 60ml, PT 1L		
1512325	WS204 1.00 SOIL	30/05/19	PT 1L		Aliphatics/Aromatics, BTEX, Naphthalene, PAH FID
1512326	WS204 3.00 SOIL	30/05/19	GJ 250ml, GJ 60ml, PT 1L		
1512327	BH101 0.20 SOIL	28/05/19	GJ 250ml, GV, PT 1L	pH + Conductivity (7 days)	
1512328	BH101 1.00 SOIL	28/05/19	GJ 250ml, GV, PT 1L	pH + Conductivity (7 days)	
1512329	BH209 0.20 SOIL	28/05/19	GJ 250ml, GV, PT 1L	pH + Conductivity (7 days)	
1512330	BH209 1.00 SOIL	28/05/19	GJ 250ml, GV, PT 1L	pH + Conductivity (7 days)	
1512331	BH220A 1.00 SOIL	30/05/19	GJ 250ml, GJ 60ml, PT 1L		
1512332	WS201 0.50 LEACHATE	30/05/19	GJ 250ml, GJ 60ml, PT 1L		
1512333	WS204 1.00 LEACHATE	30/05/19	PT 1L		
1512334	BH101 0.20 LEACHATE	28/05/19	GJ 250ml, GV, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-10881-1
	29-Oct-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-10881-1
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	13 Soil samples, 6 Leachate samples.
Date Received	11-Jun-19
Date Started	11-Jun-19
Date Completed	29-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-10881, amendments.** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514448	1514449	1514450	1514451	1514452	1514453
				Sample ID	WS203	WS203	WS203	WS207	WS207	WS207
				Depth	1.00	2.00	3.20	0.20	1.00	1.85
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	04/06/19	04/06/19	04/06/19	05/06/19	05/06/19	05/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	11	9.6	11	1.9	15	0.6
Barium	DETSC 2301#	1.5	mg/kg	300	66	73	26	52	27
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	0.3	< 0.2	0.3	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	< 0.1	0.2	< 0.1	0.2	< 0.1
Chromium III	DETSC 2301*	0.15	mg/kg	22	33	51	62	31	66
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	18	37	30	61	30	38
Lead	DETSC 2301#	0.3	mg/kg	32	12	14	5.4	29	5.5
Mercury	DETSC 2325#	0.05	mg/kg	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	19	29	32	35	25	36
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.6	0.9	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	31	29	59	68	34	56
Zinc	DETSC 2301#	1	mg/kg	190	89	76	66	93	66
Inorganics										
pH	DETSC 2008#		pH	7.8	8.9	7.9	9.2	8.6	9.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	34	20	32	11	16	< 10
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	7.1
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	19	18
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	19	18
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	1.4	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	3.3	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	47	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	51	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	71	18

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514448	1514449	1514450	1514451	1514452	1514453
				Sample ID	WS203	WS203	WS203	WS207	WS207	WS207
				Depth	1.00	2.00	3.20	0.20	1.00	1.85
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	04/06/19	04/06/19	04/06/19	05/06/19	05/06/19	05/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	0.3	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	0.3	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.1	0.1	0.3	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	1.8	< 1.6	< 1.6	< 1.6
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	16	0.9	0.4	0.4	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514448	1514449	1514450	1514451	1514452	1514453
				Sample ID	WS203	WS203	WS203	WS207	WS207	WS207
				Depth	1.00	2.00	3.20	0.20	1.00	1.85
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	04/06/19	04/06/19	04/06/19	05/06/19	05/06/19	05/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
VOCs										
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.07	0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514448	1514449	1514450	1514451	1514452	1514453
				Sample ID	WS203	WS203	WS203	WS207	WS207	WS207
				Depth	1.00	2.00	3.20	0.20	1.00	1.85
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	04/06/19	04/06/19	04/06/19	05/06/19	05/06/19	05/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	0.04	0.20	0.04
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SVOCs										
Phenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514448	1514449	1514450	1514451	1514452	1514453
			Sample ID	WS203	WS203	WS203	WS207	WS207	WS207
			Depth	1.00	2.00	3.20	0.20	1.00	1.85
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	04/06/19	04/06/19	04/06/19	05/06/19	05/06/19	05/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514454	1514455	1514456	1514457	1514458	1514459
			Sample ID	WS205A	WS205A	WS202	WS202	WS202	WS102
			Depth	0.50	2.00	0.50	2.00	3.50	0.50
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	05/06/19	05/06/19	04/06/19	04/06/19	04/06/19	06/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	8.6	3.8	8.1	9.3	4.4	1.9
Barium	DETSC 2301#	1.5	mg/kg	60	24	52	50	210	22
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.4	1.6	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	< 0.1	0.2	0.3	1.6	< 0.1
Chromium III	DETSC 2301*	0.15	mg/kg	34	49	26	36	56	80
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	18	27	19	25	640	33
Lead	DETSC 2301#	0.3	mg/kg	30	15	42	22	680	8.1
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	25	29	22	27	30	42
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.8	0.5	0.6	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	39	45	35	78	29	59
Zinc	DETSC 2301#	1	mg/kg	79	54	77	110	620	63
Inorganics									
pH	DETSC 2008#		pH	7.9	8.5	7.7	10.5	10.4	9.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg			< 0.1	0.2	< 0.1	
Cyanide, Free	DETSC 2130#	0.1	mg/kg			< 0.1	< 0.1	< 0.1	
Total Organic Carbon	DETSC 2084#	0.5	%	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	25	12	17	67	470	13
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	41	< 0.75
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.10	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.83	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	4.9	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	10	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	120	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	110	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	110	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	83	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	430	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	430	< 10

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514454	1514455	1514456	1514457	1514458	1514459
				Sample ID	WS205A	WS205A	WS202	WS202	WS202	WS102
				Depth	0.50	2.00	0.50	2.00	3.50	0.50
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	05/06/19	05/06/19	04/06/19	04/06/19	04/06/19	06/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	540	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	12	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	16	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	47	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	180	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	56	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	100	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	89	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	44	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	43	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	25	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	21	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	37	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	37	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	35	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	33	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	1300	< 1.6
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg			< 0.3	< 0.3	< 0.3	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514454	1514455	1514456	1514457	1514458	1514459
				Sample ID	WS205A	WS205A	WS202	WS202	WS202	WS102
				Depth	0.50	2.00	0.50	2.00	3.50	0.50
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	05/06/19	05/06/19	04/06/19	04/06/19	04/06/19	06/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
VOCs										
Vinyl Chloride	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1-dichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
2,2-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Bromochloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Chloroform	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Carbon tetrachloride	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Benzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.57	< 0.01	
1,2-dichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.02	< 0.01	
Trichloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,2-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Dibromomethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Bromodichloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Toluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	4.5	< 0.01	
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Tetrachloroethylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,3-dichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Dibromochloromethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,2-dibromoethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Chlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Ethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.36	< 0.01	
m+p-Xylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	7.1	< 0.01	
o-Xylene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	3.4	< 0.01	
Styrene	DETSC 3431*	0.01	mg/kg			< 0.01	< 0.01	0.11	< 0.01	
Bromoform	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Isopropylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
Bromobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	
n-propylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.03	< 0.01	
2-chlorotoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.07	< 0.01	
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.32	< 0.01	
4-chlorotoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01	

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1514454	1514455	1514456	1514457	1514458	1514459
				Sample ID	WS205A	WS205A	WS202	WS202	WS202	WS102
				Depth	0.50	2.00	0.50	2.00	3.50	0.50
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	05/06/19	05/06/19	04/06/19	04/06/19	04/06/19	06/06/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Tert-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.52	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	0.17	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg			< 0.01	< 0.01	< 0.01	< 0.01
SVOCs									
Phenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	8.3	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	6.6	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	14	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	3.2	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	140	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	51	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514454	1514455	1514456	1514457	1514458	1514459
			Sample ID	WS205A	WS205A	WS202	WS202	WS202	WS102
			Depth	0.50	2.00	0.50	2.00	3.50	0.50
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	05/06/19	05/06/19	04/06/19	04/06/19	04/06/19	06/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
4-Nitroaniline	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg			< 0.1	< 0.1	< 0.1	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg			< 0.1	< 0.1	24	< 0.1

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514460
Sample ID	WS102
Depth	2.20
Other ID	
Sample Type	SOIL
Sampling Date	06/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic	DETSC 2301#	0.2	mg/kg	4.8
Barium	DETSC 2301#	1.5	mg/kg	54
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.7
Cadmium	DETSC 2301#	0.1	mg/kg	0.3
Chromium III	DETSC 2301*	0.15	mg/kg	43
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	85
Lead	DETSC 2301#	0.3	mg/kg	76
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Nickel	DETSC 2301#	1	mg/kg	28
Selenium	DETSC 2301#	0.5	mg/kg	0.5
Vanadium	DETSC 2301#	0.8	mg/kg	61
Zinc	DETSC 2301#	1	mg/kg	150
Inorganics				
pH	DETSC 2008#		pH	9.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	
Cyanide, Free	DETSC 2130#	0.1	mg/kg	
Total Organic Carbon	DETSC 2084#	0.5	%	< 0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514460
Sample ID	WS102
Depth	2.20
Other ID	
Sample Type	SOIL
Sampling Date	06/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6
Phenols				
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	

Summary of Chemical Analysis
Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514460
Sample ID	WS102
Depth	2.20
Other ID	
Sample Type	SOIL
Sampling Date	06/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514460
			Sample ID	WS102
			Depth	2.20
			Other ID	
			Sample Type	SOIL
			Sampling Date	06/06/19
			Sampling Time	n/s
Test	**Method**	**LOD**	**Units**	
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514460
Sample ID	WS102
Depth	2.20
Other ID	
Sample Type	SOIL
Sampling Date	06/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

	Lab No	1514534	1514535	1514536	1514537	1514538	1514539
	Sample ID	WS203	WS203	WS207	WS202	WS202	WS102
	Depth	1.00	2.00	1.00	2.00	3.50	0.50
	Other ID						
	Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
	Sampling Date	04/06/19	04/06/19	05/06/19	04/06/19	04/06/19	06/06/19
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Preparation							
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y	Y	Y	Y	Y
Metals							
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.37	0.33	0.64	0.59	0.45	20
Barium, Dissolved	DETSC 2306	0.26	ug/l	5.1	5.9	2.7	< 0.26	1.4	2.6
Boron, Dissolved	DETSC 2306*	12	ug/l	17	15	< 12	< 12	14	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4	0.5	< 0.4	< 0.4	< 0.4	6.1
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.14	< 0.09	0.68	< 0.09	0.20
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.38	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6	0.7	1.5	< 0.6	1.9
Zinc, Dissolved	DETSC 2306	1.3	ug/l	4.4	2.4	1.7	6.6	2.6	4.6
Inorganics							
Conductivity	DETSC 2009	1	uS/cm	77.5	48.7	48.6	72.8	61.0	83.3
pH	DETSC 2008		pH	6.7	6.9	6.8	7.2	6.9	7.1
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40	< 40	< 40	< 40	
Hardness	DETSC 2303	0.1	mg/l	21.0	9.34	14.0	< 0.10	6.90	9.55
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015	0.017	< 0.015	< 0.015	1.3	< 0.015
Sulphate as SO4	DETSC 2055	0.1	mg/l	4.0	2.5	1.7	3.5	5.8	3.4
Total Organic Carbon	DETSC 2085	1	mg/l	30	6.0	12	4.0	36	19
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	95	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	150	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	250	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	16	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	58	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	68	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	1.1	< 1.0	< 1.0	< 1.0	17	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	2.6	< 1.0	< 1.0	< 1.0	6.5	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514534	1514535	1514536	1514537	1514538	1514539
			Sample ID	WS203	WS203	WS207	WS202	WS202	WS102
			Depth	1.00	2.00	1.00	2.00	3.50	0.50
			Other ID						
			Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
			Sampling Date	04/06/19	04/06/19	05/06/19	04/06/19	04/06/19	06/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C21-C35	DETSC 3072*	1	ug/l	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	170	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	410	< 10
PAHs									
Naphthalene	DETSC 3304	0.05	ug/l	0.12	0.17	0.17	1.7	1300	0.35
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.10	< 0.01	< 0.10	< 0.01	1.2	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.10	0.01	< 0.10	0.51	3.3	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.10	< 0.01	< 0.10	0.45	6.2	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	< 0.10	0.04	0.19	0.83	12	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	< 0.10	0.02	< 0.10	0.39	6.0	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.21	0.08	0.26	0.45	4.6	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	0.19	0.07	0.23	0.29	3.3	< 0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.12	0.04	0.12	0.10	2.6	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	0.10	0.05	0.14	0.14	2.4	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.16	0.06	0.18	0.17	3.7	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.10	0.07	< 0.10	0.06	0.86	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.10	0.05	0.12	0.10	2.2	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.10	0.04	0.10	0.13	2.0	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.10	< 0.01	< 0.10	0.04	0.35	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.12	0.05	0.11	0.18	2.4	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 1.60	0.76	1.6	5.5	1400	0.35
Phenols									
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100	< 100		< 100	480	
SVOCs									
Phenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Aniline	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2-Chlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2-Methylphenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,4-Dimethylphenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,4-Dichlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514534	1514535	1514536	1514537	1514538	1514539
			Sample ID	WS203	WS203	WS207	WS202	WS202	WS102
			Depth	1.00	2.00	1.00	2.00	3.50	0.50
			Other ID						
			Sample Type	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
			Sampling Date	04/06/19	04/06/19	05/06/19	04/06/19	04/06/19	06/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
3-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
4-Nitrophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	14	
Dibenzofuran	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	15	
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Diethylphthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
4-Nitroaniline	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Diphenylamine	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Pentachlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	1.7	
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	1.0	
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Dimethylphthalate	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Azobenzene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
Carbazole	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 5.0	< 1.0	< 2.0	< 1.0	< 1.0	

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10881-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1514448	WS203 1.00	SOIL	NAD	none	Colin Patrick
1514449	WS203 2.00	SOIL	NAD	none	Colin Patrick
1514450	WS203 3.20	SOIL	NAD	none	Colin Patrick
1514451	WS207 0.20	SOIL	NAD	none	Colin Patrick
1514452	WS207 1.00	SOIL	NAD	none	Colin Patrick
1514453	WS207 1.85	SOIL	NAD	none	Colin Patrick
1514454	WS205A 0.50	SOIL	NAD	none	Colin Patrick
1514455	WS205A 2.00	SOIL	NAD	none	Colin Patrick
1514456	WS202 0.50	SOIL	NAD	none	Colin Patrick
1514457	WS202 2.00	SOIL	NAD	none	Colin Patrick
1514458	WS202 3.50	SOIL	NAD	none	Colin Patrick
1514459	WS102 0.50	SOIL	NAD	none	Colin Patrick
1514460	WS102 2.20	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10881-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1514448	WS203 1.00 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514449	WS203 2.00 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514450	WS203 3.20 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514451	WS207 0.20 SOIL	05/06/19	GJ 250ml, GJ 60ml		
1514452	WS207 1.00 SOIL	05/06/19	GJ 250ml, GJ 60ml		
1514453	WS207 1.85 SOIL	05/06/19	GJ 250ml, GJ 60ml		
1514454	WS205A 0.50 SOIL	05/06/19	GJ 250ml, GJ 60ml		
1514455	WS205A 2.00 SOIL	05/06/19	GJ 250ml, GJ 60ml		
1514456	WS202 0.50 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514457	WS202 2.00 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514458	WS202 3.50 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514459	WS102 0.50 SOIL	06/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514460	WS102 2.20 SOIL	06/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514461	WS203 1.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514462	WS203 2.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514463	WS207 1.00 LEACHATE	05/06/19	GJ 250ml, GJ 60ml		
1514464	WS202 2.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514465	WS202 3.50 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514466	WS102 0.50 LEACHATE	06/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514534	WS203 1.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514535	WS203 2.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514536	WS207 1.00 LEACHATE	05/06/19	GJ 250ml, GJ 60ml		
1514537	WS202 2.00 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514538	WS202 3.50 LEACHATE	04/06/19	GJ 250ml, GJ 60ml, PT 1L		
1514539	WS102 0.50 LEACHATE	06/06/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-10885-1
	30-Oct-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-10885-1
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	4 Soil samples, 1 Leachate sample.
Date Received	11-Jun-19
Date Started	11-Jun-19
Date Completed	30-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-10885, amendments** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10885-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514488	1514489	1514490	1514491
			Sample ID	BH210	BH210	BH104	BH107
			Depth	0.25	1.00	0.20	0.20
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	03/06/19	03/06/19	30/05/19	04/06/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	14	14	8.7	14
Barium	DETSC 2301#	1.5	mg/kg	100	100	50	60
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.2	< 0.1	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	25	35	22	49
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	22	39	35	26
Lead	DETSC 2301#	0.3	mg/kg	50	23	9.6	23
Mercury	DETSC 2325#	0.05	mg/kg	0.07	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	22	24	27	28
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.5
Vanadium	DETSC 2301#	0.8	mg/kg	39	54	33	70
Zinc	DETSC 2301#	1	mg/kg	100	100	93	72
Inorganics							
pH	DETSC 2008#		pH	6.4	6.7	7.9	6.4
Total Organic Carbon	DETSC 2084#	0.5	%	2.5	0.8	< 0.5	1.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	10	< 10	< 10	11
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons							
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-10885-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1514488	1514489	1514490	1514491
			Sample ID	BH210	BH210	BH104	BH107
			Depth	0.25	1.00	0.20	0.20
			Other ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sampling Date	03/06/19	03/06/19	30/05/19	04/06/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	2.5	< 1.6	< 1.6	< 1.6

Summary of Chemical Analysis
Leachate Samples

Our Ref 19-10885-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514492
Sample ID	BH210
Depth	1.00
Other ID	
Sample Type	LEACHATE
Sampling Date	03/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y
Metals				
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.53
Barium, Dissolved	DETSC 2306	0.26	ug/l	1.4
Boron, Dissolved	DETSC 2306*	12	ug/l	16
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.8
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.26
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.42
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	4.4
Inorganics				
Conductivity	DETSC 2009	1	uS/cm	31.7
pH	DETSC 2008		pH	7.0
Hardness	DETSC 2303	0.1	mg/l	2.14
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015
Sulphate as SO4	DETSC 2055	0.1	mg/l	3.8
Total Organic Carbon	DETSC 2085	1	mg/l	51
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	1.2
Aliphatic C16-C21	DETSC 3072*	1	ug/l	8.4
Aliphatic C21-C35	DETSC 3072*	1	ug/l	18
Aliphatic C5-C35	DETSC 3072*	10	ug/l	28
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-10885-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1514492
Sample ID	BH210
Depth	1.00
Other ID	
Sample Type	LEACHATE
Sampling Date	03/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	28
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.09
Fluorene	DETSC 3304	0.01	ug/l	0.04
Phenanthrene	DETSC 3304	0.01	ug/l	0.04
Anthracene	DETSC 3304	0.01	ug/l	0.02
Fluoranthene	DETSC 3304	0.01	ug/l	0.07
Pyrene	DETSC 3304	0.01	ug/l	0.05
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.04
Chrysene	DETSC 3304	0.01	ug/l	0.03
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.05
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.02
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.04
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.05
PAH Total	DETSC 3304	0.2	ug/l	0.60

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-10885-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1514489	BH210 1.00	SOIL	NAD	none	Luke Donaghy
1514490	BH104 0.20	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-10885-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1514488	BH210 0.25 SOIL	03/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1514489	BH210 1.00 SOIL	03/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1514490	BH104 0.20 SOIL	30/05/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1514491	BH107 0.20 SOIL	04/06/19	GJ 250ml, GJ 60ml, PT 1L x2		
1514492	BH210 1.00 LEACHATE	03/06/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-11276-1

21-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-11276-1

Client Reference PN193981

Order No AUTH-ON21436

Contract Title A55 Junction 15 & 16 Improvements

Description 6 Soil samples.

Date Received 17-Jun-19

Date Started 17-Jun-19

Date Completed 21-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-11276, extra testing.**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-11276-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1517325	1517326	1517327	1517328	1517329	1517330
			Sample ID	BH107A	BH110	BH111	BH114	BH114	BH208
			Depth	0.20	0.50	0.20	0.20	1.00	0.20
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	04/06/19	06/06/19	10/06/19	11/06/19	11/06/19	05/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	18000	23000	9000	17000	5000	9700
Barium	DETSC 2301#	1.5	mg/kg	82	68	70	18	120	92
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.3	0.2	0.6	< 0.2	0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.2	0.3	< 0.1	0.1	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	47	58	20	140	36	110
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	29	82	24	43	22	33
Lead	DETSC 2301#	0.3	mg/kg	40	65	49	8.7	140	21
Mercury	DETSC 2325#	0.05	mg/kg	0.06	< 0.05	0.06	0.09	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	28	32	15	70	21	58
Selenium	DETSC 2301#	0.5	mg/kg	0.6	1.4	1.1	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	65	60	29	63	22	39
Zinc	DETSC 2301#	1	mg/kg	95	84	91	98	62	60
Inorganics									
pH	DETSC 2008#		pH	7.6	7.2	6.0	8.7	8.3	8.3
Total Organic Carbon	DETSC 2084#	0.5	%	1.5	15	9.7	0.9	2.3	1.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160	74	58	31	77	70
Sulphur (free)	DETSC 3049#	0.75	mg/kg	3.8	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	9.8
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	7.4
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	110
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	130
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	7.1
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	200
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	210
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	340
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-11276-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1517325	1517326	1517327	1517328	1517329	1517330
			Sample ID	BH107A	BH110	BH111	BH114	BH114	BH208
			Depth	0.20	0.50	0.20	0.20	1.00	0.20
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	04/06/19	06/06/19	10/06/19	11/06/19	11/06/19	05/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.4	< 1.0
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	0.5	< 1.0
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1	0.5	< 1.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 1.0
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	0.4	< 1.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1	0.2	< 1.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 1.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 1.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 1.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.6	< 0.1	0.3	< 1.0
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	2.2	< 1.6	3.2	< 16.0

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-11276-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1517327	BH111 0.20	SOIL	NAD	none	Keith Wilson
1517328	BH114 0.20	SOIL	NAD	none	Keith Wilson
1517329	BH114 1.00	SOIL	NAD	none	Keith Wilson
1517330	BH208 0.20	SOIL	NAD	none	Keith Wilson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-11276-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1517325	BH107A 0.20 SOIL	04/06/19	GJ 250ml, GJ 60ml	pH + Conductivity (7 days)	
1517326	BH110 0.50 SOIL	06/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1517327	BH111 0.20 SOIL	10/06/19	GJ 250ml, GJ 60ml, PT 1L		
1517328	BH114 0.20 SOIL	11/06/19	GJ 250ml, GJ 60ml, PT 1L		
1517329	BH114 1.00 SOIL	11/06/19	GJ 250ml, GJ 60ml, PT 1L		
1517330	BH208 0.20 SOIL	05/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass J-Jar P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-12302-1

30-Oct-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-12302-1

Client Reference PN193981

Order No AUTH-ON21436

Contract Title A55 Junction 15 & 16 Improvements

Description 2 Soil samples.

Date Received 01-Jul-19

Date Started 01-Jul-19

Date Completed 30-Oct-19

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 19-12302, amendments**

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-12302-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1524488	1524489
			Sample ID	BH114A	BH114A
			Depth	0.30	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	19/06/19	19/06/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	2.4	5.3
Barium	DETSC 2301#	1.5	mg/kg	56	110
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.1	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	47	47
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	40	31
Lead	DETSC 2301#	0.3	mg/kg	34	130
Mercury	DETSC 2325#	0.05	mg/kg	0.07	0.19
Nickel	DETSC 2301#	1	mg/kg	27	30
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	67	54
Zinc	DETSC 2301#	1	mg/kg	68	97
Inorganics					
pH	DETSC 2008#		pH	9.3	9.1
Total Organic Carbon	DETSC 2084#	0.5	%	0.5	1.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	21	32
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-12302-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1524488	1524489
			Sample ID	BH114A	BH114A
			Depth	0.30	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	19/06/19	19/06/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	2.0

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-12302-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1524488	BH114A 0.30	SOIL	NAD	none	Lee Kerridge
1524489	BH114A 1.00	SOIL	NAD	none	Lee Kerridge

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-12302-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1524488	BH114A 0.30 SOIL	19/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1524489	BH114A 1.00 SOIL	19/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-12882-1
	30-Oct-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-12882-1
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	6 Soil samples, 2 Leachate samples.
Date Received	08-Jul-19
Date Started	08-Jul-19
Date Completed	30-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-12882, amendments** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1528354	1528355	1528356	1528357	1528358	1528359
			Sample ID	BHWS101	BHWS101	BH201	BH201	BH202	BH221
			Depth	1.00-1.20	3.00	0.10-0.30	0.70-1.20	0.50	0.30-0.60
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/06/19	25/06/19	26/06/19	26/06/19	26/06/19	28/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	7.2	17	11	9.5	9.1	13
Barium	DETSC 2301#	1.5	mg/kg	29	65	69	66	48	41
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	0.2	0.4	0.2	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	19	44	25	27	39	29
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	48	31	29	22	29	24
Lead	DETSC 2301#	0.3	mg/kg	6.8	17	43	23	25	30
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.07	< 0.05	< 0.05	0.10
Nickel	DETSC 2301#	1	mg/kg	20	30	18	25	29	26
Selenium	DETSC 2301#	0.5	mg/kg	0.7	< 0.5	1.4	0.7	< 0.5	0.8
Vanadium	DETSC 2301#	0.8	mg/kg	26	51	45	41	49	45
Zinc	DETSC 2301#	1	mg/kg	76	94	100	81	90	97
Inorganics									
pH	DETSC 2008#		pH	9.1	7.3	6.9	8.2	8.3	7.7
Total Organic Carbon	DETSC 2002	0.1	%	< 0.1	< 0.1	2.7	0.5	0.2	< 0.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	19	38	32	27	30	38
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	8.4	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	10	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	21	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	8.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	9.3	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	19	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	40	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1528354	1528355	1528356	1528357	1528358	1528359
			Sample ID	BHWS101	BHWS101	BH201	BH201	BH202	BH221
			Depth	1.00-1.20	3.00	0.10-0.30	0.70-1.20	0.50	0.30-0.60
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	25/06/19	25/06/19	26/06/19	26/06/19	26/06/19	28/06/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.6	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	3.6	< 1.6	< 1.6	< 1.6

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1528354
Sample ID	BHWS101
Depth	1.00-1.20
Other ID	
Sample Type	ES
Sampling Date	25/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
VOCs				
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1528354
Sample ID	BHWS101
Depth	1.00-1.20
Other ID	
Sample Type	ES
Sampling Date	25/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01
MTBE	DETSC 3431*	0.01	mg/kg	< 0.01
SVOCs				
Phenol	DETSC 3433	0.1	mg/kg	< 0.1
Aniline	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
Benzyl Alcohol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis(2-chloroisopropyl)ether	DETSC 3433	0.1	mg/kg	< 0.1
3&4-Methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dimethylphenol	DETSC 3433	0.1	mg/kg	< 0.1
Bis-(dichloroethoxy)methane	DETSC 3433	0.1	mg/kg	< 0.1
2,4-Dichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
1,2,4-Trichlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
4-Chloro-3-methylphenol	DETSC 3433	0.1	mg/kg	< 0.1
2-Methylnaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorocyclopentadiene	DETSC 3433*	0.1	mg/kg	< 0.1
2,4,6-Trichlorophenol	DETSC 3433	0.1	mg/kg	< 0.1
2,4,5-Trichlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
2-Chloronaphthalene	DETSC 3433	0.1	mg/kg	< 0.1
2-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
2,4-Dinitrotoluene	DETSC 3433*	0.1	mg/kg	< 0.1
3-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Dibenzofuran	DETSC 3433	0.1	mg/kg	< 0.1
2,6-Dinitrotoluene	DETSC 3433	0.1	mg/kg	< 0.1
2,3,4,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
4-Chlorophenylphenylether	DETSC 3433*	0.1	mg/kg	< 0.1
4-Nitroaniline	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC/SVOC Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1528354
Sample ID	BHWS101
Depth	1.00-1.20
Other ID	
Sample Type	ES
Sampling Date	25/06/19
Sampling Time	n/s

Test	Method	LOD	Units	
2-Methyl-4,6-Dinitrophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Diphenylamine	DETSC 3433	0.1	mg/kg	< 0.1
4-Bromophenylphenylether	DETSC 3433	0.1	mg/kg	< 0.1
Hexachlorobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Pentachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Di-n-butylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
Butylbenzylphthalate	DETSC 3433*	0.1	mg/kg	< 0.1
Bis(2-ethylhexyl)phthalate	DETSC 3433	0.1	mg/kg	< 0.1
Di-n-octylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,4-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
Dimethylphthalate	DETSC 3433	0.1	mg/kg	< 0.1
1,3-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
1,2-Dinitrobenzene	DETSC 3433*	0.1	mg/kg	< 0.1
2,3,5,6-Tetrachlorophenol	DETSC 3433*	0.1	mg/kg	< 0.1
Azobenzene	DETSC 3433	0.1	mg/kg	< 0.1
Carbazole	DETSC 3433*	0.1	mg/kg	< 0.1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1528360	1528361
			Sample ID	BH201	BH202
			Depth	0.70-1.20	0.50
			Other ID		
			Sample Type	ES	ES
			Sampling Date	26/06/19	26/06/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y	Y
Metals					
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.32	0.27
Barium, Dissolved	DETSC 2306	0.26	ug/l	4.0	4.2
Boron, Dissolved	DETSC 2306*	12	ug/l	33	22
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.0	0.6
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09	0.18
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02	0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.69	0.26
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3
Inorganics					
Conductivity	DETSC 2009	1	uS/cm	110	34.4
pH	DETSC 2008		pH	6.9	7.0
Hardness	DETSC 2303	0.1	mg/l	25.3	13.0
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.020	0.040
Sulphate as SO4	DETSC 2055	0.1	mg/l	6.9	1.8
Total Organic Carbon	DETSC 2085	1	mg/l	3.8	2.7
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Leachate Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1528360	1528361
			Sample ID	BH201	BH202
			Depth	0.70-1.20	0.50
			Other ID		
			Sample Type	ES	ES
			Sampling Date	26/06/19	26/06/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.02	0.02
Anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.02	0.02
Pyrene	DETSC 3304	0.01	ug/l	0.01	0.02
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-12882-1
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1528354	BHWS101 1.00-1.20	SOIL	NAD	none	Rebekah Sayer
1528357	BH201 0.70-1.20	SOIL	NAD	none	Rebekah Sayer
1528358	BH202 0.50	SOIL	NAD	none	Rebekah Sayer

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-12882-1
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1528354	BHWS101 1.00-1.20 SOIL	25/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days), VOC (7 days)	
1528355	BHWS101 3.00 SOIL	25/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1528356	BH201 0.10-0.30 SOIL	26/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1528357	BH201 0.70-1.20 SOIL	26/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1528358	BH202 0.50 SOIL	26/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1528359	BH221 0.30-0.60 SOIL	28/06/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1528360	BH201 0.70-1.20 LEACHATE	26/06/19	GJ 250ml, GJ 60ml, PT 1L		
1528361	BH202 0.50 LEACHATE	26/06/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-13758	25-Jul-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ	
Our Reference	19-13758	
Client Reference	PN193981	
Order No	AUTH-ON21436	
Contract Title	A55 Junction 15 & 16 Improvements	
Description	2 Soil samples, 1 Leachate sample.	
Date Received	19-Jul-19	
Date Started	19-Jul-19	
Date Completed	25-Jul-19	
Test Procedures	Identified by prefix DETSn (details on request).	
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.	

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-13758
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1534265	1534266
			Sample ID	BH108	BH108
			Depth	0.50	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	04/07/19	04/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Barium	DETSC 2301#	1.5	mg/kg	39	35
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	19	34
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	24	36
Lead	DETSC 2301#	0.3	mg/kg	23	22
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	17	25
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	32	46
Zinc	DETSC 2301#	1	mg/kg	71	69
Inorganics					
pH	DETSC 2008#		pH	10.3	7.5
Total Organic Carbon	DETSC 2084#	0.5	%	1.4	0.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	480	540
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	2.3	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	45	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	47	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	47	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	1.2	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	2.3	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	2.0	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	9.8	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-13758
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1534265	1534266
			Sample ID	BH108	BH108
			Depth	0.50	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	04/07/19	04/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Anthracene	DETSC 3301	0.1	mg/kg	4.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	27	0.2
Pyrene	DETSC 3301	0.1	mg/kg	26	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	13	0.1
Chrysene	DETSC 3301	0.1	mg/kg	15	0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	14	0.2
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	7.4	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	18	0.2
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	14	0.2
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	2.8	0.2
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	13	0.2
PAH Total	DETSC 3301	1.6	mg/kg	170	6.9

Summary of Chemical Analysis
Leachate Samples

Our Ref 19-13758
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1534267
Sample ID	BH108
Depth	1.00
Other ID	
Sample Type	LEACHATE
Sampling Date	04/07/19
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Leachate 2:1 250g Non-WAC	DETSC 1009*			Y
Metals				
Antimony, Dissolved	DETSC 2306	0.17	ug/l	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.42
Barium, Dissolved	DETSC 2306	0.26	ug/l	5.9
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	< 1.0
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.22
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.26
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	< 0.6
Zinc, Dissolved	DETSC 2306	1.3	ug/l	15
Inorganics				
Conductivity	DETSC 2009	1	uS/cm	76.4
pH	DETSC 2008		pH	7.0
Hardness	DETSC 2303	0.1	mg/l	30.6
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015
Sulphate as SO4	DETSC 2055	0.1	mg/l	9.0
Total Organic Carbon	DETSC 2085	1	mg/l	1.7
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	22
Aliphatic C12-C16	DETSC 3072*	1	ug/l	66
Aliphatic C16-C21	DETSC 3072*	1	ug/l	46
Aliphatic C21-C35	DETSC 3072*	1	ug/l	12
Aliphatic C5-C35	DETSC 3072*	10	ug/l	150
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	150

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 19-13758
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	1534267
Sample ID	BH108
Depth	1.00
Other ID	
Sample Type	LEACHATE
Sampling Date	04/07/19
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.02
Fluorene	DETSC 3304	0.01	ug/l	0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.02
Anthracene	DETSC 3304	0.01	ug/l	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.01
Pyrene	DETSC 3304	0.01	ug/l	0.02
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.01
PAH Total	DETSC 3304	0.2	ug/l	0.20

Key: * -not accredited. n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-13758
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1534265	BH108 0.50	SOIL	NAD	none	Jordan Eadington
1534266	BH108 1.00	SOIL	NAD	none	Jordan Eadington

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-13758
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1534265	BH108 0.50 SOIL	04/07/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
1534266	BH108 1.00 SOIL	04/07/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
1534267	BH108 1.00 LEACHATE	04/07/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-14072
	30-Jul-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-14072
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	2 Soil samples.
Date Received	24-Jul-19
Date Started	24-Jul-19
Date Completed	30-Jul-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-14072
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1536641	1536642
			Sample ID	BH105	BH105
			Depth	0.50	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	17/07/19	17/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Barium	DETSC 2301#	1.5	mg/kg	120	120
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.6	0.6
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2
Chromium III	DETSC 2301*	0.15	mg/kg	40	39
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	35	50
Lead	DETSC 2301#	0.3	mg/kg	40	130
Mercury	DETSC 2325#	0.05	mg/kg	0.22	0.72
Nickel	DETSC 2301#	1	mg/kg	33	30
Selenium	DETSC 2301#	0.5	mg/kg	0.6	1.0
Vanadium	DETSC 2301#	0.8	mg/kg	56	54
Zinc	DETSC 2301#	1	mg/kg	120	140
Inorganics					
pH	DETSC 2008#		pH	7.9	7.7
Total Organic Carbon	DETSC 2084#	0.5	%	1.8	2.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	250	260
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-14072
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1536641	1536642
			Sample ID	BH105	BH105
			Depth	0.50	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	17/07/19	17/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Fluoranthene	DETSC 3301	0.1	mg/kg	0.3	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-14072
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1536641	BH105 0.50	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-14072
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1536641	BH105 0.50 SOIL	17/07/19	GJ 250ml, GJ 60ml, PT 1L		
1536642	BH105 1.00 SOIL	17/07/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-14501
	05-Aug-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-14501
Client Reference	PM193981
Order No	AUTH-OC21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	8 Soil samples.
Date Received	30-Jul-19
Date Started	30-Jul-19
Date Completed	05-Aug-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-14501
Client Ref PM193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1539355	1539356	1539357	1539358	1539359	1539360
				Sample ID	BH212	BH212	BH217	BH217	TP207	TP207
				Depth	0.20	0.50	0.20	0.50	0.20-0.50	1.00
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	22/07/19	22/07/19	22/07/19	22/07/19	24/07/19	24/07/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Barium	DETSC 2301#	1.5	mg/kg		79	90	48	73	68
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg		< 0.2	0.3	0.3	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg		0.1	0.3	< 0.1	0.1	0.2
Chromium III	DETSC 2301*	0.15	mg/kg		36	17	16	29	18
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg		31	49	15	27	21
Lead	DETSC 2301#	0.3	mg/kg		17	97	23	29	28
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	0.20	< 0.05	0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg		38	16	12	24	17
Selenium	DETSC 2301#	0.5	mg/kg		< 0.5	< 0.5	< 0.5	0.6	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg		43	29	25	40	30
Zinc	DETSC 2301#	1	mg/kg		70	120	45	72	70
Inorganics										
pH	DETSC 2008#		pH		8.1	8.0	8.1	7.9	8.6
Total Organic Carbon	DETSC 2084#	0.5	%		< 0.5	6.5	0.7	0.9	< 0.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l		14	15	< 10	14	12
Sulphur (free)	DETSC 3049#	0.75	mg/kg		< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.4	< 0.1	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-14501
Client Ref PM193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1539355	1539356	1539357	1539358	1539359	1539360
			Sample ID	BH212	BH212	BH217	BH217	TP207	TP207
			Depth	0.20	0.50	0.20	0.50	0.20-0.50	1.00
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	22/07/19	22/07/19	22/07/19	22/07/19	24/07/19	24/07/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Anthracene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.8	< 0.1	0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.9	< 0.1	0.2	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.4	< 0.1	0.4	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.4	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.4	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.6	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.5	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	0.4	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 16.0	< 1.6	5.5	< 1.6	< 1.6	< 1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3					

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-14501
Client Ref PM193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1539361	1539362
			Sample ID	TP208	TP208
			Depth	0.00-0.20	0.20-0.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	24/07/19	24/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Barium	DETSC 2301#	1.5	mg/kg	120	65
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.1
Chromium III	DETSC 2301*	0.15	mg/kg	24	18
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	34	25
Lead	DETSC 2301#	0.3	mg/kg	44	24
Mercury	DETSC 2325#	0.05	mg/kg	0.10	< 0.05
Nickel	DETSC 2301#	1	mg/kg	23	16
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.7
Vanadium	DETSC 2301#	0.8	mg/kg	33	29
Zinc	DETSC 2301#	1	mg/kg	71	54
Inorganics					
pH	DETSC 2008#		pH	7.4	8.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.2	0.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	16	19
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-14501
Client Ref PM193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1539361	1539362
			Sample ID	TP208	TP208
			Depth	0.00-0.20	0.20-0.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	24/07/19	24/07/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.1	0.2
Pyrene	DETSC 3301	0.1	mg/kg	0.2	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.1	0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.2	0.2
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.2	0.2
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	1.8
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-14501
Client Ref PM193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1539358	BH217 0.50	SOIL	NAD	none	Luke Donaghy
1539359	TP207 0.20-0.50	SOIL	NAD	none	Luke Donaghy
1539360	TP207 1.00	SOIL	NAD	none	Luke Donaghy
1539361	TP208 0.00-0.20	SOIL	NAD	none	Luke Donaghy
1539362	TP208 0.20-0.50	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-14501
Client Ref PM193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1539355	BH212 0.20 SOIL	22/07/19	GJ 250ml, GJ 60ml, PT 1L		
1539356	BH212 0.50 SOIL	22/07/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1539357	BH217 0.20 SOIL	22/07/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1539358	BH217 0.50 SOIL	22/07/19	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
1539359	TP207 0.20-0.50 SOIL	24/07/19	GJ 250ml, GJ 60ml, PT 1L		
1539360	TP207 1.00 SOIL	24/07/19	GJ 250ml, GJ 60ml, PT 1L		
1539361	TP208 0.00-0.20 SOIL	24/07/19	GJ 250ml, GJ 60ml		
1539362	TP208 0.20-0.50 SOIL	24/07/19	GJ 250ml, GJ 60ml		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-15131
	12-Aug-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-15131
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16
Description	12 Core samples.
Date Received	07-Aug-19
Date Started	07-Aug-19
Date Completed	12-Aug-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Core Samples

Our Ref 19-15131
Client Ref PN193981
Contract Title A55 Junction 15 & 16

			Lab No	1543184	1543185	1543186	1543187	1543188	1543189
			Sample ID	PC101	PC101	PC101	PC104	PC104	PC104
			Depth	0.04-0.10	0.10-0.25	0.25-0.33	0.10-0.18	0.18-0.25	0.25-0.34
			Other ID						
			Sample Type	CORE	CORE	CORE	CORE	CORE	CORE
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 2.0	4.7	< 2.0	< 2.0	< 2.0	< 2.0
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 2.0	5.1	< 2.0	< 2.0	< 2.0	< 2.0
Acenaphthene	DETSC 3301	0.1	mg/kg	< 2.0	5.6	< 2.0	< 2.0	< 2.0	< 2.0
Fluorene	DETSC 3301	0.1	mg/kg	< 2.0	5.2	< 2.0	< 2.0	< 2.0	< 2.0
Phenanthrene	DETSC 3301	0.1	mg/kg	< 2.0	5.3	< 2.0	< 2.0	< 2.0	< 2.0
Anthracene	DETSC 3301	0.1	mg/kg	< 2.0	5.3	< 2.0	< 2.0	< 2.0	< 2.0
Fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	5.6	< 2.0	< 2.0	< 2.0	< 2.0
Pyrene	DETSC 3301	0.1	mg/kg	< 2.0	6.4	< 2.0	< 2.0	< 2.0	< 2.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 2.0	6.4	< 2.0	< 2.0	< 2.0	< 2.0
Chrysene	DETSC 3301	0.1	mg/kg	< 2.0	7.0	< 2.0	3.3	< 2.0	< 2.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	5.3	< 2.0	< 2.0	< 2.0	< 2.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	5.6	< 2.0	< 2.0	< 2.0	< 2.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 2.0	5.8	< 2.0	< 2.0	< 2.0	< 2.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 2.0	9.5	< 2.0	< 2.0	< 2.0	< 2.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 2.0	7.2	< 2.0	< 2.0	< 2.0	< 2.0
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 2.0	5.1	< 2.0	< 2.0	< 2.0	< 2.0
PAH Total	DETSC 3301	1.6	mg/kg	< 32.0	95	< 32.0	< 32.0	< 32.0	< 32.0

Key: n/s -not supplied.

Summary of Chemical Analysis
Core Samples

Our Ref 19-15131
Client Ref PN193981
Contract Title A55 Junction 15 & 16

			Lab No	1543190	1543191	1543192	1543193	1543194	1543195
			Sample ID	PC203	PC203	PC203	PC204	PC204	PC204
			Depth	0.14-0.20	0.20-0.26	0.26-0.35	0.00-0.04	0.04-0.18	0.18-0.35
			Other ID						
			Sample Type	CORE	CORE	CORE	CORE	CORE	CORE
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Acenaphthene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	10	2.0	< 2.0
Fluorene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Phenanthrene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	2.2	< 2.0	< 2.0
Anthracene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	2.9	2.7	< 2.0
Pyrene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	8.7	4.7	< 2.0
Chrysene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	7.6	5.7	< 2.0
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	15	7.7	7.2
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	4.3	3.1	< 2.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	4.3	< 2.0	< 2.0
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	3.1	< 2.0	< 2.0
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PAH Total	DETSC 3301	1.6	mg/kg	< 32.0	< 32.0	< 32.0	63	< 32.0	< 32.0

Key: n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-15131
Client Ref PN193981
Contract A55 Junction 15 & 16

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1543184	PC101 0.04-0.10 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543185	PC101 0.10-0.25 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543186	PC101 0.25-0.33 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543187	PC104 0.10-0.18 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543188	PC104 0.18-0.25 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543189	PC104 0.25-0.34 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543190	PC203 0.14-0.20 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543191	PC203 0.20-0.26 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543192	PC203 0.26-0.35 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543193	PC204 0.00-0.04 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543194	PC204 0.04-0.18 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID
1543195	PC204 0.18-0.35 CORE		PG	Sample date not supplied, Naphthalene (14 days), PAH FID (14 days)	Naphthalene, PAH FID

Key: P-Plastic G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Information in Support of the Analytical Results

Our Ref 19-15131
Client Ref PN193981
Contract A55 Junction 15 & 16

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-19184
	04-Oct-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-19184
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	2 Soil samples.
Date Received	26-Sep-19
Date Started	26-Sep-19
Date Completed	04-Oct-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis
Soil Samples

Our Ref 19-19184
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1570508	1570509
			Sample ID	BH215	BH215
			Depth	0.00-0.20	0.20-0.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	09/09/19	09/09/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	8.0	14
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.6
Chromium	DETSC 2301#	0.15	mg/kg	19	27
Copper	DETSC 2301#	0.2	mg/kg	49	53
Lead	DETSC 2301#	0.3	mg/kg	92	76
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.06
Nickel	DETSC 2301#	1	mg/kg	14	26
Zinc	DETSC 2301#	1	mg/kg	140	170
Inorganics					
pH	DETSC 2008#		pH	8.0	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	0.2
Organic matter	DETSC 2002#	0.1	%	5.3	2.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	27	18
Petroleum Hydrocarbons					
EPH (C10-C40)	DETSC 3311*	10	mg/kg	110	46
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	0.15	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.25	0.13
Anthracene	DETSC 3303	0.03	mg/kg	0.06	0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.41	0.39
Pyrene	DETSC 3303#	0.03	mg/kg	0.39	0.37
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.18	0.18
Chrysene	DETSC 3303	0.03	mg/kg	0.21	0.20
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.18	0.16
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.15	0.14
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.19	0.16
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.09	0.10
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.05
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.12	0.11
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	2.5	2.0
PAH Total	DETSC 3301	1.6	mg/kg	6.3	5.3
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	1.0	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 19-19184
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1570508	BH215 0.00-0.20	SOIL	NAD	none	Luke Donaghy
1570509	BH215 0.20-0.50	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-19184
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1570508	BH215 0.00-0.20 SOIL	09/09/19	GJ 250ml x2, PT 1L	Naphthalene (14 days), PAH FID (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (Ballast) (14 days)	
1570509	BH215 0.20-0.50 SOIL	09/09/19	GJ 250ml x2, PT 1L	Naphthalene (14 days), PAH FID (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (Ballast) (14 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

APPENDIX 13

Laboratory Test Results - Contamination (Groundwater)

Certificate of Analysis

Certificate Number	19-15966
	27-Aug-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-15966
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 & 16 Improvements
Description	16 Water samples.
Date Received	19-Aug-19
Date Started	19-Aug-19
Date Completed	27-Aug-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1549056	1549057	1549058	1549059	1549060	1549061
				Sample ID	WS07	WS03	WS201	BH221	BH201	BH202
				Depth	5.00	4.65	5.00	6.10	6.00	14.25
				Other ID						
				Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
				Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Antimony, Dissolved ug/l	DETSC 2306	0.17	ug/l		0.75	0.44	0.20	< 0.17	0.18	0.37
Arsenic, Dissolved ug/l	DETSC 2306	0.16	ug/l		0.17	0.21	1.7	0.34	< 0.16	1.1
Barium, Dissolved ug/l	DETSC 2306	0.26	ug/l		11	29	22	48	81	120
Boron, Dissolved ug/l	DETSC 2306*	12	ug/l		59	250	21	54	35	23
Cadmium, Dissolved ug/l	DETSC 2306	0.03	ug/l		< 0.03	0.17	< 0.03	< 0.03	0.07	< 0.03
Chromium III, Dissolved ug/l	DETSC 2306*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent ug/l	DETSC 2203	7	ug/l		< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved ug/l	DETSC 2306	0.4	ug/l		2.1	2.6	7.6	1.1	0.8	1.1
Lead, Dissolved ug/l	DETSC 2306	0.09	ug/l		0.11	0.19	2.5	0.58	< 0.09	< 0.09
Mercury, Dissolved ug/l	DETSC 2306	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved ug/l	DETSC 2306	0.5	ug/l		0.9	14	0.6	0.8	2.9	3.7
Selenium, Dissolved ug/l	DETSC 2306	0.25	ug/l		0.41	4.1	0.28	2.4	< 0.25	3.2
Vanadium, Dissolved ug/l	DETSC 2306	0.6	ug/l		< 0.6	< 0.6	2.3	0.6	< 0.6	< 0.6
Zinc, Dissolved ug/l	DETSC 2306	1.3	ug/l		4.1	38	5.6	23	2.7	3.2
Inorganics										
Conductivity uS/cm	DETSC 2009	1	uS/cm		504	988	256	631	660	1520
pH pH	DETSC 2008		pH		7.1	6.6	7.6	7.4	7.5	7.9
Cyanide, Total ug/l	DETSC 2130	40	ug/l		< 40	150	< 40		< 40	
Hardness mg/l	DETSC 2303	0.1	mg/l		137	234	83.9	177	231	192
Ammoniacal Nitrogen as N mg/l	DETSC 2207	0.015	mg/l		0.052	0.066	< 0.015	0.055	0.030	0.051
Sulphate as SO4 mg/l	DETSC 2055	0.1	mg/l		23	120	13	25	38	420
Total Organic Carbon mg/l	DETSC 2085	1	mg/l		16	< 1.0	2.9	3.0	5.9	5.8
Petroleum Hydrocarbons										
Aliphatic C5-C6 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35 ug/l	DETSC 3072*	10	ug/l		< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10 ug/l	DETSC 3322	0.1	ug/l		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	8.3
Aromatic C16-C21 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	12
Aromatic C21-C35 ug/l	DETSC 3072*	1	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	21
Aromatic C5-C35 ug/l	DETSC 3072*	10	ug/l		< 10	< 10	< 10	< 10	< 10	40
TPH Ali/Aro Total ug/l	DETSC 3072*	10	ug/l		< 10	< 10	< 10	< 10	< 10	40
PAHs										
Naphthalene ug/l	DETSC 3304	0.05	ug/l		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1549056	1549057	1549058	1549059	1549060	1549061
				Sample ID	WS07	WS03	WS201	BH221	BH201	BH202
				Depth	5.00	4.65	5.00	6.10	6.00	14.25
				Other ID						
				Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
				Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Acenaphthylene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.10	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.08	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total ug/l	DETSC 3304	0.2	ug/l		< 0.20	0.40	< 0.20	< 0.20	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1549062	1549063	1549064	1549065	1549066	1549067
				Sample ID	BH204	BH228	BH220	WS204	BH210	BH213
				Depth	10.10	9.10	13.15	5.00	8.20	20.45
				Other ID						
				Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
				Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Antimony, Dissolved ug/l	DETSC 2306	0.17	ug/l	0.61	< 0.17	< 0.17	0.93	< 0.17	< 0.17
Arsenic, Dissolved ug/l	DETSC 2306	0.16	ug/l	0.21	0.54	< 0.16	< 0.16	0.19	< 0.16
Barium, Dissolved ug/l	DETSC 2306	0.26	ug/l	51	31	16	73	18	15
Boron, Dissolved ug/l	DETSC 2306*	12	ug/l	23	18	26	80	32	28
Cadmium, Dissolved ug/l	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium III, Dissolved ug/l	DETSC 2306*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent ug/l	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved ug/l	DETSC 2306	0.4	ug/l	0.7	0.4	0.6	2.2	1.1	0.6
Lead, Dissolved ug/l	DETSC 2306	0.09	ug/l	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Mercury, Dissolved ug/l	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved ug/l	DETSC 2306	0.5	ug/l	7.3	1.8	0.8	0.5	1.0	0.7
Selenium, Dissolved ug/l	DETSC 2306	0.25	ug/l	2.6	< 0.25	0.37	31	< 0.25	< 0.25
Vanadium, Dissolved ug/l	DETSC 2306	0.6	ug/l	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc, Dissolved ug/l	DETSC 2306	1.3	ug/l	15	5.3	1.4	< 1.3	25	19
Inorganics										
Conductivity uS/cm	DETSC 2009	1	uS/cm	821	680	461	757	534	534
pH pH	DETSC 2008		pH	7.4	7.6	7.3	7.2	7.2	7.2
Cyanide, Total ug/l	DETSC 2130	40	ug/l	< 40		< 40	< 40		
Hardness mg/l	DETSC 2303	0.1	mg/l	207	238	163	270	168	165
Ammoniacal Nitrogen as N mg/l	DETSC 2207	0.015	mg/l	0.39	0.052	0.022	0.098	0.12	0.053
Sulphate as SO4 mg/l	DETSC 2055	0.1	mg/l	72	50	24	73	28	28
Total Organic Carbon mg/l	DETSC 2085	1	mg/l	3.4	2.2	2.7	3.5	< 1.0	< 1.0
Petroleum Hydrocarbons										
Aliphatic C5-C6 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35 ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35 ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
PAHs										
Naphthalene ug/l	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1549062	1549063	1549064	1549065	1549066	1549067
				Sample ID	BH204	BH228	BH220	WS204	BH210	BH213
				Depth	10.10	9.10	13.15	5.00	8.20	20.45
				Other ID						
				Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
				Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Acenaphthylene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene ug/l	DETSC 3304	0.01	ug/l		0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene ug/l	DETSC 3304	0.01	ug/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total ug/l	DETSC 3304	0.2	ug/l		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549068	1549069	1549070	1549071
			Sample ID	BH216	BH218	BH110	BH109
			Depth	15.45	8.55	9.00	9.55
			Other ID				
			Sample Type	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Antimony, Dissolved ug/l	DETSC 2306	0.17	ug/l	< 0.17	0.37	0.22	1.4
Arsenic, Dissolved ug/l	DETSC 2306	0.16	ug/l	< 0.16	1.5	0.61	2.3
Barium, Dissolved ug/l	DETSC 2306	0.26	ug/l	15	47	92	25
Boron, Dissolved ug/l	DETSC 2306*	12	ug/l	29	30	20	270
Cadmium, Dissolved ug/l	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	0.07
Chromium III, Dissolved ug/l	DETSC 2306*	1	ug/l	< 1.0	1.1	< 1.0	< 1.0
Chromium, Hexavalent ug/l	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved ug/l	DETSC 2306	0.4	ug/l	0.7	7.1	3.6	3.0
Lead, Dissolved ug/l	DETSC 2306	0.09	ug/l	< 0.09	1.5	< 0.09	0.50
Mercury, Dissolved ug/l	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	0.01
Nickel, Dissolved ug/l	DETSC 2306	0.5	ug/l	0.6	2.6	3.5	3.3
Selenium, Dissolved ug/l	DETSC 2306	0.25	ug/l	< 0.25	0.33	19	3.3
Vanadium, Dissolved ug/l	DETSC 2306	0.6	ug/l	< 0.6	1.8	0.7	1.7
Zinc, Dissolved ug/l	DETSC 2306	1.3	ug/l	23	17	2.4	3.3
Inorganics							
Conductivity uS/cm	DETSC 2009	1	uS/cm	668	411	933	3130
pH pH	DETSC 2008		pH	7.1	7.3	7.6	7.4
Cyanide, Total ug/l	DETSC 2130	40	ug/l				
Hardness mg/l	DETSC 2303	0.1	mg/l	175	131	186	418
Ammoniacal Nitrogen as N mg/l	DETSC 2207	0.015	mg/l	0.088	0.083	0.18	0.037
Sulphate as SO4 mg/l	DETSC 2055	0.1	mg/l	28	13	190	220
Total Organic Carbon mg/l	DETSC 2085	1	mg/l	< 1.0	8.3	20	7.3
Petroleum Hydrocarbons							
Aliphatic C5-C6 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35 ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
Aromatic C5-C7 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10 ug/l	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35 ug/l	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35 ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
TPH Ali/Aro Total ug/l	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10
PAHs							
Naphthalene ug/l	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05

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Summary of Chemical Analysis
Water Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

				Lab No	1549068	1549069	1549070	1549071
				Sample ID	BH216	BH218	BH110	BH109
				Depth	15.45	8.55	9.00	9.55
				Other ID				
				Sample Type	WATER	WATER	WATER	WATER
				Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19
				Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Acenaphthylene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	0.01	< 0.01
Fluorene ug/l	DETSC 3304	0.01	ug/l	< 0.01	0.01	0.01	< 0.01
Phenanthrene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene ug/l	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total ug/l	DETSC 3304	0.2	ug/l	< 0.20	< 0.20	< 0.20	< 0.20

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Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549056	1549057	1549058	1549059	1549060	1549062
			Sample ID	WS07	WS03	WS201	BH221	BH201	BH204
			Depth	5.00	4.65	5.00	6.10	6.00	10.10
			Other ID						
			Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
VOCs									
Dichlorodifluoromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Methylene Chloride ug/l	DETSC 3432*	27	ug/l	< 27	< 27	< 27	< 27	< 27	< 27
Trans-1,2-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Cis-1,2-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
2,2-dichloropropane ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2	< 2	< 2
Bromochloromethane ug/l	DETSC 3432	4	ug/l	< 4	< 4	< 4	< 4	< 4	< 4
Chloroform ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-trichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Benzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2-dichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethylene ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2-dichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane ug/l	DETSC 3432	4	ug/l	< 4	< 4	< 4	< 4	< 4	< 4
cis-1,3-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Toluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-trichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,3-dichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2-dibromoethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1,2-tetrachloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
m+p-Xylene ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2	< 2	< 2
o-Xylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Styrene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-tetrachloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-trichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1

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Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549056	1549057	1549058	1549059	1549060	1549062
			Sample ID	WS07	WS03	WS201	BH221	BH201	BH204
			Depth	5.00	4.65	5.00	6.10	6.00	10.10
			Other ID						
			Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
n-propylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
2-chlorotoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-trimethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
4-chlorotoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Tert-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-trimethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
sec-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
p-isopropyltoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,3-dichlorobenzene ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2	< 2	< 2
1,4-dichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
n-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2-dichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2-dibromo-3-chloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-trichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-trichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
MTBE ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1	< 1	< 1
SVOCs									
Phenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Aniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Chlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Benzyl Alcohol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-chloroisopropyl)ether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
3&4-Methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-chloroethoxy)methane ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dimethylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Chloro-3-methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Methylnaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Hexachlorocyclopentadiene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4,6-Trichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4,5-Trichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Chloronaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dinitrotoluene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
3-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Nitrophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Dibenzofuran ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,6-Dinitrotoluene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

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Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549056	1549057	1549058	1549059	1549060	1549062
			Sample ID	WS07	WS03	WS201	BH221	BH201	BH204
			Depth	5.00	4.65	5.00	6.10	6.00	10.10
			Other ID						
			Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
2,3,4,6-Tetrachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Diethylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Chlorophenylphenylether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Diphenylamine ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
4-Bromophenylphenylether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Hexachlorobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-ethylhexyl)ester ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Pentachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Di-n-butylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Butylbenzylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-ethylhexyl)phthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Di-n-octylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dinitrobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Dimethylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dinitrobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,3,5,6-Tetrachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Azobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Carbazole ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1-Methylnaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

	Lab No	1549064	1549065	1549066	1549071
	Sample ID	BH220	WS204	BH210	BH109
	Depth	13.15	5.00	8.20	9.55
	Other ID				
	Sample Type	WATER	WATER	WATER	WATER
	Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19
	Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Dichlorodifluoromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Chloromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Vinyl Chloride ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Bromomethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Chloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Trichlorofluoromethane ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1
1,1-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Methylene Chloride ug/l	DETSC 3432*	27	ug/l	< 27	< 27	< 27	< 27
Trans-1,2-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1-dichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Cis-1,2-dichloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
2,2-dichloropropane ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2
Bromochloromethane ug/l	DETSC 3432	4	ug/l	< 4	< 4	< 4	< 4
Chloroform ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1,1-trichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Carbon tetrachloride ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Benzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2-dichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Trichloroethylene ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1
1,2-dichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Dibromomethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Bromodichloromethane ug/l	DETSC 3432	4	ug/l	< 4	< 4	< 4	< 4
cis-1,3-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Toluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
trans-1,3-dichloropropene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1,2-trichloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Tetrachloroethylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,3-dichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Dibromochloromethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2-dibromoethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Chlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1,1,2-tetrachloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Ethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
m+p-Xylene ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2
o-Xylene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Styrene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Bromoform ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Isopropylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,1,2,2-tetrachloroethane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Bromobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2,3-trichloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549064	1549065	1549066	1549071
			Sample ID	BH220	WS204	BH210	BH109
			Depth	13.15	5.00	8.20	9.55
			Other ID				
			Sample Type	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
n-propylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
2-chlorotoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,3,5-trimethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
4-chlorotoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Tert-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2,4-trimethylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
sec-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
p-isopropyltoluene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,3-dichlorobenzene ug/l	DETSC 3432	2	ug/l	< 2	< 2	< 2	< 2
1,4-dichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
n-butylbenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2-dichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2-dibromo-3-chloropropane ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2,4-trichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
Hexachlorobutadiene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
1,2,3-trichlorobenzene ug/l	DETSC 3432	1	ug/l	< 1	< 1	< 1	< 1
MTBE ug/l	DETSC 3432*	1	ug/l	< 1	< 1	< 1	< 1
SVOCs							
Phenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Aniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2-Chlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Benzyl Alcohol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2-Methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-chloroisopropyl)ether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
3&4-Methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-chloroethoxy)methane ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dimethylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
4-Chloro-3-methylphenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2-Methylnaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Hexachlorocyclopentadiene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,4,6-Trichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,4,5-Trichlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2-Chloronaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dinitrotoluene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
3-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
4-Nitrophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Dibenzofuran ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,6-Dinitrotoluene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-15966
Client Ref PN193981
Contract Title A55 Junction 15 & 16 Improvements

			Lab No	1549064	1549065	1549066	1549071
			Sample ID	BH220	WS204	BH210	BH109
			Depth	13.15	5.00	8.20	9.55
			Other ID				
			Sample Type	WATER	WATER	WATER	WATER
			Sampling Date	14/08/19	14/08/19	14/08/19	14/08/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
2,3,4,6-Tetrachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Diethylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
4-Chlorophenylphenylether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
4-Nitroaniline ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Diphenylamine ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
4-Bromophenylphenylether ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Hexachlorobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-ethylhexyl)ester ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Pentachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Di-n-butylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Butylbenzylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Bis(2-ethylhexyl)phthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Di-n-octylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
1,4-Dinitrobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Dimethylphthalate ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
1,3-Dinitrobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
2,3,5,6-Tetrachlorophenol ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Azobenzene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
Carbazole ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5
1-Methylnaphthalene ug/l	DETSC 3434*	1	ug/l	< 2.5	< 2.5	< 2.5	< 2.5

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-15966
Client Ref PN193981
Contract A55 Junction 15 & 16 Improvements

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1549056	WS07 5.00 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549057	WS03 4.65 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549058	WS201 5.00 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549059	BH221 6.10 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549060	BH201 6.00 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549061	BH202 14.25 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549062	BH204 10.10 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549063	BH228 9.10 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549064	BH220 13.15 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549065	WS204 5.00 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549066	BH210 8.20 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549067	BH213 20.45 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549068	BH216 15.45 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549069	BH218 8.55 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549070	BH110 9.00 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	
1549071	BH109 9.55 WATER	14/08/19	GB to 500ml, GV, PB 500ml	Chromium, Hexavalent (4 days), pH/Cond/TDS (1 days), PAH MS (4 days)	

Key: G-Glass P-Plastic B-Bottle V-Vial

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number	19-21041-1
	13-Nov-19
Client	Geotechnics LTD The Geotechnical Centre Unit 1B Borders Ind. Park River Lane Saltney Chester CH4 8RJ
Our Reference	19-21041-1
Client Reference	PN193981
Order No	AUTH-ON21436
Contract Title	A55 Junction 15 and Junction 16
Description	6 Water samples.
Date Received	16-Oct-19
Date Started	18-Oct-19
Date Completed	13-Nov-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	**This report supersedes 19-21041, amendments.** Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Water Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

			Lab No	1584260	1584261	1584262	1584263	1584264	1584265
			Sample ID	BH101	BH102	BH104	BH105	BH110	BH114B
			Depth						
			Other ID						
			Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
			Sampling Date	14/10/19	14/10/19	14/10/19	14/10/19	14/10/19	14/10/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Metals									
Antimony, Dissolved	DETSC 2306	0.17	ug/l	0.64	0.55	< 0.17	0.18	< 0.17	< 0.17
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	8.1	3.8	2.3	2.9	1.2	0.77
Barium, Dissolved	DETSC 2306	0.26	ug/l	21	5.9	40	62	110	6.6
Boron, Dissolved	DETSC 2306*	12	ug/l	84	25	74	59	27	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium III, Dissolved	DETSC 2306*	1	ug/l	1.1	7.5	11	1.2	2.2	7.2
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.6	6.8	3.0	0.9	2.5	5.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.21	0.38	0.72	< 0.09	0.22	0.62
Magnesium, Dissolved	DETSC 2306	0.02	mg/l	2.7	0.73	8.1	18	18	0.56
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	2.4	1.7	3.8	2.1	4.0	4.6
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.3	0.87	1.0	0.72	1.4	< 0.25
Vanadium, Dissolved	DETSC 2306	0.6	ug/l	0.7	19	6.6	< 0.6	2.3	2.5
Zinc, Dissolved	DETSC 2306	1.3	ug/l	15	14	9.6	4.0	2.7	21
Inorganics									
Conductivity	DETSC 2009	1	uS/cm	368	374	385	626	851	58.7
pH	DETSC 2008		pH	7.4	8.2	7.8	7.5	7.5	7.4
Hardness	DETSC 2303	0.1	mg/l	141	13.3	94.5	207	242	13.1
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	0.88	0.090	0.12	0.15	0.11	0.24
Chloride	DETSC 2055	0.1	mg/l	9.8	25	24	37	30	7.5
Nitrate as NO3	DETSC 2055	0.1	mg/l	0.62	1.7	0.27	< 0.10	12	1.7
Sulphate as SO4	DETSC 2055	0.1	mg/l	27	17	16	54	120	2.8
Sulphur as S, Total	DETSC 2320*	10	mg/l	< 10	< 10	< 10	19	45	< 10
Total Organic Carbon	DETSC 2085	1	mg/l	19	3.3	1.4	1.3	5.8	2.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis

Water Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

			Lab No	1584260	1584261	1584262	1584263	1584264	1584265
			Sample ID	BH101	BH102	BH104	BH105	BH110	BH114B
			Depth						
			Other ID						
			Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
			Sampling Date	14/10/19	14/10/19	14/10/19	14/10/19	14/10/19	14/10/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	0.08	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.10	< 0.01	< 0.01	0.01	0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	0.30	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

Lab No	1584260	1584261
Sample ID	BH101	BH102
Depth		
Other ID		
Sample Type	WATER	WATER
Sampling Date	14/10/19	14/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
VOCs					
Dichlorodifluoromethane	DETSC 3432	1	ug/l	< 1	< 1
Chloromethane	DETSC 3432	1	ug/l	< 1	< 1
Vinyl Chloride	DETSC 3432	1	ug/l	< 1	< 1
Bromomethane	DETSC 3432	1	ug/l	< 1	< 1
Chloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichlorofluoromethane	DETSC 3432*	1	ug/l	< 1	< 1
1,1-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
Methylene Chloride	DETSC 3432*	27	ug/l	< 27	< 27
Trans-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Cis-1,2-dichloroethylene	DETSC 3432	1	ug/l	< 1	< 1
2,2-dichloropropane	DETSC 3432	2	ug/l	< 2	< 2
Bromochloromethane	DETSC 3432	4	ug/l	< 4	< 4
Chloroform	DETSC 3432	1	ug/l	< 1	< 1
1,1,1-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
1,1-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Carbon tetrachloride	DETSC 3432	1	ug/l	< 1	< 1
Benzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Trichloroethylene	DETSC 3432*	1	ug/l	< 1	< 1
1,2-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromomethane	DETSC 3432	1	ug/l	< 1	< 1
Bromodichloromethane	DETSC 3432	4	ug/l	< 4	< 4
cis-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
Toluene	DETSC 3432	1	ug/l	< 1	< 1
trans-1,3-dichloropropene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2-trichloroethane	DETSC 3432	1	ug/l	< 1	< 1
Tetrachloroethylene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichloropropane	DETSC 3432	1	ug/l	< 1	< 1
Dibromochloromethane	DETSC 3432	1	ug/l	< 1	< 1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

Lab No	1584260	1584261
Sample ID	BH101	BH102
Depth		
Other ID		
Sample Type	WATER	WATER
Sampling Date	14/10/19	14/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
1,2-dibromoethane	DETSC 3432	1	ug/l	< 1	< 1
Chlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,1,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Ethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
m+p-Xylene	DETSC 3432	2	ug/l	< 2	< 2
o-Xylene	DETSC 3432	1	ug/l	< 1	< 1
Styrene	DETSC 3432	1	ug/l	< 1	< 1
Bromoform	DETSC 3432	1	ug/l	< 1	< 1
Isopropylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,1,2,2-tetrachloroethane	DETSC 3432	1	ug/l	< 1	< 1
Bromobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2,3-trichloropropane	DETSC 3432	1	ug/l	< 1	< 1
n-propylbenzene	DETSC 3432	1	ug/l	< 1	< 1
2-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3,5-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
4-chlorotoluene	DETSC 3432	1	ug/l	< 1	< 1
Tert-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2,4-trimethylbenzene	DETSC 3432	1	ug/l	< 1	< 1
sec-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
p-isopropyltoluene	DETSC 3432	1	ug/l	< 1	< 1
1,3-dichlorobenzene	DETSC 3432	2	ug/l	< 2	< 2
1,4-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
n-butylbenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
1,2-dibromo-3-chloropropane	DETSC 3432	1	ug/l	< 1	< 1
1,2,4-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
Hexachlorobutadiene	DETSC 3432	1	ug/l	< 1	< 1
1,2,3-trichlorobenzene	DETSC 3432	1	ug/l	< 1	< 1
MTBE	DETSC 3432*	1	ug/l	< 1	< 1

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

Lab No	1584260	1584261
Sample ID	BH101	BH102
Depth		
Other ID		
Sample Type	WATER	WATER
Sampling Date	14/10/19	14/10/19
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
SVOCs					
Phenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Aniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Benzyl Alcohol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroisopropyl)ether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3&4-Methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-chloroethoxy)methane	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dimethylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,2,4-Trichlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chloro-3-methylphenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorocyclopentadiene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4,6-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4,5-Trichlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Chloronaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,4-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
3-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Nitrophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dibenzofuran	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,6-Dinitrotoluene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,3,4,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Chlorophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water VOC/SVOC Samples

Our Ref 19-21041-1
Client Ref PN193981
Contract Title A55 Junction 15 and Junction 16

			Lab No	1584260	1584261
			Sample ID	BH101	BH102
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	14/10/19	14/10/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
4-Nitroaniline	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Diphenylamine	DETSC 3434*	1	ug/l	< 1.0	< 1.0
4-Bromophenylphenylether	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Hexachlorobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)ester	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Pentachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-butylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Butylbenzylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Bis(2-ethylhexyl)phthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Di-n-octylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,4-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Dimethylphthalate	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1,3-Dinitrobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
2,3,5,6-Tetrachlorophenol	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Azobenzene	DETSC 3434*	1	ug/l	< 1.0	< 1.0
Carbazole	DETSC 3434*	1	ug/l	< 1.0	< 1.0
1-Methylnaphthalene	DETSC 3434*	1	ug/l	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-21041-1
Client Ref PN193981
Contract A55 Junction 15 and Junction 16

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1584260	BH101 WATER	14/10/19	GB 1L, PB 1L		
1584261	BH102 WATER	14/10/19	GB 1L, PB 1L		
1584262	BH104 WATER	14/10/19	GB 1L, PB 1L		
1584263	BH105 WATER	14/10/19	GB 1L, PB 1L		
1584264	BH110 WATER	14/10/19	GB 1L, PB 1L		
1584265	BH114B WATER	14/10/19	GB 1L, PB 1L		

Key: G-Glass P-Plastic B-Bottle

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

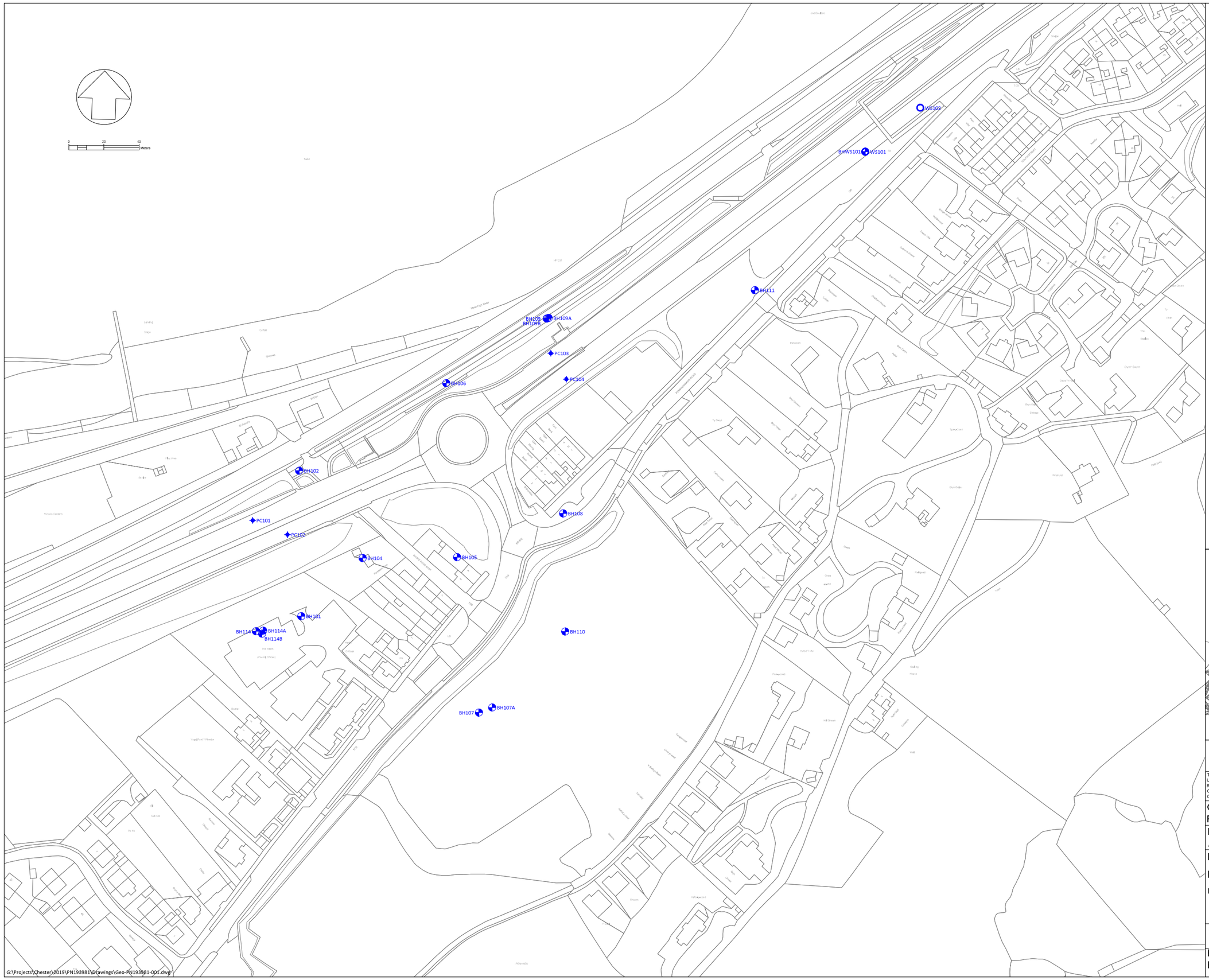
Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

APPENDIX 14

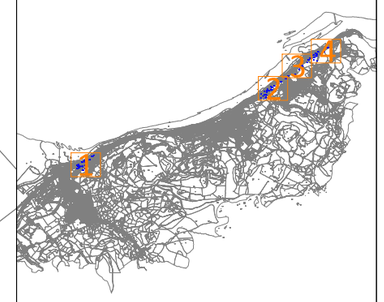
Exploratory Hole Location Plan



Key

- Borehole
- Trial Pit
- Pavement Core
- Dynamic Sample Borehole

Hole ID	Easting (m)	Northing (m)	Level (mOD)
BH101	268465.0	373804.3	5.84
BH102	268443.8	373887.1	6.34
BH104	268470.9	373922.4	5.97
BH105	268583.7	373820.9	5.72
BH106	268527.5	373530.9	6.41
BH107	268566.1	373349.5	18.42
BH107A	268533.6	373352.4	18.97
BH108	268964.0	373462.8	12.15
BH109	268584.7	373573.7	7.25
BH109A	268585.2	373574.0	7.08
BH109B	268584.8	373573.6	7.08
BH110	268595.2	373395.6	20.53
BH111	268703.1	373688.4	19.31
BH114	268419.2	373395.8	6.04
BH114A	268421.3	373396.1	6.07
BH114B	268422.7	373396.4	6.12
BH201	272728.9	373989.2	16.11
BH202	272771.8	373984.4	15.10
BH203	272783.6	373765.5	15.32
BH204	272836.1	373584.9	15.11
BH204a	272838.3	373585.6	15.02
BH205	272880.8	373593.3	14.49
BH205A	272892.7	373707.5	16.52
BH205B	272903.8	373710.5	16.63
BH205C	272896.4	373709.3	16.40
BH207	273115.4	373953.3	13.96
BH208	273222.2	373936.2	15.87
BH209	273286.8	373727.8	13.33
BH210	273805.7	377753.5	6.63
BH212	273863.7	378002.9	12.44
BH213	273874.3	377932.2	12.07
BH214	273911.7	378038.3	9.83
BH215	273938.2	378076.1	9.67
BH216	273928.4	377978.7	8.76
BH216A	273927.7	377978.1	9.86
BH217	274009.0	378053.2	8.62
BH218	274008.7	378079.3	6.14
BH219	274068.8	378078.7	5.29
BH220	272717.7	377025.7	29.95
BH220A	272770.4	377024.3	30.02
BH221	272703.8	377042.1	18.98
BH238	272767.7	377088.8	11.80
BHWS101	268365.9	373668.6	12.10
PC101	268417.4	373458.8	9.29
PC102	268587.0	373553.9	11.20
PC103	268595.8	373539.2	11.20
PC201	272786.0	373582.2	12.83
PC202	273751.9	378892.0	12.33
PC203	273760.0	377936.0	12.12
PC204	274201.5	378174.1	7.65
TP201	273062.0	373549.4	11.70
TP202	273461.8	377558.3	14.44
TP203	273522.7	377664.2	8.19
TP204	273719.2	377832.7	12.73
TP205	273864.1	377892.1	11.61
TP206	273961.3	377809.6	10.05
TP207	274328.0	378133.0	7.80
TP208	274276.0	378175.0	7.40
TP210	272954.1	377553.5	11.30
TP210A	272917.5	377555.4	11.22
TP211	273754.5	377744.5	6.98
TP212	273587.0	377697.7	6.42
WS101	268765.9	373668.6	12.10
WS102	268797.2	373693.6	14.02
WS201	272647.6	373516.9	22.06
WS202	272799.3	373215.9	10.92
WS203	272862.6	373092.0	9.56
WS204	272720.3	370996.4	30.79
WS205	272733.9	373174.5	14.35
WS205A	272734.0	373174.5	14.01
WS206	272655.2	373107.0	16.34
WS207	272625.0	373182.4	16.44



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Client:
Ramboll UK Limited

Project:
A55 Junctions 15 & 16 Improvements

Drawing Title:

Exploratory Hole Location Plan

Drawing 1 of 4

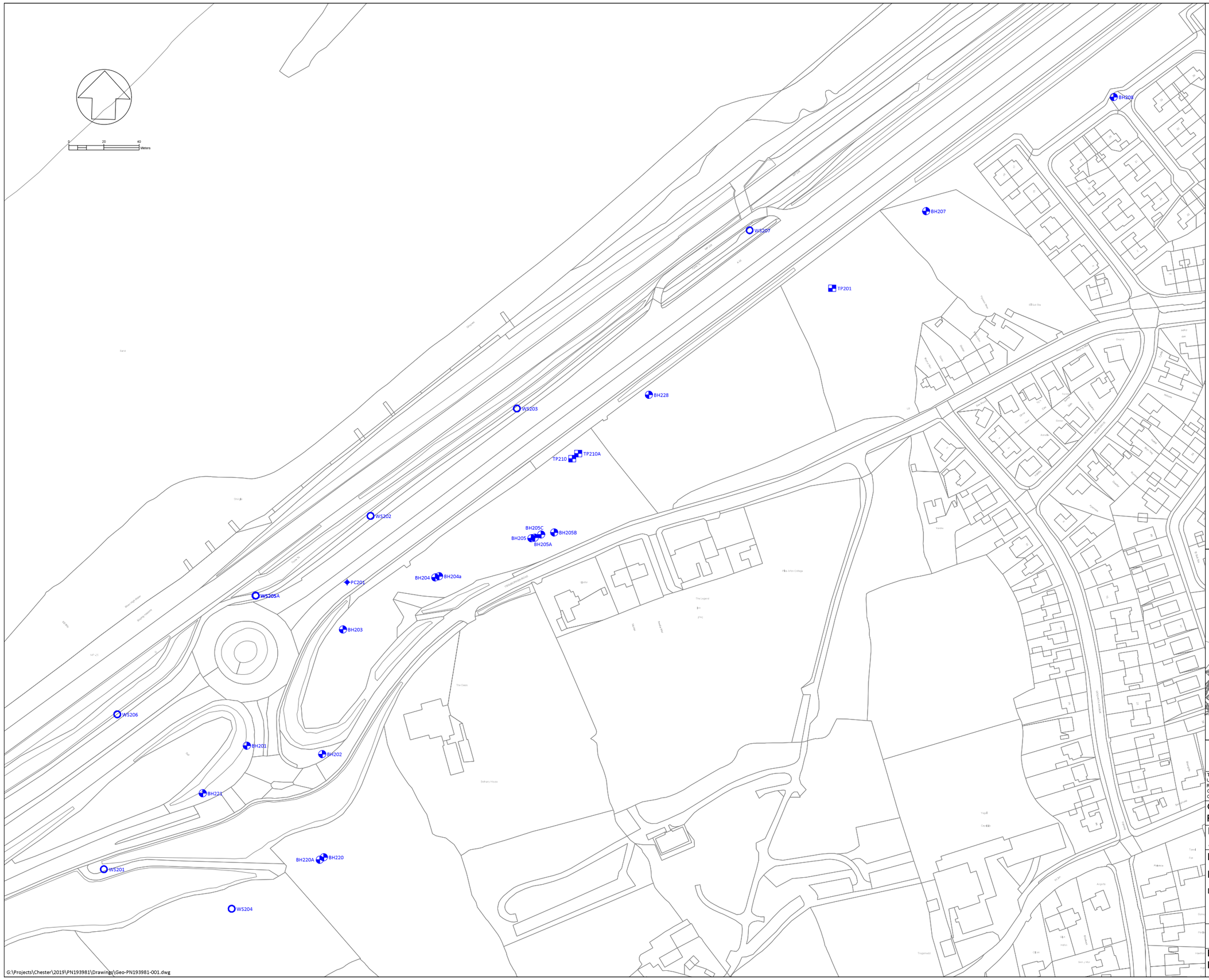
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Date:
October 2019

Project No:
PN193981

File Name:
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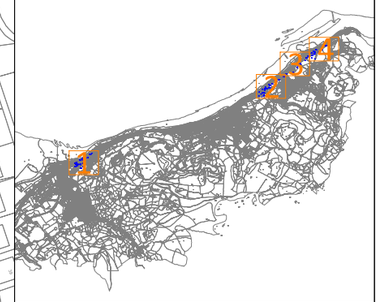
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Key

- Borehole
- Trial Pit
- Pavement Core
- Dynamic Sample Borehole

Hole ID	Easting (m)	Northing (m)	Level (mOD)
BH101	268465.0	373804.3	5.84
BH102	268443.8	373837.1	6.34
BH104	268470.9	373832.4	5.97
BH105	268583.7	373830.9	5.72
BH106	268527.5	373530.9	6.41
BH107	268566.1	373585.5	18.42
BH107A	268533.6	373352.4	18.97
BH108	268964.0	373402.8	12.15
BH109	268584.7	373573.7	7.25
BH109A	268585.7	373574.0	7.08
BH109B	268584.8	373573.6	7.08
BH110	268595.2	373395.6	20.53
BH111	268703.1	373488.4	19.31
BH114	268419.2	373395.8	6.04
BH114A	268423.3	373396.1	6.07
BH114B	268422.7	373396.4	6.12
BH201	272728.9	373089.2	16.11
BH202	272771.8	373086.4	15.10
BH203	272816.6	373156.5	15.12
BH204	272836.1	373184.9	15.11
BH204a	272838.3	373185.6	15.02
BH205	272860.8	373260.3	16.49
BH205A	272852.7	373207.5	16.52
BH205B	272903.8	373210.5	16.63
BH205C	272896.4	373209.3	16.40
BH207	273115.4	373393.3	13.96
BH208	273222.2	373506.2	19.87
BH209	273286.8	373727.8	13.33
BH210	273605.7	373753.5	6.63
BH212	273863.7	374002.9	12.44
BH213	273874.3	374012.2	12.19
BH214	273911.7	374038.3	9.83
BH215	273938.2	374026.1	5.67
BH216	273928.4	373578.7	6.76
BH216A	273872.7	373578.1	5.86
BH217	273850.0	373653.2	6.62
BH218	274030.7	374029.3	6.14
BH219	274098.8	374078.7	5.29
BH220	272772.7	373525.7	29.95
BH220A	272770.4	373524.3	30.02
BH221	272703.8	373042.1	18.08
BH238	272767.7	373388.8	11.80
BHWS101	268365.9	373668.6	12.10
PC101	268417.4	373458.8	5.29
PC102	268481.8	373555.7	5.97
PC103	268587.0	373553.9	11.20
PC104	268595.8	373539.2	11.20
PC201	272786.0	373182.2	12.83
PC202	273751.9	373892.0	12.33
PC203	273760.0	373936.0	12.12
PC204	274201.5	378174.1	7.65
TP201	273062.0	373549.4	11.70
TP202	273441.8	373558.3	14.44
TP203	273522.7	373644.2	8.19
TP204	273728.2	373832.7	12.19
TP205	273864.1	373892.1	11.61
TP206	273961.3	373969.6	10.05
TP207	274108.0	378133.0	7.80
TP208	274276.0	378175.0	7.40
TP210	272954.1	373753.5	11.30
TP210A	272917.5	373755.4	11.22
TP211	273734.5	377734.5	6.98
TP212	273587.0	373597.7	6.42
WS101	268765.9	373668.6	12.10
WS102	268797.2	373693.6	14.02
WS201	272647.6	373518.9	22.06
WS202	272799.3	373219.9	10.92
WS203	272862.6	373281.0	9.58
WS204	272720.3	373096.4	30.79
WS205	272733.9	373174.5	14.35
WS205A	272734.0	373174.5	14.01
WS206	272655.2	373107.0	16.34
WS207	273025.0	373382.4	16.44



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Client:
Ramboll UK Limited

Project:
A55 Junctions 15 & 16 Improvements

Drawing Title:
Exploratory Hole Location Plan

Drawing 2 of 4

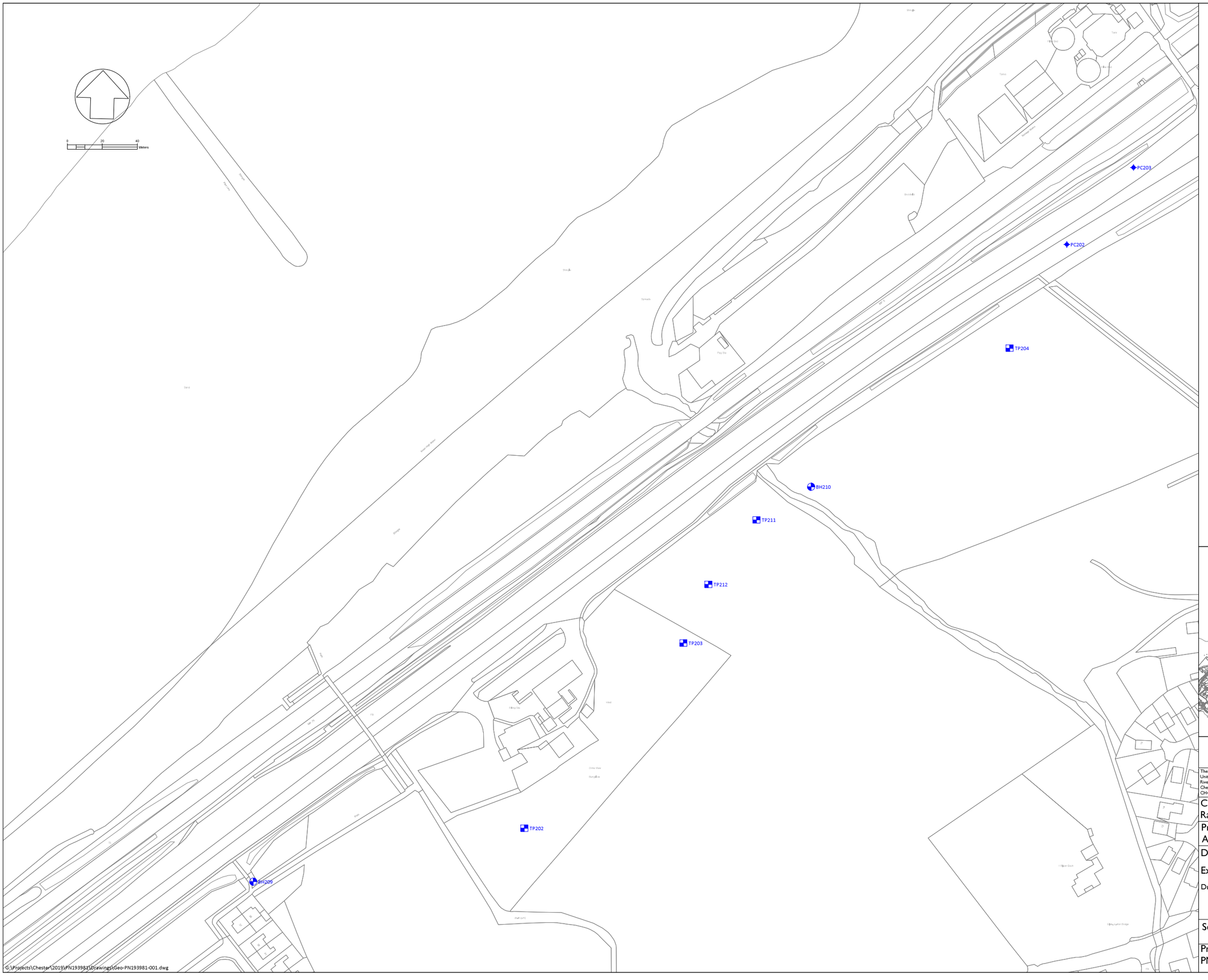
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October 2019

Project No:
PN193981

File Name:
Geo-PN193981-001(2)

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Key

- Borehole
- Trial Pit
- Pavement Core
- Dynamic Sample Borehole

Hole ID	Easting (m)	Northing (m)	Level (mOD)
BH101	268465.0	375804.3	5.84
BH102	268443.8	375881.1	6.34
BH104	268470.9	375932.4	5.97
BH105	268383.7	375830.9	5.71
BH106	268527.5	375530.9	6.41
BH107	268546.1	375548.5	18.42
BH107A	268533.6	375552.4	18.97
BH108	268594.0	375462.8	13.15
BH109	268584.7	375573.7	7.25
BH109A	268585.7	375574.0	7.08
BH109B	268584.8	375573.6	7.08
BH110	268595.2	375395.6	20.53
BH111	268705.1	375688.4	19.31
BH114	268403.9	375395.8	6.04
BH114A	268423.3	375396.1	6.07
BH114B	268422.7	375396.4	6.12
BH201	272728.9	377089.2	16.11
BH202	272771.8	376986.4	15.10
BH203	272783.6	377056.5	15.12
BH204	272836.1	377184.9	15.11
BH204a	272858.3	377185.6	15.02
BH205	272860.8	377060.3	16.49
BH205A	272892.7	377207.5	16.52
BH205B	272903.8	377210.5	16.03
BH205C	272896.4	377209.3	16.40
BH207	273115.4	377093.3	13.96
BH208	273222.2	377036.2	19.87
BH209	273286.8	377127.8	13.33
BH210	273805.7	377753.5	6.63
BH212	273863.7	378002.9	12.44
BH213	273874.3	377942.2	12.07
BH214	273911.7	378038.3	9.83
BH215	273938.2	378076.1	9.67
BH216	273928.4	377978.7	8.76
BH216A	273937.7	377978.1	9.86
BH217	273955.0	378025.2	9.62
BH218	274030.7	378029.3	6.14
BH219	274098.8	378078.7	5.29
BH220	272772.7	377025.7	29.95
BH220A	272770.4	377024.3	30.02
BH221	272703.8	377042.1	18.98
BH238	272767.7	377088.8	11.80
BH(S102)	268305.9	376668.6	12.10
PC101	268417.4	376458.8	5.29
PC102	268487.8	376580.7	9.97
PC103	268587.0	375559.9	11.20
PC104	268595.8	375539.2	11.20
PC201	272786.0	377182.2	12.83
PC202	273751.9	378892.0	12.33
PC203	273790.0	377936.0	12.12
PC204	274201.5	378174.1	7.65
TP201	273062.0	377549.4	11.70
TP202	273441.8	377558.3	14.44
TP203	273532.7	377664.2	8.19
TP204	273728.2	377810.7	12.19
TP205	273864.1	377892.1	11.61
TP206	273961.3	377969.6	10.05
TP207	274028.0	378133.0	7.80
TP208	274276.0	378175.0	7.40
TP210	273564.1	377753.5	11.80
TP210A	273567.5	377755.4	11.22
TP211	273734.5	377744.5	9.98
TP212	273587.0	377697.7	6.42
WS101	268765.9	376668.6	12.10
WS102	268797.2	376993.6	14.02
WS201	272647.6	377018.9	22.06
WS202	272799.3	377215.9	10.52
WS203	272862.6	377281.0	9.58
WS204	272720.3	377096.4	30.79
WS205	272733.9	377174.5	14.35
WS205A	272734.0	377174.5	14.01
WS206	272655.2	377107.0	16.34
WS207	272615.0	377082.4	16.44



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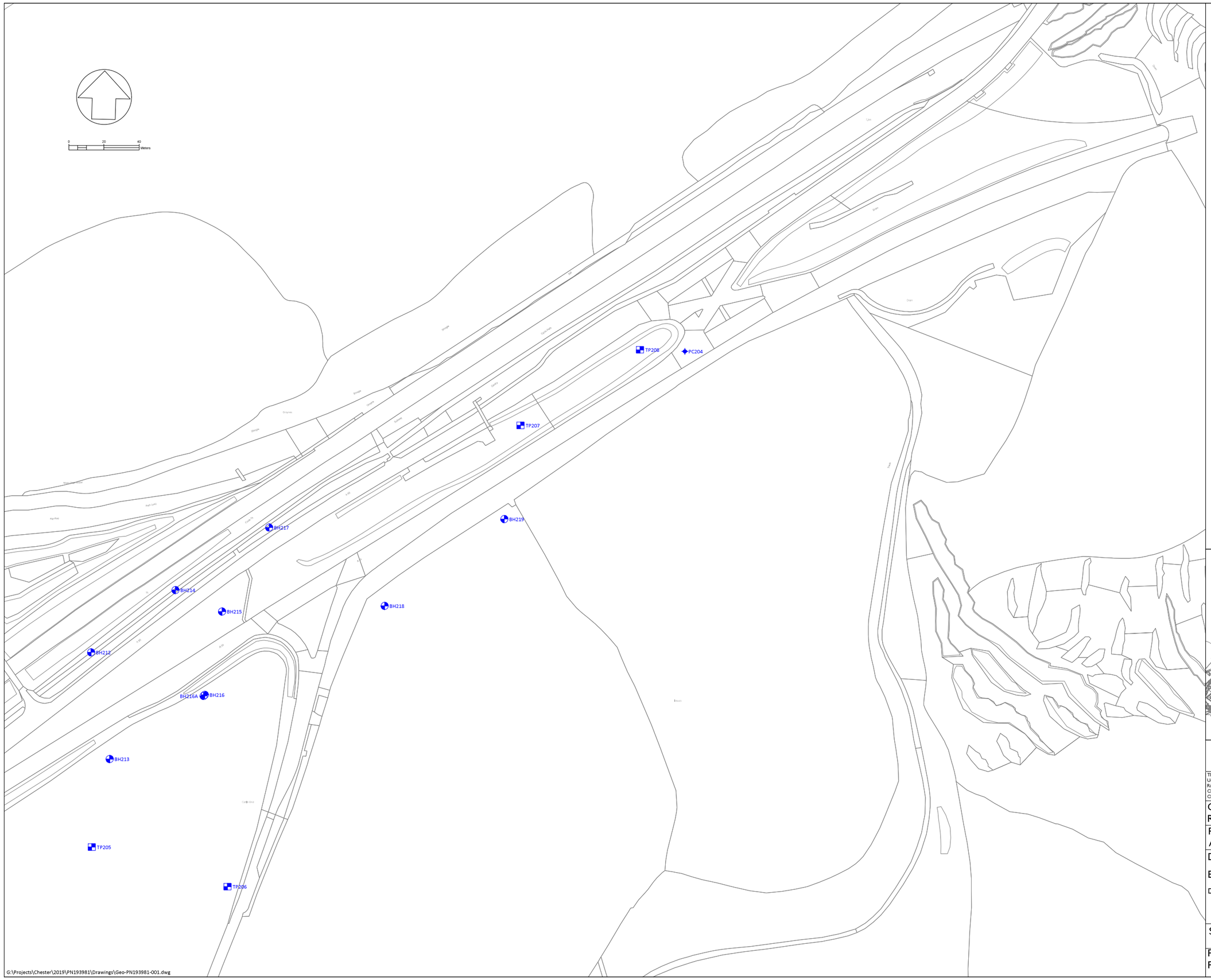
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Exploratory Hole Location Plan

Drawing 3 of 4

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Project No: PN193981	File Name: Geo-PN193981-001(3)

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0
20
40
Meters
TP208
PC204
TP207
BH219
BH217
BH214
BH215
BH218
BH212
BH216A
BH216
BH213
TP205
TP206
Dyke
Drain
Hedge
Ditch
Culvert
Gantry
Orchard
Path
Track
Ash
Oak
Conifer Grid
Wales
Chester
Ash Tree
Path Gate
Conifer Trees
Conifer Hedge
Ash Hedge
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APPENDIX 15

Investigation Techniques and General Notes

INVESTIGATION TECHNIQUES

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

GENERAL NOTES

1. *The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.*

2. *Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.*

3. *The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.*

4. *The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.*

5. *The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.*

6. *Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.*

7. *The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.*

8. *The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.*

9. *Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.*

10. *Any unavoidable variations from specified procedures are identified in the report.*

11. *Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated*

12. *All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.*

13. *Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.*

14. *The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.*

15. *Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.*

16. *The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.*

17. *Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.*

18. *Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.*

19. *Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.*

20. *Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.*

21. *The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.*

APPENDIX 6.3
CONTAMINATED LAND RISK ASSESSMENT

Table 6.17: Contaminated Land Risk Assessment (without mitigation) – Junction 16

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
Historic and / or current land uses	Ingestion, Inhalation and/or Dermal Contact with Contaminants	General public in adjacent areas	Unlikely	Medium	**Low** – Low concentrations of soil contaminants within shallow soils with no exceedances of the assessment criteria identified. Exceedance of human health assessment criteria for PAHs from made ground in WS202 at 3.5m bgl (former gas works), although this is located beneath the A55 and existing cycleway and will not be disturbed during the construction works as only shallow excavations will be required in this area. Made ground will be covered by hard cover and by topsoil /subsoil within landscaping areas following construction works. Mitigation will also be implemented during construction works to ensure risks remain low.
		Workers during construction	Low	Medium	**Moderate / Low** – Low concentrations of soil contaminants have been identified within shallow soils except for the made ground from WS202 at 3.5m bgl (former gas works). However, this material will not be disturbed as part of the construction works as only shallow excavations are required in this area. However, workers still have the potential for greater exposure to soils during ground works such as excavations. Unexpected contamination would be managed through appropriate H&S procedures.
		Workers during operation	Unlikely	Medium	**Low** - Low concentrations of soil contaminants identified in shallow soils. Potential for exposure to soils during excavations (if required) although these are likely to be limited in extent. Unexpected contamination would be managed through appropriate H&S procedures.
		Future site users	Unlikely	Medium	**Low** – There should not be a risk in areas of hard cover such as roads. The potential risks from soil contaminants in areas of soft cover are considered low (or negligible) as no exceedances of the assessment criteria have been identified in shallow soils and made ground would be covered by topsoil / subsoil in areas of landscaping.

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
	Migration of Ground Gas or Vapours into Confined Spaces	General public in adjacent areas	Unlikely	Severe	**Moderate / Low** – Risk based on potential severity to receptor, but there should not be an increase in risk during or following construction from the Scheme as overall concentrations of gas are low and the works would not increase the potential for gas migration off-site.
		Workers during construction	Low	Severe	**Moderate** - Risk based on potential severity to receptor. Overall concentrations of ground gas are low, although some exceedances of workplace exposure limits have been obtained which could represent a risk if confined spaces, including deeper excavations, are required. There should not be a risk to workers at the ground surface.
		Workers during operation	Low	Severe	**Moderate** – Risk based on potential severity to receptor. Overall concentrations of ground gas are low, although some exceedances of workplace exposure limits have been obtained which could represent a risk if confined spaces such as deeper excavations were to be required. Otherwise there should not be a risk to workers.
		Future site users	Unlikely	Severe	**Moderate / Low** - Risk based on potential severity to receptor, although as it is road scheme with some landscaping areas there should not be a risk to future site users.
	Plant Uptake	Plants in areas of soft landscaping	Unlikely	Minor	**Very Low** – Elevated concentrations of potentially phytotoxic metals within shallow soils identified from soil testing in only one exploratory hole (TP211 located on a former tip / landfill). The sample from WS202 at 3.5m bgl is located below the depth of the construction works and below the A55 within the Scheme area.
	Chemical Attack	Underground services / structures	Low	Mild	**Low** – Overall levels of aggressive contaminants encountered in soils are low. Buried concrete design and service diversions would take account of aggressive ground conditions.

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
	Migration of Soil Contaminants or Contaminants in Perched Groundwater	Groundwater in Secondary Aquifers during construction	Unlikely	Medium	**Low** – Outside of the former gas works only slightly elevated concentrations of contaminants have been identified in soil leachate from the made ground mainly in the western part of the Scheme nearer to Junction 16 where Glacial Till is present near surface and underlying made ground limiting the potential for migration. Alluvium has been encountered south of the A55 towards the central and eastern end of the Scheme, although only one slight exceedance was obtained from soil leachate testing on the made ground in this area. No evidence of significant contamination in groundwater has been encountered from chemical testing. The construction works should not increase existing risk from soil contaminants to groundwater.
		Groundwater in Secondary Aquifers during construction – former gas works	Unlikely	Medium	**Low** – Elevated concentrations of contaminants have been encountered from soil leachate testing on the made ground from WS202 at 3.5m bgl with only slightly elevated concentrations from other samples in this area. WS202 terminated on an obstruction at 3.5m (possibly concrete) with exploratory holes in the surrounding area indicating Glacial Till is present (including below the made ground) which should limit the potential for contaminant migration. No evidence of contamination was encountered in overlying soils at less than 3.0m bgl from WS202. No existing evidence of significant contamination in groundwater has been encountered from chemical testing in this area, only limited groundwater was present in WS202 towards the base of the well which was insufficient water for sampling and testing. The contamination encountered at depth in WS202 would not be disturbed as part of the construction works as only shallow excavations and replacement of the existing road surfacing are required in this area. Therefore, the construction works should not increase existing risk from soil contaminants to groundwater.

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
		Groundwater in Secondary Aquifers during operation	Unlikely	Medium	**Low** – Outside of the former gas works only slightly elevated concentrations of contaminants have been identified in soil leachate from the made ground mainly in the western part of the Scheme nearer to Junction 16 where Glacial Till is present near surface and underlying the made ground limiting the potential for migration. No existing evidence of significant contamination in groundwater has been encountered from chemical testing. Where materials are covered by the road and embankments this would limit the potential for infiltration into underlying soils and potential for leaching. Where foundations are required (overbridge to the Welsh Water Treatment Works) these would not result in new preferential pathways being introduced for contaminant migration.
		Groundwater in Secondary Aquifers during operation – former gas works	Unlikely	Medium	**Low** – The contamination encountered at depth in WS202 and to a lesser extent some other exploratory hole is in this area, will not be disturbed as part of the construction works as only shallow excavations and replacement of the existing road surfacing is required limiting the potential for infiltration and leaching. Deeper foundations will not be required in the area around WS202 or the former gas works. The presence of Glacial Till below the made ground should limit the potential for contaminant migration. No existing evidence of significant contamination in groundwater has been encountered from chemical testing in this area, only limited groundwater was present in WS202 towards the base of the well which was insufficient water for sampling and testing. Therefore, the construction works should not increase existing risk from soil contaminants to groundwater in this area during the operation stage.
	Lateral Migration of Contaminants in Groundwater	Groundwater offsite	Unlikely	Medium	**Low** – No existing evidence of significant contamination in groundwater has been encountered from chemical testing with only locally elevated metals encountered. Much of the proposed construction works will be shallow. Where foundations are required (overbridge to the Welsh Water Treatment Works) these would not result in new preferential pathways being introduced for contaminant migration.

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
		Groundwater offsite – former gas works	Unlikely	Medium	**Low** – No existing evidence of significant contamination in groundwater has been encountered from chemical testing in this area, with only limited groundwater present towards the base of WS202 which was insufficient water for sampling and testing. Contaminant migration within groundwater in the Glacial Till should be limited. Where contaminants are located at depth as in WS202 this would not be disturbed as part of the construction works as only shallow excavations and replacement of the existing road surfacing are required in this area. Only limited groundwater encountered towards the base of WS202 which should limit the potential for migration. Therefore, the construction works should not increase existing risks from contaminants in groundwater.
		Surface Water	Unlikely	Medium	**Low** – Although the Scheme is located close to the sea, no existing evidence of significant contamination in groundwater has been identified from chemical testing. Construction works should not increase the risk of contaminant migration offsite in groundwater towards surface water as the majority of the works will be shallow. Where foundations are required (overbridge to the Welsh Water Treatment Works) these would not result in new preferential pathways being introduced for contaminant migration.
		Surface Water - former gas works	Unlikely	Medium	**Low** – Although the Scheme is located close to the sea, no existing evidence of significant contamination in groundwater has been encountered from chemical testing, with only limited groundwater towards the base of WS202 limiting the potential for migration. This area is also underlain by Glacial Till which should limit the potential for lateral groundwater migration. Construction works should not increase the risk of contaminant migration offsite in groundwater towards surface water as the works in this area will be shallow which should not introduce new preferential pathways.

Potential Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification
	Contaminant Run-off to Surface Water	Ponds, drains, rivers, sea during construction	Low	Medium	**Moderate / Low** – Although low concentrations of contaminants have been identified in shallow soils, given the requirement for excavations and proximity to the sea and other water courses, the requirement for mitigation has been identified during the construction works to ensure the risks are low.
		Ponds, drains, rivers, sea during operation	Unlikely	Medium	**Low** – It is unlikely there would be a risk from contaminant run-off following construction as the site will be covered by hard cover with topsoil / subsoil in areas of soft landscaping. Mitigation would be implemented for attenuation ponds in areas where there is potential for contamination or landfill.