GWYNEDD COUNTY COUNCIL

LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR

GEOTECHNICAL, GROUND PERMEABILITY AND CONTAMINATION INVESTIGATION REPORT

APPENDIX 2 – ENVIROINSIGHT AND GEOINSIGHT REPORT
APPENDIX 3 – TRIAL PIT RECORDS
APPENDIX 4 – WS BOREHOLE RECORDS AND DCP REPORT
APPENDIX 5 – PERMEABILITY TEST RESULTS
APPENDIX 6 – CHEMICAL ANALYSIS

REPORT No. E1125.GGCI.R1

JUNE 2020

Appendix 2 - EnviroInsight and GeoInsight Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

LAND AT BRON EIFION, A497, CRICCIETH, LL52 0SA

Order Details

Date: 01/07/2020

Your ref: E1125

Our Ref: HMD-165-6825693

Client: E-Geo Solutions Ltd

Site Details

Location: 249231 338049

Area: 1.91 ha

Authority: Gwynedd County Council

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	0	4	6	13	-
15	1.2	Historical tanks	0	0	2	2	-
16	1.3	Historical energy features	0	0	1	1	-
16	1.4	Historical petrol stations	0	0	1	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
18	2.1	Historical industrial land uses	0	5	9	17	-
20	2.2	Historical tanks	0	0	3	2	-
20	2.3	Historical energy features	0	0	2	3	-
21	2.4	Historical petrol stations	0	0	2	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23	3.7	Waste exemptions	0	0	0	7	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
25	4.1	Recent industrial land uses	1	0	2	-	-
26	4.2	Current or recent petrol stations	0	0	0	1	-
26	4.3	Electricity cables	0	0	0	0	-
26	4.4	Gas pipelines	0	0	0	0	-
26	4.5	Sites determined as Contaminated Land	0	0	0	0	-

26	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
27	4.7	Regulated explosive sites	0	0	0	0	-
27	4.8	Hazardous substance storage/usage	0	0	0	0	-
27	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
27	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
27	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
28	4.12	Radioactive Substance Authorisations	0	0	0	0	-
28	**4.13**	**Licensed Discharges to controlled waters**	0	0	0	13	-
30	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
30	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	6	-
31	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
33	5.1	Superficial aquifer	None (within 500m)				
34	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
35	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
36	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	5.6	Groundwater abstractions	0	0	0	0	0
37	5.7	Surface water abstractions	0	0	0	0	0
37	5.8	Potable abstractions	0	0	0	0	0
37	5.9	Source Protection Zones	0	0	0	0	-
38	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
39	**6.1**	**Water Network (OS MasterMap)**	0	4	15	-	-

41	**6.2**	**Surface water features**	0	3	8	-	-
41	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
42	6.4	WFD Surface water bodies	0	0	0	-	-
42	**6.5**	**WFD Groundwater bodies**	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
43	7.3	Flood Defences	0	0	0	-	-
43	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
46	**8.1**	**Surface water flooding**	1 in 100 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
48	**9.1**	**Groundwater flooding**	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
49	**10.1**	**Sites of Special Scientific Interest (SSSI)**	0	0	0	1	5
50	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
50	**10.3**	**Special Areas of Conservation (SAC)**	0	0	0	2	0
51	**10.4**	**Special Protection Areas (SPA)**	0	0	0	1	1
51	10.5	National Nature Reserves (NNR)	0	0	0	0	0
52	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
52	**10.7**	**Designated Ancient Woodland**	0	0	2	3	21
53	10.8	Biosphere Reserves	0	0	0	0	0
53	10.9	Forest Parks	0	0	0	0	0
54	10.10	Marine Conservation Zones	0	0	0	0	0
54	10.11	Green Belt	0	0	0	0	0
54	10.12	Proposed Ramsar sites	0	0	0	0	0

54	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
54	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
55	10.15	Nitrate Sensitive Areas	0	0	0	0	0
55	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
56	10.17	SSSI Impact Risk Zones	0	-	-	-	-
56	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
57	11.1	World Heritage Sites	0	0	0	-	-
58	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
58	11.3	National Parks	0	0	0	-	-
58	**11.4**	**Listed Buildings**	0	0	1	-	-
59	11.5	Conservation Areas	0	0	0	-	-
59	11.6	Scheduled Ancient Monuments	0	0	0	-	-
59	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
60	**12.1**	**Agricultural Land Classification**	Grade 3b (within 250m)				
61	12.2	Open Access Land	0	0	0	-	-
61	12.3	Tree Felling Licences	0	0	0	-	-
61	12.4	Environmental Stewardship Schemes	0	0	0	-	-
61	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
62	13.1	Priority Habitat Inventory	0	0	0	-	-
62	13.2	Habitat Networks	0	0	0	-	-
62	13.3	Open Mosaic Habitat	0	0	0	-	-
62	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
63	**14.1**	**10k Availability**	Identified (within 500m)				
64	14.2	Artificial and made ground (10k)	0	0	0	0	-
65	14.3	Superficial geology (10k)	0	0	0	0	-

65	14.4	Landslip (10k)	0	0	0	0	-
66	14.5	Bedrock geology (10k)	0	0	0	0	-
66	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
67	**15.1**	**50k Availability**	Identified (within 500m)				
68	15.2	Artificial and made ground (50k)	0	0	0	0	-
68	15.3	Artificial ground permeability (50k)	0	0	-	-	-
69	**15.4**	**Superficial geology (50k)**	1	0	0	1	-
70	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
70	15.6	Landslip (50k)	0	0	0	0	-
70	15.7	Landslip permeability (50k)	None (within 50m)				
71	**15.8**	**Bedrock geology (50k)**	1	1	0	0	-
72	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
72	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
73	**16.1**	**BGS Boreholes**	0	0	5	-	-
Page	Section	Natural ground subsidence					
75	**17.1**	**Shrink swell clays**	Negligible (within 50m)				
76	**17.2**	**Running sands**	Very low (within 50m)				
77	**17.3**	**Compressible deposits**	Negligible (within 50m)				
78	**17.4**	**Collapsible deposits**	Very low (within 50m)				
79	**17.5**	**Landslides**	Very low (within 50m)				
80	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
81	18.1	Natural cavities	0	0	0	0	-
82	18.2	BritPits	0	0	0	0	-
82	**18.3**	**Surface ground workings**	0	5	4	-	-
82	18.4	Underground workings	0	0	0	0	0
83	18.5	Historical Mineral Planning Areas	0	0	0	0	-

83	**18.6**	**Non-coal mining**	1	0	0	0	1
83	18.7	Mining cavities	0	0	0	0	0
84	18.8	JPB mining areas	None (within 0m)				
84	18.9	Coal mining	None (within 0m)				
84	18.10	Brine areas	None (within 0m)				
84	18.11	Gypsum areas	None (within 0m)				
84	18.12	Tin mining	None (within 0m)				
85	18.13	Clay mining	None (within 0m)				

Page	Section	Radon					
86	**19.1**	**Radon**	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
87	**20.1**	**BGS Estimated Background Soil Chemistry**	2	0	-	-	-
87	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
87	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
88	21.1	Underground railways (London)	0	0	0	-	-
88	21.2	Underground railways (Non-London)	0	0	0	-	-
89	21.3	Railway tunnels	0	0	0	-	-
89	**21.4**	**Historical railway and tunnel features**	0	0	6	-	-
89	21.5	Royal Mail tunnels	0	0	0	-	-
90	21.6	Historical railways	0	0	0	-	-
90	**21.7**	**Railways**	0	4	2	-	-
90	21.8	Crossrail 1	0	0	0	0	-
90	21.9	Crossrail 2	0	0	0	0	-
91	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 26/07/2018

Site Area: 1.91ha

Recent site history - 2015 aerial photograph

Capture Date: 16/04/2015

Site Area: 1.91ha

Recent site history - 2013 aerial photograph

Capture Date: 09/06/2013

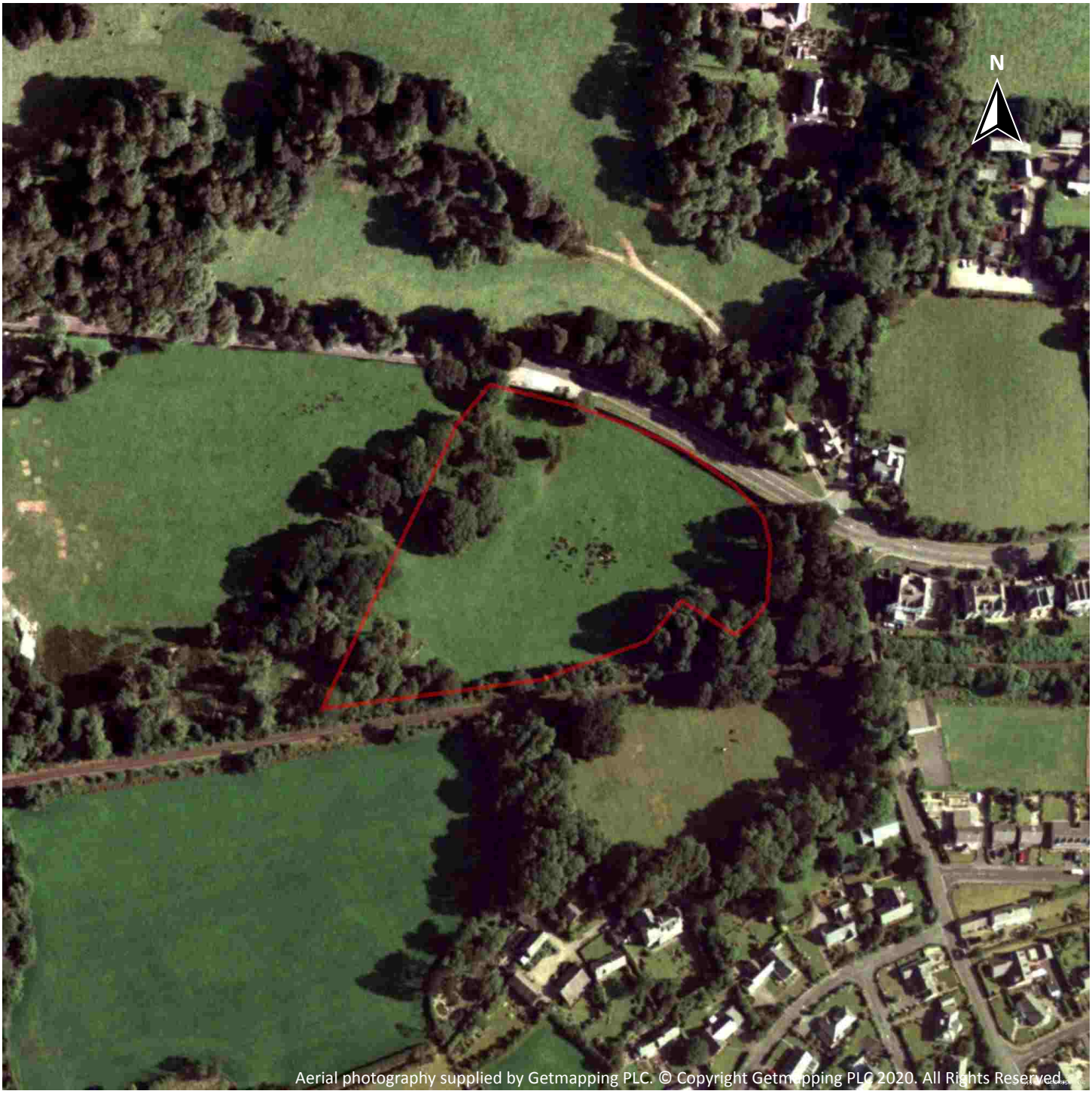
Site Area: 1.91ha

Recent site history - 2009 aerial photograph

Capture Date: 01/06/2009

Site Area: 1.91ha

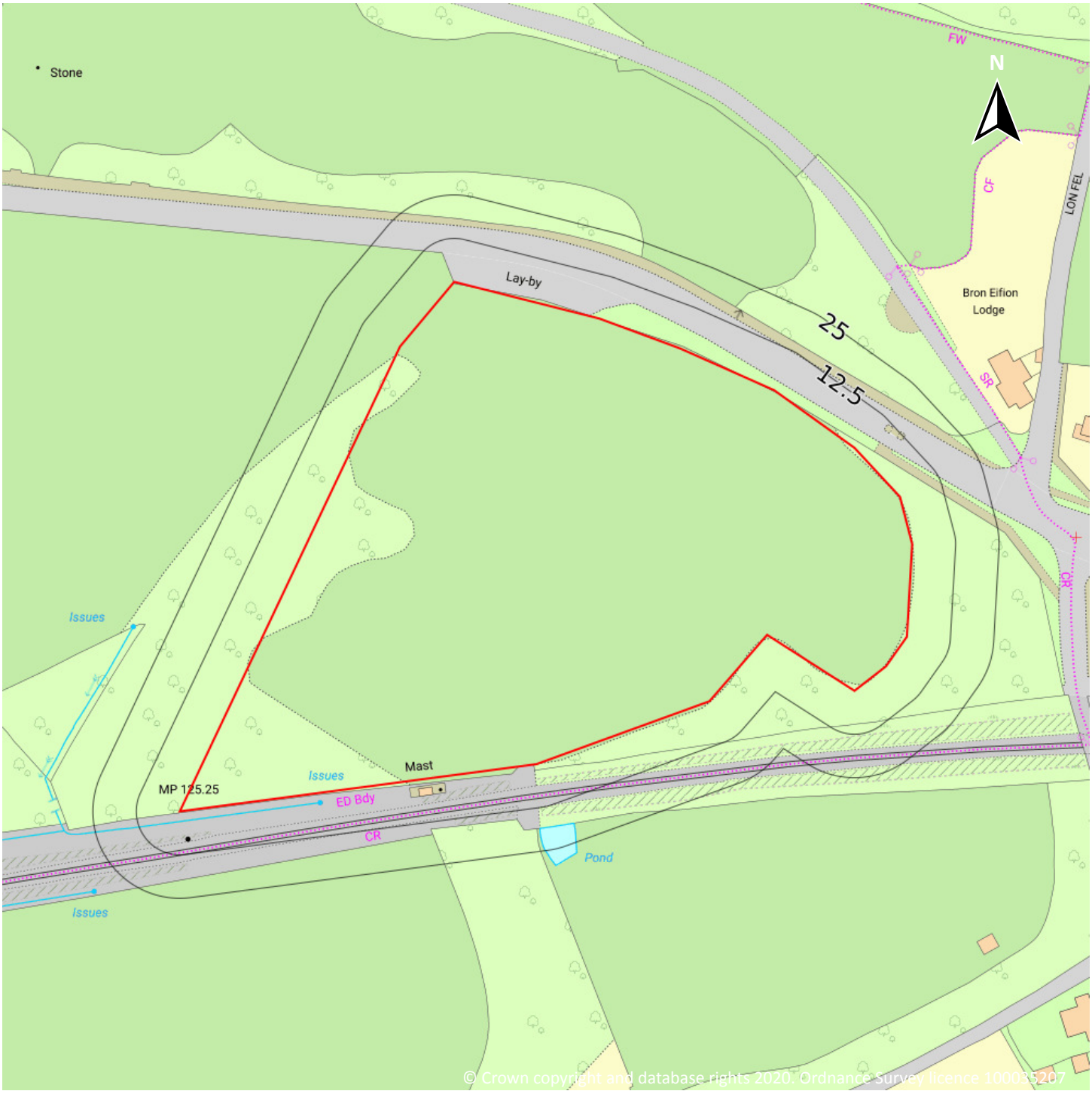
Recent site history - 2000 aerial photograph



Capture Date: 22/07/2000

Site Area: 1.91ha

OS MasterMap site plan



Site Area: 1.91ha

1 Past land use

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical petrol stations

1.1 Historical industrial land uses

Records within 500m	23

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	3m S	Cuttings	1887	225404

ID	Location	Land use	Dates present	Group ID
A	10m S	Cuttings	1920 - 1947	238583
B	11m S	Cuttings	1949	241912
B	15m S	Cuttings	1960 - 1981	227720
B	55m E	Cuttings	1947	227967
B	57m E	Cuttings	1887 - 1920	243299
C	176m E	Railway Sidings	1887 - 1920	231444
C	188m E	Railway Sidings	1949	231535
C	188m E	Railway Sidings	1960	246791
2	196m E	Railway Sidings	1947	242822
C	275m E	Railway Station	1947	238924
C	303m E	Railway Station	1949 - 1960	241898
C	319m E	Railway Station	1887	243434
C	325m E	Railway Station	1981	233076
C	342m E	Railway Station	1920	232372
C	356m E	Unspecified Ground Workings	1887	219485
C	367m E	Railway Land	1947	217810
C	367m E	Railway Sidings	1947	239101
C	405m E	Railway Building	1949 - 1960	249307
4	409m S	Sewage Pipe	1913	222336
C	452m E	Railway Building	1947 - 1949	231295
C	452m E	Railway Building	1960	232624
C	453m E	Railway Building	1887 - 1920	225442

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**4**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or

succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
D	236m E	Unspecified Tank	1990 - 1995	32806
D	239m E	Unspecified Tank	1977	32478
E	263m W	Tanks	1997	31181
E	272m W	Tanks	1997	31182

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**2**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	121m SE	Electricity Substation	1977 - 1995	16714
C	319m E	Electricity Substation	1977 - 1995	16531

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	**1**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
3	242m E	Filling Station	1977 - 1990	571

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical petrol stations

2.1 Historical industrial land uses

Records within 500m	31

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
A	3m S	Cuttings	1887	225404
A	10m S	Cuttings	1947	238583
B	11m S	Cuttings	1949	241912

ID	Location	Land Use	Date	Group ID
A	13m S	Cuttings	1920	238583
B	15m S	Cuttings	1960	227720
B	55m E	Cuttings	1947	227967
B	57m E	Cuttings	1887	243299
B	57m E	Cuttings	1920	243299
B	62m E	Cuttings	1981	227720
D	176m E	Railway Sidings	1920	231444
D	188m E	Railway Sidings	1949	231535
D	188m E	Railway Sidings	1960	246791
1	196m E	Railway Sidings	1947	242822
D	246m E	Railway Sidings	1887	231444
D	275m E	Railway Station	1947	238924
D	303m E	Railway Station	1949	241898
D	304m E	Railway Station	1960	241898
D	319m E	Railway Station	1887	243434
D	325m E	Railway Station	1981	233076
D	342m E	Railway Station	1920	232372
D	356m E	Unspecified Ground Workings	1887	219485
D	367m E	Railway Sidings	1947	239101
D	367m E	Railway Land	1947	217810
D	405m E	Railway Building	1949	249307
D	405m E	Railway Building	1960	249307
2	409m S	Sewage Pipe	1913	222336
D	452m E	Railway Building	1949	231295
D	452m E	Railway Building	1960	232624
D	453m E	Railway Building	1947	231295
D	453m E	Railway Building	1887	225442
D	453m E	Railway Building	1920	225442

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	5

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
E	236m E	Unspecified Tank	1990	32806
E	236m E	Unspecified Tank	1995	32806
E	239m E	Unspecified Tank	1977	32478
G	263m W	Tanks	1997	31181
G	272m W	Tanks	1997	31182

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	5

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
C	121m SE	Electricity Substation	1995	16714
C	121m SE	Electricity Substation	1977	16714
D	319m E	Electricity Substation	1995	16531
D	319m E	Electricity Substation	1990	16531
D	321m E	Electricity Substation	1977	16531

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	2

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
F	242m E	Filling Station	1990	571
F	246m E	Filling Station	1977	571

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	7

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	439m NE	Bryn Awelon Nursing Home, Bryn Awelon Nursing Home, Lon Fel, Cricieth, LL520LN	NRW-WME023054	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Using waste exemption	On a farm	Use of waste in construction
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Disposing of waste exemption	On a farm	Burning waste in the open
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Using waste exemption	On a farm	Use of waste for a specified purpose
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	483m NW	Gweithdy, Bron Elfion farm, Cricieth, Gwynedd, LL520SA	NRW-WME013358	Storing waste exemption	On a farm	Storage of waste in a secure place

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use

Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Mast**	**Gwynedd, LL52**	**Telecommunications Features**	**Infrastructure and Facilities**
2	130m SE	Electricity Sub Station	Gwynedd, LL52	Electrical Features	Infrastructure and Facilities
A	238m E	Tank	Gwynedd, LL52	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Company	Address	LPG	Status
A	261m E	GULF	High Street, Criccieth, Gwynedd, LL52 0RN	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	13

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Address	Details	
3	391m SE	Criccieth West Ps, Criccieth, LL52 0EN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0341401 Permit Version: 0 Receiving Water: TREMADOG BAY	Status: Effective Issue date: 26/10/2017 Effective Date: 26/10/2017 Revocation Date: -
4	391m NW	BRON EIFION HOTEL, CRICCIETH, GWYNEDD	Effluent Type: UNSPECIFIED Permit Number: CG0130501 Permit Version: 1 Receiving Water: UN-NAMED DITCH	Status: REVOKED - UNSPECIFIED Issue date: 16/10/1986 Effective Date: 16/10/1986 Revocation Date: 17/10/1994
5	397m W	Bron Eifion Hotel, Criccieth, Gwynedd	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CG0130501 Permit Version: 0 Receiving Water: UN-NAMED DITCH	Status: Effective Issue date: 18/10/1994 Effective Date: 18/10/1994 Revocation Date: -
C	456m SW	Stp Serving Cefn Castell, Cefn Castell, Criccieth, Gwynedd, Wales, LL52 0SA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: ZP3222XE Permit Version: 0 Receiving Water: Onto beach at base of cliff	Status: Effective Issue date: 06/02/2013 Effective Date: 02/06/2013 Revocation Date: -
C	456m SW	STP SERVING CEFN CASTELL, CEFN CASTELL, CRICCIETH, GWYNEDD, WALES, LL52 0SA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRZP3222XE Permit Version: 1 Receiving Water: ONTO LAND	Status: NEW ISSUED UNDER EPR 2010 Issue date: 06/02/2013 Effective Date: 06/02/2013 Revocation Date: -

ID	Location	Address	Details	
C	456m SW	STP SERVING CEFN CASTELL, CEFN CASTELL, CRICCIETH, GWYNEDD, WALES, LL52 0SA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRZP3222XE Permit Version: 1 Receiving Water: ONTO LAND	Status: NEW ISSUED UNDER EPR 2010 Issue date: 06/02/2013 Effective Date: 06/02/2013 Revocation Date: -
E	484m S	Criccieth West Ps, Criccieth, LL52 0EN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0341401 Permit Version: 0 Receiving Water: TREMADOG BAY	Status: Effective Issue date: 26/10/2017 Effective Date: 26/10/2017 Revocation Date: -
E	484m S	Criccieth West Ps,	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0341402 Permit Version: 0 Receiving Water: TREMADOG BAY	Status: Effective Issue date: 26/05/1994 Effective Date: 31/12/1995 Revocation Date: -
E	484m S	CRICCIETH WEST PS,	Effluent Type: SEWERAGE SYSTEM DISCHARGE Permit Number: CG0144601 Permit Version: 1 Receiving Water: COASTAL WATERS	Status: REVOKED - UNSPECIFIED Issue date: 29/09/1987 Effective Date: 29/09/1987 Revocation Date: 22/02/1993
E	484m S	CRICCIETH WEST PS,	Effluent Type: UNSPECIFIED Permit Number: CG0144601 Permit Version: 2 Receiving Water: COASTAL WATERS	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 23/11/1992 Effective Date: 23/02/1993 Revocation Date: 31/12/1995
E	484m S	CRICCIETH WEST PS,	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CG0341401 Permit Version: 1 Receiving Water: TREMADOG BAY	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 26/05/1994 Effective Date: 31/12/1995 Revocation Date: -
E	484m S	CRICCIETH WEST PS,	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CG0341401 Permit Version: 1 Receiving Water: TREMADOG BAY	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 26/05/1994 Effective Date: 31/12/1995 Revocation Date: -
E	484m S	CRICCIETH WEST PS,	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0341402 Permit Version: 1 Receiving Water: TREMADOG BAY	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 26/05/1994 Effective Date: 31/12/1995 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	6

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Details	
B	400m SE	Incident Date: 17/04/2014 Incident Identification: 1228302 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water	Water Impact: - Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	421m W	Incident Date: 11/09/2001 Incident Identification: 31331 Pollutant: Sewage Materials Pollutant Description: Final Effluent	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	448m SE	Incident Date: 04/10/2002 Incident Identification: 112630 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	464m SE	Incident Date: 12/05/2003 Incident Identification: 157825 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	498m SE	Incident Date: 22/04/2016 Incident Identification: 1601950 Pollutant: Sewage Material Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: No Details
D	498m SE	Incident Date: 22/04/2016 Incident Identification: 1601950 Pollutant: - Pollutant Description: -	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: No Details

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer

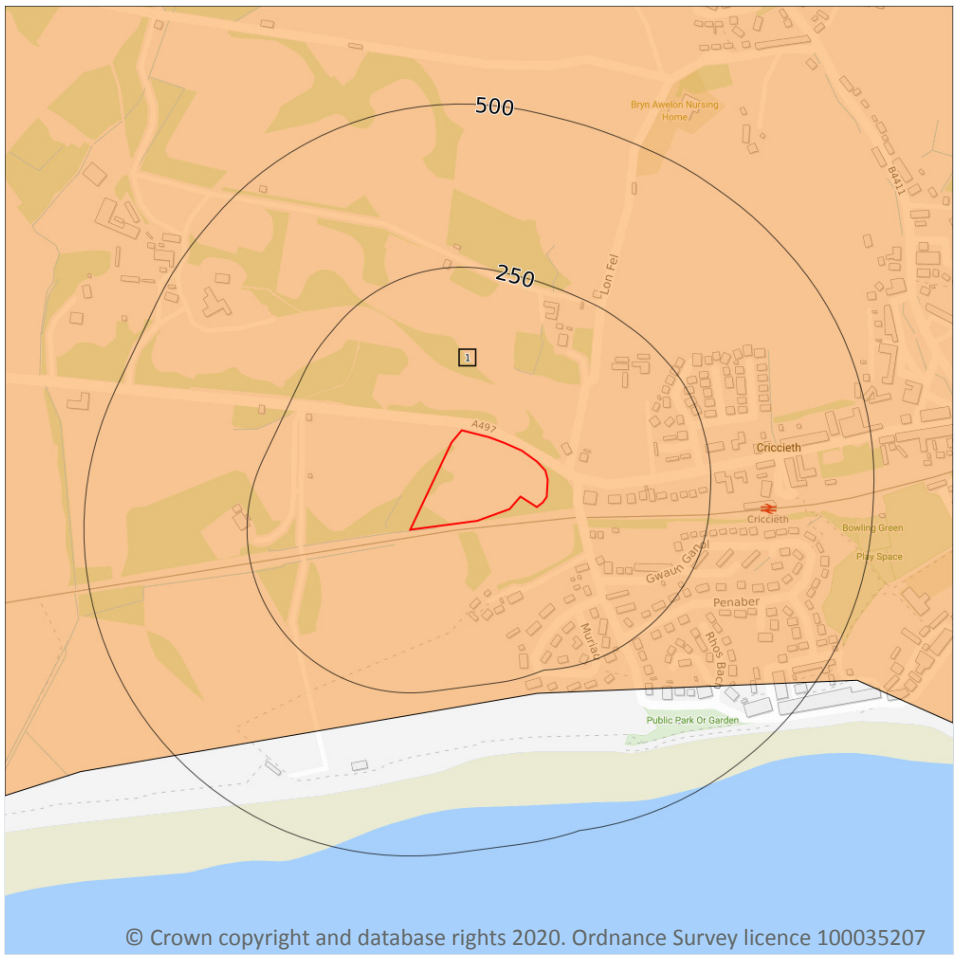
5.1 Superficial aquifer

Records within 500m	0

Aquifer status of groundwater held within superficial geology.

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	1

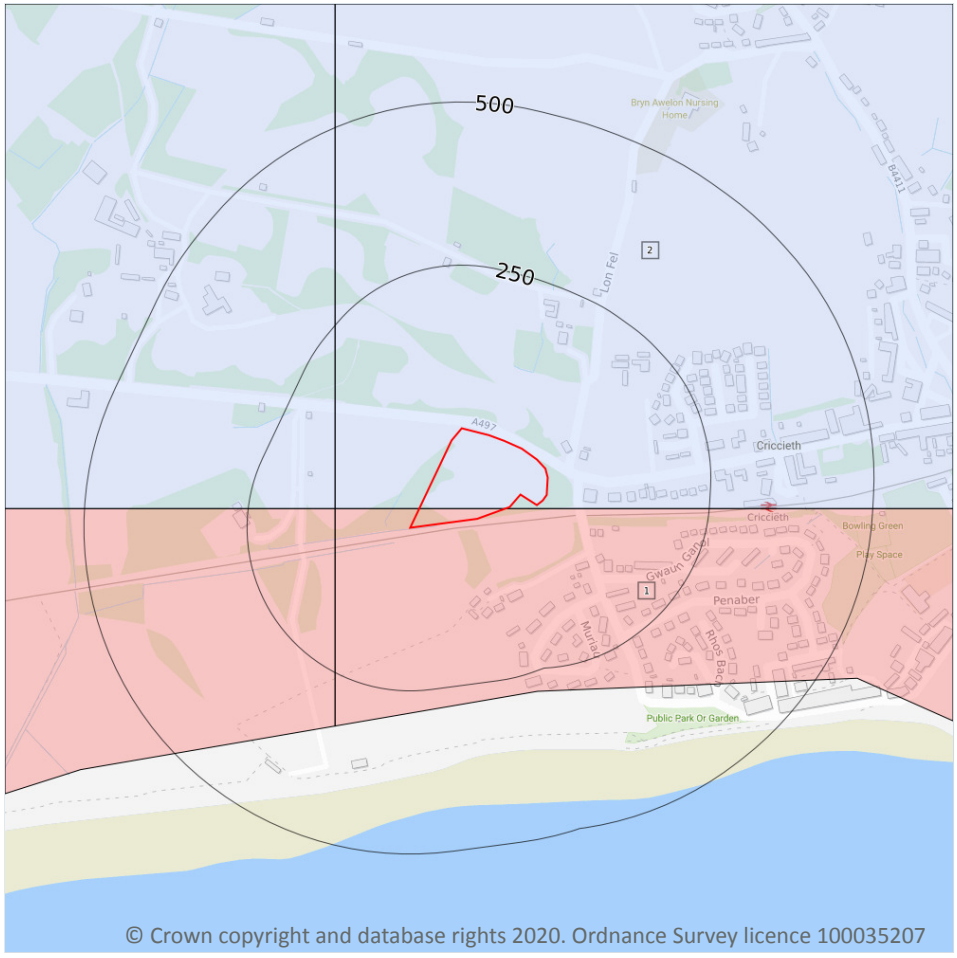
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 34**

ID	Location	Designation	Description
1	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 35**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: >10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

5.6 Groundwater abstractions

Records within 2000m	0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**19**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 39**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	2m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	33m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	33m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	33m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
1	107m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
D	110m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	166m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	168m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	171m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	172m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
2	187m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	189m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
E	197m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	197m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
E	198m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	199m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	199m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	242m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	245m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**11**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 39**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 39**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**Coastal catchment**	**Not part of a river WB catchment**	**417**	**Dwyfor**	**Llyn and Eryri**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**0**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site.

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 39**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Llyn and Eryri**	**GB41002G204600**	**Poor**	**Poor**	**Good**	**2016**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding

Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 1000 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 100 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 46**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

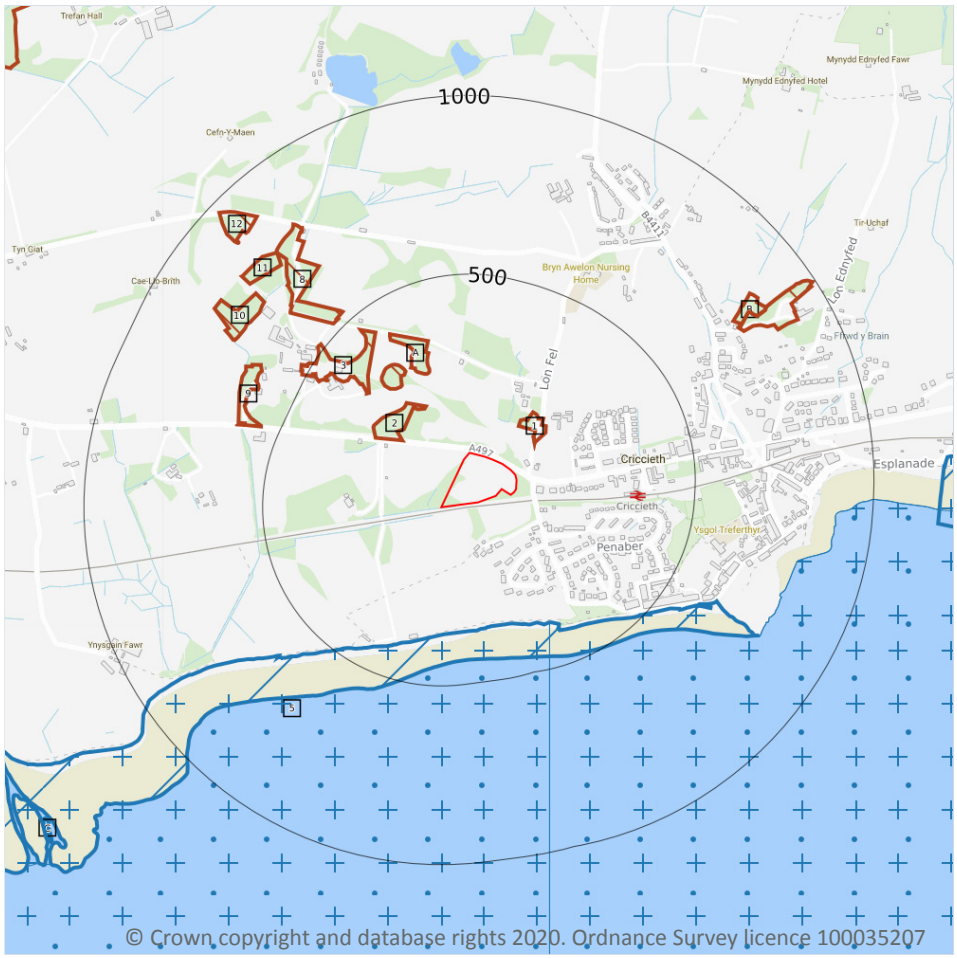
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 48**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

Special Protection Areas (SPA)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	**6**

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 49**

ID	Location	Name	Data source
5	348m S	Glanllynnau A Glannau Pen-Ychain I Gricieth	Natural Resources Wales

ID	Location	Name	Data source
13	1185m E	Tiroedd A Glannau Rhwng Cricieth Ac Afon Glaslyn	Natural Resources Wales
C	1408m SW	Glanllynnau A Glannau Pen-Ychain I Gricieth	Natural Resources Wales
C	1416m SW	Glanllynnau A Glannau Pen-Ychain I Gricieth	Natural Resources Wales
16	1432m SW	Glanllynnau A Glannau Pen-Ychain I Gricieth	Natural Resources Wales
-	1663m E	Rhiw-For-Fawr	Natural Resources Wales

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**2**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 49**

ID	Location	Name	Features of interest	Habitat description	Data source
4	348m S	Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Lagoons; Shallow inlets and bays; Reefs; Glasswort and other annuals colonising mud and sand; Cord-grass swards; Atlantic salt meadows; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Bottlenose dolphin; Harbour porpoise; Otter; Grey seal.	Coastal sand dunes, Sand beaches, Machair; Marine areas, Sea inlets; Bogs, Marshes, Water fringed vegetation, Fens; Shingle, Sea cliffs, Islets; Salt marshes, Salt pastures, Salt steppes; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	Natural Resources Wales

ID	Location	Name	Features of interest	Habitat description	Data source
6	373m S	Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Lagoons; Shallow inlets and bays; Reefs; Glasswort and other annuals colonising mud and sand; Cord-grass swards; Atlantic salt meadows; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Bottlenose dolphin; Harbour porpoise; Otter; Grey seal.	Coastal sand dunes, Sand beaches, Machair; Marine areas, Sea inlets; Bogs, Marshes, Water fringed vegetation, Fens; Shingle, Sea cliffs, Islets; Salt marshes, Salt pastures, Salt steppes; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	Natural Resources Wales

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	**2**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

Features are displayed on the Environmental designations map on **page 49**

ID	Location	Name	Species of interest	Habitat description	Data source
7	433m S	Northern Cardigan Bay / Gogledd Bae Ceredigion	Red-throated diver	Marine areas, Sea inlets	
-	1418m E	Northern Cardigan Bay / Gogledd Bae Ceredigion	Red-throated diver	Marine areas, Sea inlets	

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	26

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 49**

ID	Location	Name	Woodland Type
1	100m NE	Unknown	Restored Ancient Woodland Site
2	176m NW	Unknown	Restored Ancient Woodland Site
A	251m NW	Unknown	Restored Ancient Woodland Site
A	267m NW	Unknown	Restored Ancient Woodland Site
3	324m NW	Unknown	Restored Ancient Woodland Site
8	525m NW	Unknown	Restored Ancient Woodland Site
9	553m NW	Unknown	Restored Ancient Woodland Site
10	704m NW	Unknown	Plantation on Ancient Woodland Site
11	744m NW	Unknown	Plantation on Ancient Woodland Site
B	746m NE	Unknown	Restored Ancient Woodland Site
B	750m NE	Unknown	Ancient Semi Natural Woodland
12	874m NW	Unknown	Restored Ancient Woodland Site
-	1320m W	Unknown	Restored Ancient Woodland Site
17	1531m NW	Unknown	Ancient Semi Natural Woodland
-	1546m NW	Unknown	Restored Ancient Woodland Site
-	1570m NW	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
-	1593m NW	Unknown	Ancient Semi Natural Woodland
-	1691m N	Unknown	Restored Ancient Woodland Site
-	1731m W	Unknown	Ancient Semi Natural Woodland
-	1765m NW	Unknown	Ancient Semi Natural Woodland
-	1793m NW	Unknown	Ancient Semi Natural Woodland
-	1849m N	Unknown	Restored Ancient Woodland Site
-	1871m NW	Unknown	Restored Ancient Woodland Site
-	1904m W	Unknown	Ancient Semi Natural Woodland
-	1920m N	Unknown	Ancient Semi Natural Woodland
-	1927m N	Unknown	Ancient Semi Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	1

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 57**

ID	Location	Name	Grade	Reference Number	Listed date
1	202m NE	Former Haybarn At Parciau Mawr, West Of The Parciau Mawr Hotel, And Close To Lon Fel	II	15372	12/12/1994

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

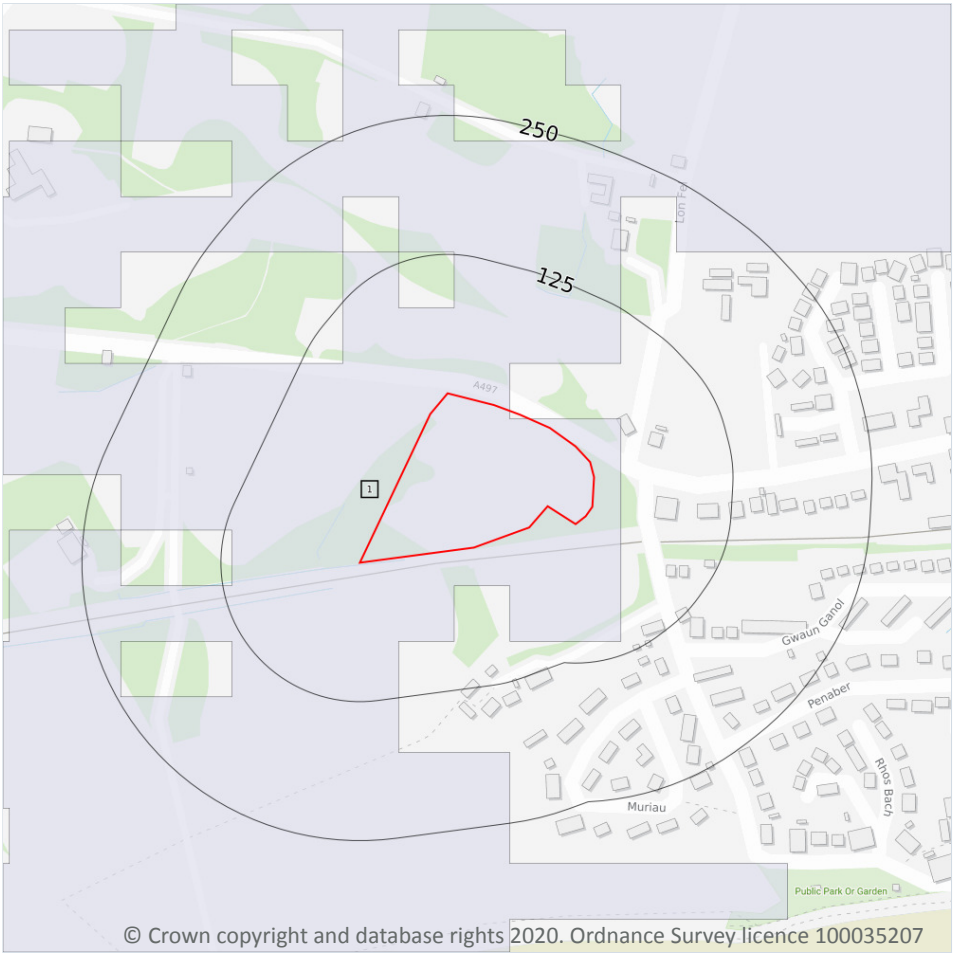
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 60**

ID	Location	Classification	Description
1	**On site**	**Grade 3b**	**Moderate quality agricultural land**

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability

Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 63**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**No coverage**	**No coverage**	**No coverage**	**NoCov**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

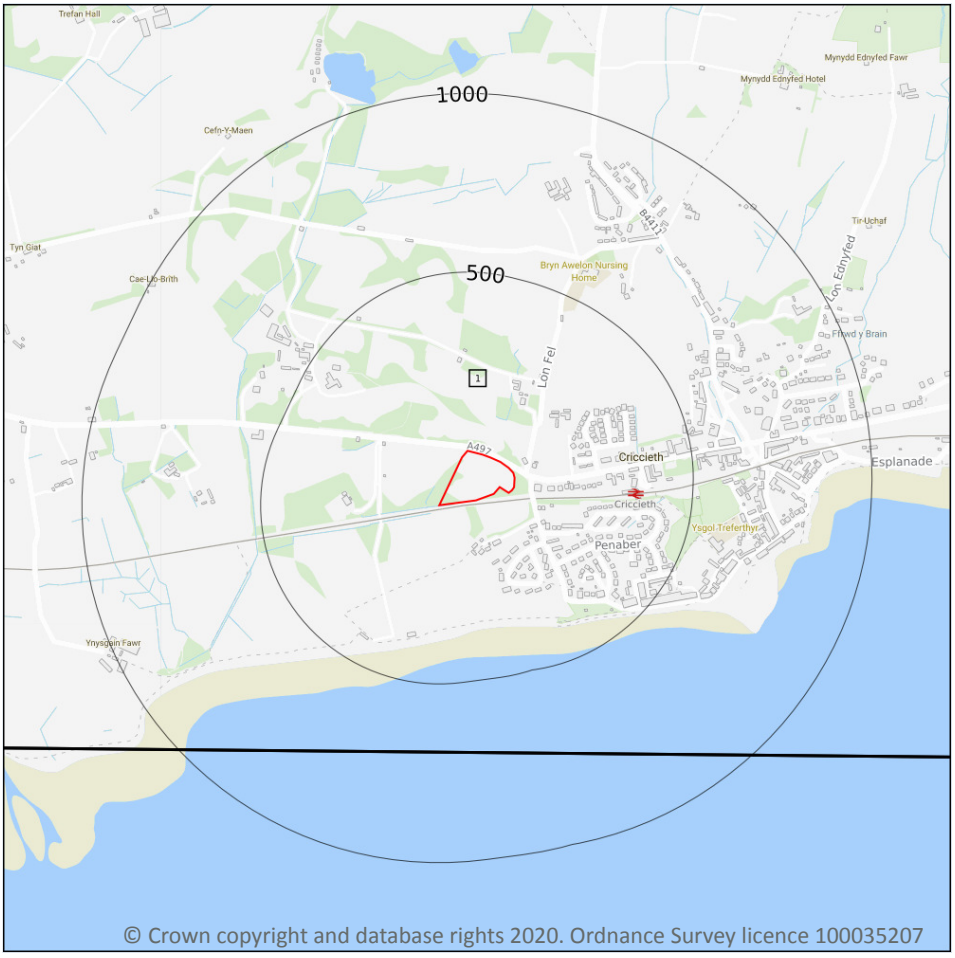
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 67**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW118_nevyn**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

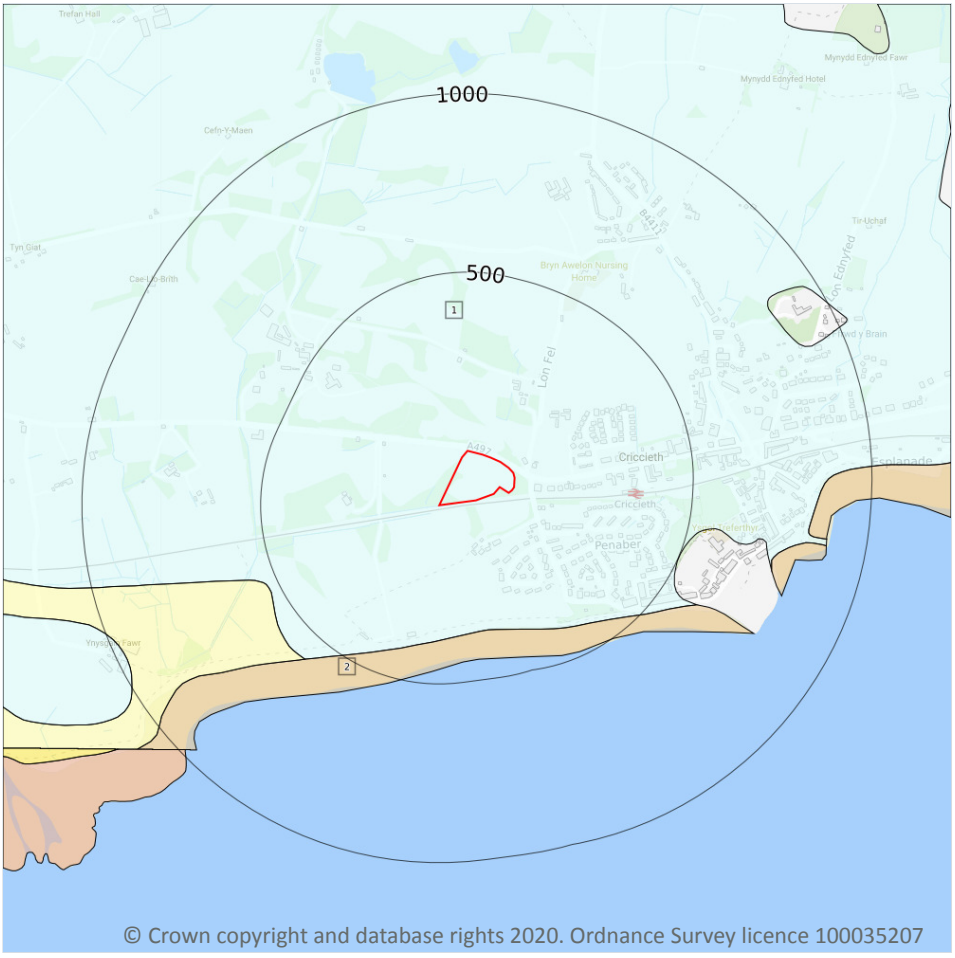
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **2**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 69**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	364m S	BCHD-XSV	BEACH DEPOSITS	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

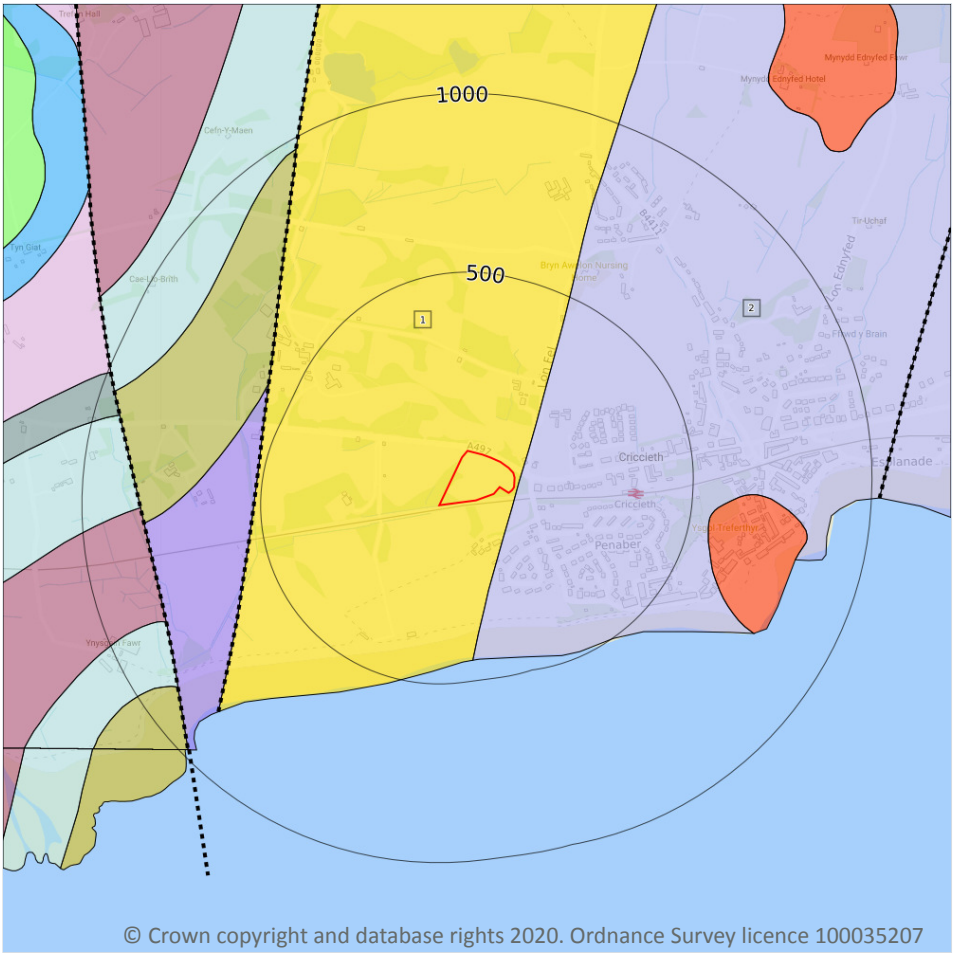
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **2**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 71**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PT-FTUFF**	**PITTS HEAD TUFF FORMATION - TUFF, FELSIC**	**-**
2	10m E	NFR-SLST	NANT FFRANCON SUBGROUP - SILTSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Low**
10m NE	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	5

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

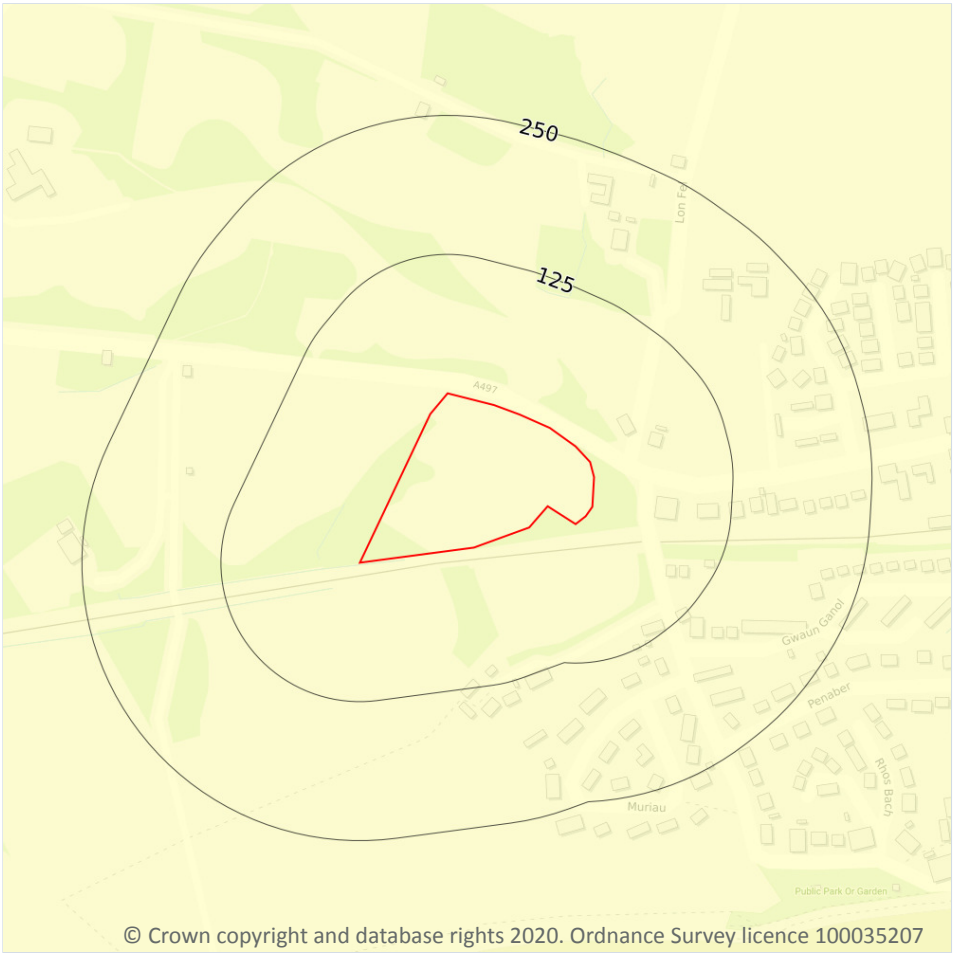
Features are displayed on the Boreholes map on **page 73**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	179m NW	248950 338040	CRICCIETH SEW DIS SCH TP107	-	Y	N/A
2	205m W	248910 337960	CRICCIETH SEW DIS SCH TP114	-	Y	N/A
3	225m SW	248940 337830	CRICCIETH SEW DIS SCH TP116	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	231m NW	248940 338140	CRICCIETH SEW DIS SCH TP106	-	Y	N/A
5	239m S	249190 337740	CRICCIETH SEW DIS SCH TP118	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	**1**

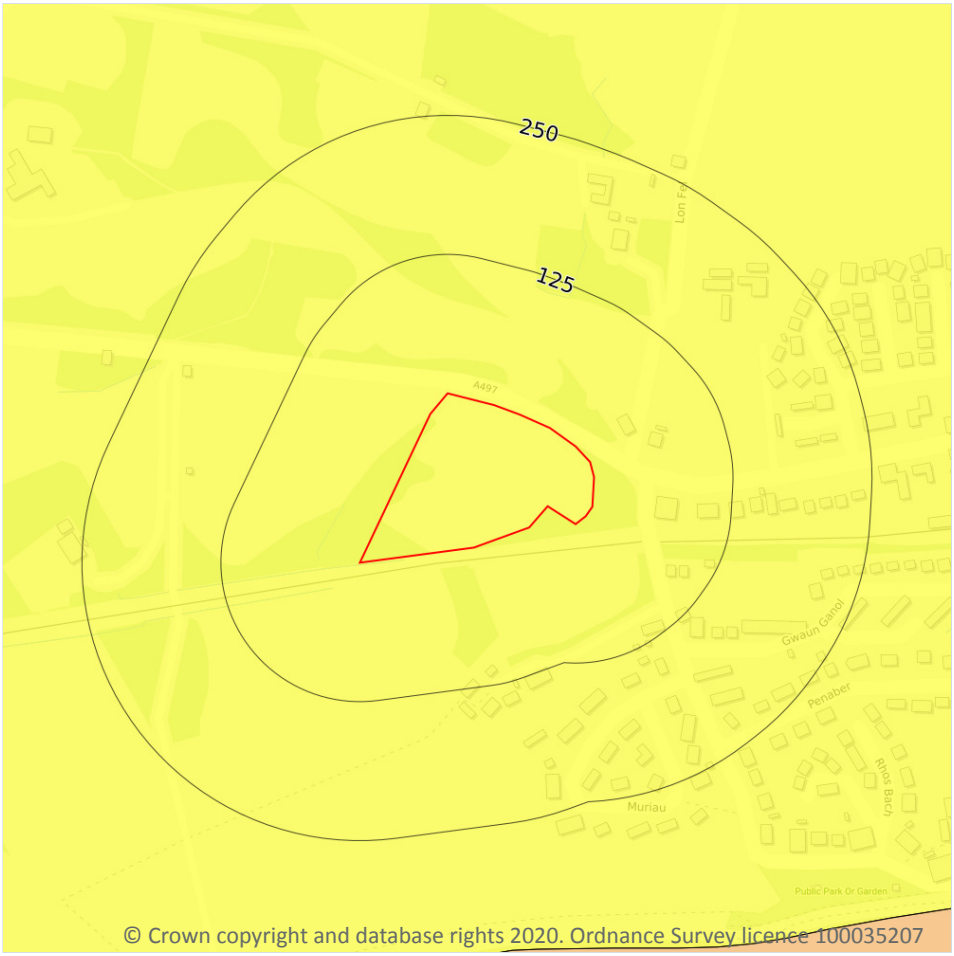
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 75**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

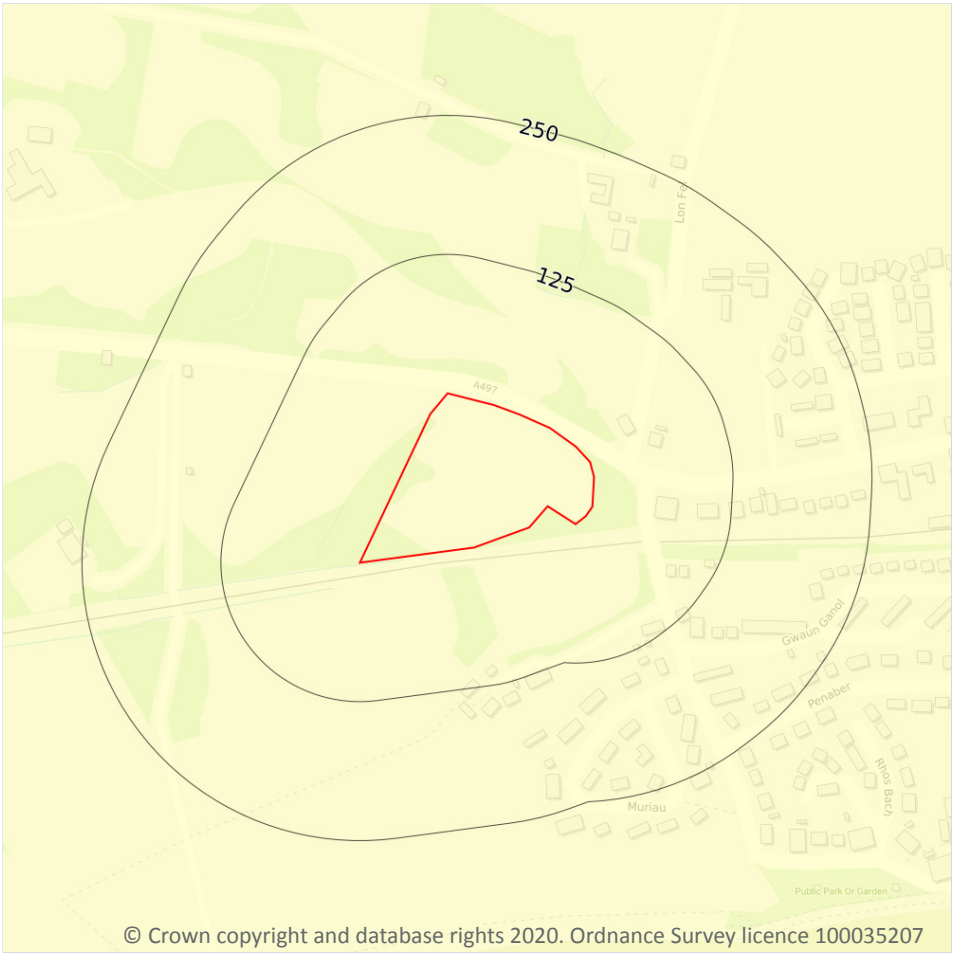
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 76**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

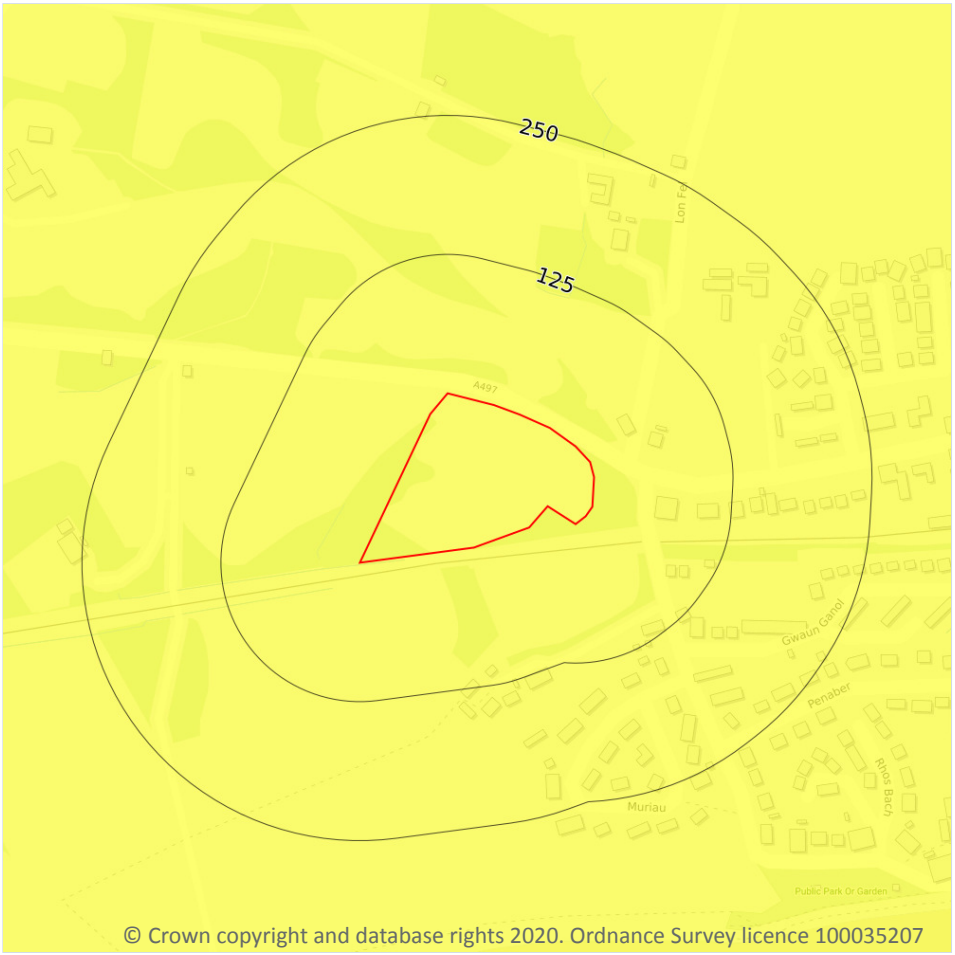
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 77**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

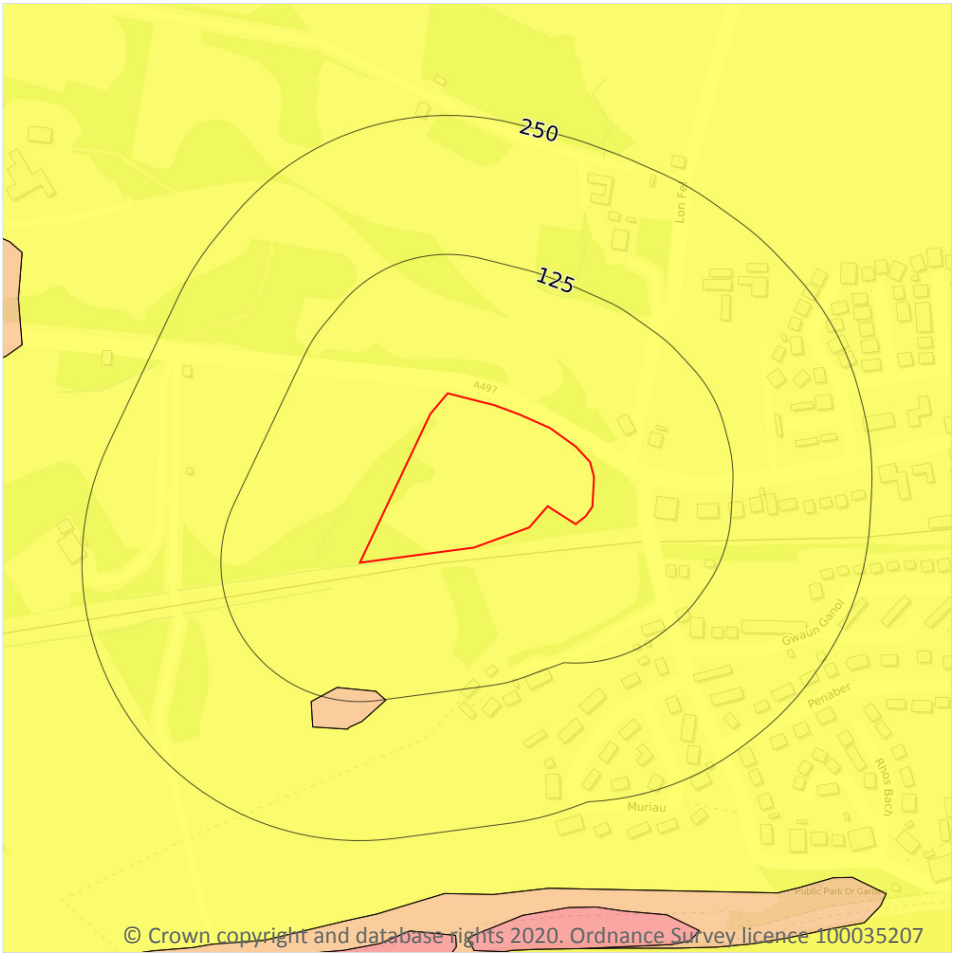
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 78**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

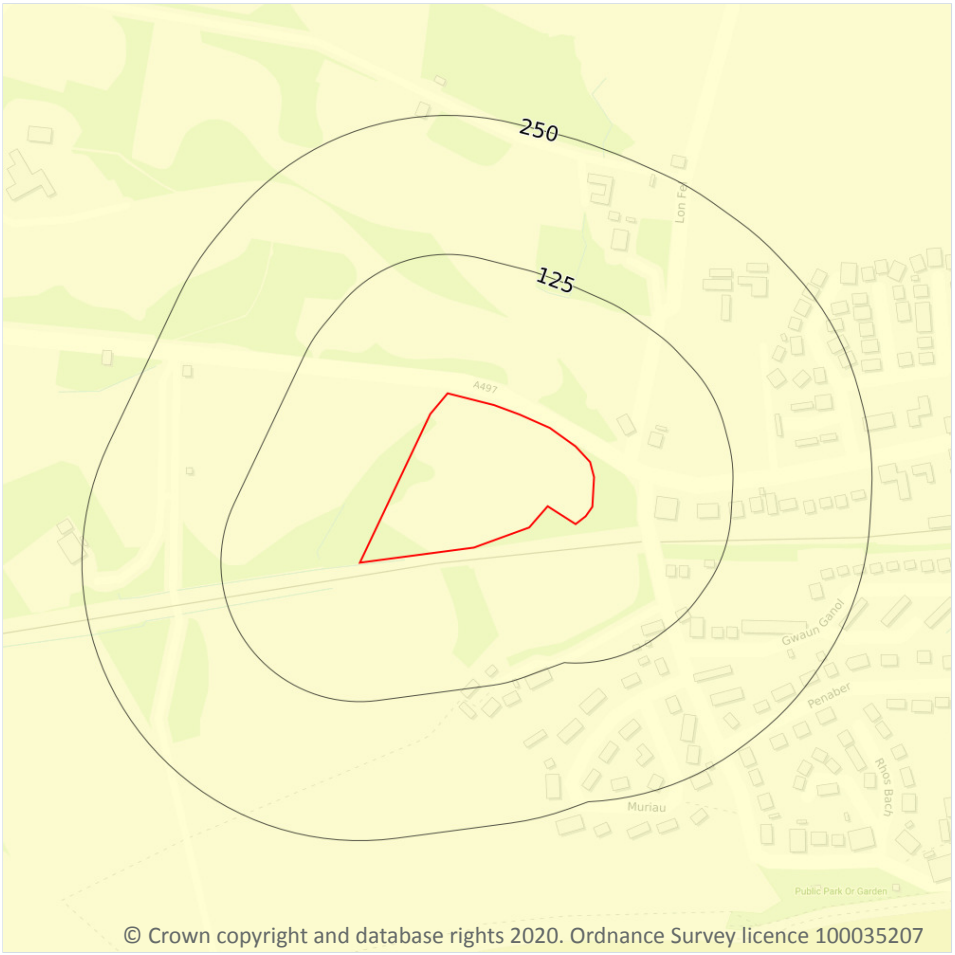
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 79**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 80**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities

Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	9

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 81**

ID	Location	Land Use	Year of mapping	Mapping scale
A	3m S	Cuttings	1887	1:10560
A	10m S	Cuttings	1947	1:10560
B	11m S	Cuttings	1949	1:10560
A	13m S	Cuttings	1920	1:10560
B	15m S	Cuttings	1960	1:10560
B	55m E	Cuttings	1947	1:10560
B	57m E	Cuttings	1887	1:10560
B	57m E	Cuttings	1920	1:10560
B	62m E	Cuttings	1981	1:10000

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	2

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 81**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Vein Mineral**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
-	674m E	Not available	Vein Mineral	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

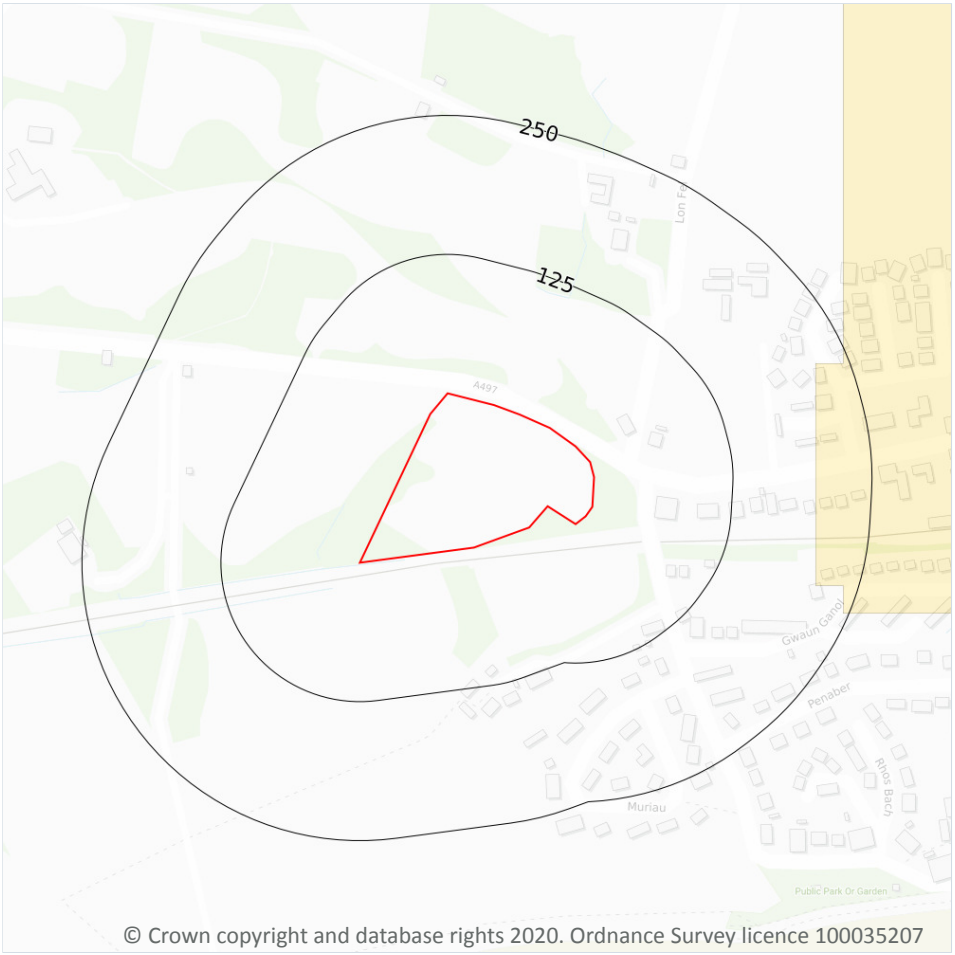
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



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Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 86**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**20 - 40 mg/kg**	**15 mg/kg**

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	6

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 88**

Location	Land Use	Year of mapping	Mapping scale
176m E	Railway Sidings	1920	10560
188m E	Railway Sidings	1949	10560
188m E	Railway Sidings	1960	10560
196m E	Railway Sidings	1947	10560
213m E	Railway Sidings	1916	2500
246m E	Railway Sidings	1887	10560

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	6

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 88**

Location	Name	Type
4m S	Cambrian Line	rail
10m S	Not given	Single Track
10m S	Not given	Single Track
12m S	Not given	Single Track
69m SE	Not given	Single Track
244m E	Not given	Single Track

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Appendix 3 - Trial Pit Records

TRIAL PIT RECORD

						Trial Pit No:	**TP1**	
Site : A497 School Site, Criccieth, LL52 0RR						Ref: E1125		
Excavator : Mini 5T Excavator						Date: 03.06.20		
Pit size : 1.30 x 0.60m			Depth : 1.30m			Elev (m aOD):		
						SAMPLE RECORD		
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number
TP1	0.00	0.25	0.25	Light brown slightly gravely silty TOPSOIL				
	0.25	1.30+	1.00+	Firm to stiff to stiff light brown very gravely sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Low cobble content. (shear vane can not penetrate)	0.5	D	0.40	
					1.0			
		1.30			1.5			
					2.0			
				Base of pit at 1.30m	2.5			

Remarks

Sidewalls :	Stable
Groundwater :	None
In-situ testing :	Permeability test
Contaminants :	None observed
Services :	None

e-geo solutions Ltd
Glasgow House, High Street, St.Asaph, LL17 0RD
Tel : 01745 828494 Fax : 01745 828493

TRIAL PIT RECORD

Trial Pit No: **TP2**

Site : A497 School Site, Criccieth, LL52 0RR	Ref: E1125
Excavator : Mini 5T Excavator	Date: 03.06.20
Pit size : 1.30 x 0.60m Depth : 1.90m	Elev (m aOD):

Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	SAMPLE RECORD Type B U D W	Depth (m)	Number
TP2	0.00	0.25	0.25	Light brown slightly gravely silty TOPSOIL				
	0.25	1.20	0.95	Firm to stiff to stiff light brown very gravely sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Low cobble content. (shear vane can not penetrate)	0.5	D	0.40	
					1.0			
	1.20	1.90+	0.70+	Firm to stiff to stiff light brown and greyish brown gravely sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Medium cobble content. Rare boulder to 475mm	1.5	D	1.20	
		1.90			2.0			
				Base of pit at 1.90m	2.5			

Remarks

Sidewalls :	Stable
Groundwater :	None
In-situ testing :	Permeability test
Contaminants :	None observed
Services :	None

e-geo solutions Ltd
Glasgow House, High Street, St.Asaph, LL17 0RD
Tel : 01745 828494 Fax : 01745 828493

TRIAL PIT RECORD

Trial Pit No: **TP3**

Site : A497 School Site, Criccieth, LL52 0RR | Ref: E1125

Excavator : Mini 5T Excavator | Date: 03.06.20

Pit size : 1.40 x 0.75m | Depth : 1.35m | Elev (m aOD):

Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	SAMPLE RECORD Type B U D W	Depth (m)	Number
TP3	0.00	0.25	0.25	Light brown slightly gravely silty TOPSOIL		D	0.20	
	0.25	1.20	0.95	Firm to stiff light brown and light orangish brown gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies. Low cobble content. Some boulders to 800mm	0.5	D	0.40	
					1.0			
	1.20	1.35+	0.15	Firm to stiff to stiff light brown very gravely sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Low cobble content.	1.5			
				Very difficult excavation from 1.35	2.0			
				Base of pit at 1.35m	2.5			

Remarks

Sidewalls :	Some collapse of pit sides
Groundwater :	None
In-situ testing :	Permeability test
Contaminants :	None observed
Services :	None

e-geo solutions Ltd
Glasgow House, High Street, St.Asaph, LL17 0RD
Tel : 01745 828494 Fax : 01745 828493

TRIAL PIT RECORD

Trial Pit No: **TP4**

Site : A497 School Site, Criccieth, LL52 0RR | Ref: E1125

Excavator : Mini 5T Excavator | Date: 03.06.20

Pit size : 1.30 x 0.60m | Depth : 1.70m | Elev (m aOD):

Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	SAMPLE RECORD Type B U D W	Depth (m)	Number
TP4	0.00	0.25	0.25	Light brown slightly gravely silty TOPSOIL some roots to 10mm				
	0.25	1.00	0.75	Firm to stiff to stiff light brown very gravely sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Low cobble content.	0.5			
					1.0			
	1.00	1.70+	0.70+	Stiff light grey and greyish brown gravely sandy silty CLAY. Gravel is fine to coarse subnagular of various lithologies. Low cobble content	1.5			
		1.70			2.0			
				Base of pit at 1.90m	2.5			

Remarks

Sidewalls : Stable
Groundwater : None
In-situ testing : Permeability test
Contaminants : None observed
Services : None

e-geo solutions Ltd
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Tel : 01745 828494 Fax : 01745 828493

Appendix 4 - WS Borehole Records and DCP Report

E-GEO SOLUTIONS LTD, GLASGOW HOUSE, HIGH STREET, ST. ASAPH, LL17 0RD
Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR	BOREHOLE No:
PROJECT: LAND ON A497 AT BRON EIFION, CRICCIETH - GGI	**WS1**
CLIENT: GWYNEDD COUNTY COUNCIL	Sheet 1 of 1
Dates : 03/06/2020	Project Ref: E1125
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)
0.00 - 0.20		SPT N=0		Light brown silty TOPSOIL		
0.20 - 0.50		SPT N=11	0.25	Firm to stiff light brown to light orangish brown very gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies		
0.50 - 0.80		SPT N=14				0.7 seepage
0.80 - 1.10		SPT N24				
1.10 - 1.40		SPT N=18	1.20	Firm becoming soft to firm light grey and light greyish brown very gravely silty CLAY. Gravel is fine to coarse subangular siltstone		
1.40 - 1.70		SPT N=15				
1.70 - 2.00		SPT N=10				1.8 seepage
2.00 - 2.30		SPT N=12				
2.30 - 2.60		SPT N=15				
2.60 - 2.90		SPT N=13				
2.90 - 3.20		SPT N=15				
3.20 - 3.40		SPT N=R	3.40	DCP borehole refused at 3.40m		

Remarks
DCP with SPTs carried out to 3.4m (refused) adjacent to window sample borehole.

E-GEO SOLUTIONS LTD, GLASGOW HOUSE, HIGH STREET, ST. ASAPH, LL17 0RD
Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR	BOREHOLE No:
PROJECT: LAND ON A497 AT BRON EIFION, CRICCIETH - GGI	**WS2**
CLIENT: GWYNEDD COUNTY COUNCIL	Sheet 1 of 1
Dates : 03/06/2020	Project Ref: E1125
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)
0.00 - 0.20		SPT N=0		Light brown silty TOPSOIL		
0.20 - 0.50		SPT N=9	0.25	Soft to firm light brown to light orangish brown very gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies		
0.50 - 0.80		SPT N=4				
0.80 - 1.10		SPT N=4				
1.10 - 1.40		SPT N=6				
1.40 - 1.70		SPT N=11	1.50	Firm becoming soft to firm light grey and light greyish brown very gravely silty CLAY. Gravel is fine to coarse subangular siltstone		
1.70 - 2.00		SPT N=17				
2.00 - 2.30		SPT N=20		WS borehole refused at 2.00m		
2.30 - 2.60		SPT N=23				
2.60 - 2.90		SPT N=28				
2.90 - 3.20		SPT N=32				
3.20 - 3.40		SPT N=17				
3.50 - 3.80		SPT N=28				
3.80 - 4.00		SPT N=27				
4.00 - 4.30		SPT N=30				
4.30 - 4.60		SPT N=51		DCP borehole refused at 4.80m		
4.60 - 4.80		SPT N=R	4.80			

Remarks
DCP with SPTs carried out to 4.8m (refused) adjacent to window sample borehole.

E-GEO SOLUTIONS LTD, GLASGOW HOUSE, HIGH STREET, ST. ASAPH, LL17 0RD
Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR	BOREHOLE No:
PROJECT: LAND ON A497 AT BRON EIFION, CRICCIETH - GGI	**WS3**
CLIENT: GWYNEDD COUNTY COUNCIL	Sheet 1 of 1
Dates : 03/06/2020	Project Ref: E1125
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)
0.00 - 0.20		SPT N=0		Light brown silty TOPSOIL		
0.20 - 0.50		SPT N=26	0.25	Stiff light brown to light greyish brown very gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies		
0.50 - 0.80		SPT N=22				
0.80 - 1.10		SPT N=24				
1.10 - 1.40		SPT N=28				
1.40 - 1.70		SPT N=26	1.50	Firm becoming soft to firm light grey and light greyish brown very gravely silty CLAY. Gravel is fine to coarse subangular siltstone		
1.70 - 2.00		SPT N=43				
2.00 - 2.30		SPT N=33				
2.30 - 2.60		SPT N=29				
2.60 - 2.90		SPT N=20				
2.90 - 3.20		SPT N=15				
3.20 - 3.40		SPT N=14				
3.50 - 3.80		SPT N=25				
3.80 - 4.00		SPT N=17				
4.00 - 4.30		SPT N=15				
4.30 - 4.60		SPT N=27				
4.60 - 4.90		SPT N=24				
4.90 - 5.20		SPT N=36				
5.20 - 5.50		SPT N=34				
5.50 - 5.80		SPT N=28				
5.80 - 6.10		SPT N=27				
6.10 - 6.40		SPT N=26				
6.40 - 6.70		SPT N=20				
6.70 - 7.10		SPT N=24				

E-GEO SOLUTIONS LTD, GLASGOW HOUSE, HIGH STREET, ST. ASAPH, LL17 0RD
Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR	BOREHOLE No:
PROJECT: LAND ON A497 AT BRON EIFION, CRICCIETH - GGI	**WS4**
CLIENT: GWYNEDD COUNTY COUNCIL	Sheet 1 of 1
Dates : 03/06/2020	Project Ref: E1125
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)
0.00 - 0.20		SPT N=0		Light brown silty TOPSOIL		
0.20 - 0.50		SPT N=12	0.25	Firm to stiff light brown to light orangish brown very gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies		
0.50 - 0.80		SPT N=13	0.60	Firm becoming soft to firm light grey and light greyish brown very gravely silty CLAY. Gravel is fine to coarse subangular siltstone		
0.80 - 1.10		SPT N=9				
1.10 - 1.40		SPT N=18				
1.40 - 1.70		SPT N=21				
1.70 - 2.00		SPT N=25				
2.00 - 2.30		SPT N=31				
2.30 - 2.60		SPT N=29				
2.60 - 2.90		SPT N=48				
2.90 - 3.20		SPT N=R				
			3.20	DCP borehole refused at 3.20m		

Remarks
DCP with SPTs carried out to 3.2m (refused) adjacent to window sample borehole.

E-GEO SOLUTIONS LTD, GLASGOW HOUSE, HIGH STREET, ST. ASAPH, LL17 0RD
Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND ON A497 AT BRON EIFION, CRICCIETH, GWYNEDD, LL52 0RR	BOREHOLE No:
PROJECT: LAND ON A497 AT BRON EIFION, CRICCIETH - GGI	**WS5**
CLIENT: GWYNEDD COUNTY COUNCIL	Sheet 1 of 1
Dates : 03/06/2020	Project Ref: E1125
Elev (maOD) :	
Casing dia : 100mm	Logged By: HLJ
Engineer : e-geo Solutions Ltd	

Depth (m)	Sample/ Test	Field Record	Depth (m)	Strata Description	Casing Depth(m)	Water Depth(m)
0.00 - 0.20		SPT N=0		Light brown silty TOPSOIL		
0.20 - 0.50		SPT N=11	0.25	Stiff light brown to light greyish brown very gravely sandy silty CLAY. Gravel is fine to coarse subangular of various lithologies		
0.50 - 0.80		SPT N=23				
0.80 - 1.10		SPT N=28				
1.10 - 1.40		SPT N=28	1.00	Firm becoming soft to firm light grey and light greyish brown very gravely silty CLAY. Gravel is fine to coarse subangular siltstone		
1.40 - 1.70		SPT N=28				
1.70 - 2.00		SPT N=29				
2.00 - 2.30		SPT N=23				
2.30 - 2.60		SPT N=18				
2.60 - 2.90		SPT N=26				
2.90 - 3.20		SPT N=21				
3.20 - 3.40		SPT N=34				
3.50 - 3.80		SPT N=66				
3.80 - 4.00		SPT N=34				
4.00 - 4.30		SPT N=22				
4.30 - 4.60		SPT N=26				
4.60 - 4.90		SPT N=29				
4.90 - 5.20		SPT N=38				
5.20 - 5.50		SPT N=39				
5.50 - 5.80		SPT N=50				
5.80 - 6.10		SPT N=R				
				DCP borehole refused at 6.10m		

Remarks
DCP with SPTs carried out to 6.1m (refused) adjacent to window sample borehole.

Dynamic Probe
Test Results

Bron Eifion, Criccieth

FACTUAL REPORT

Prepared for:
E-Geo Solutions,
Windsor House,
26 Mostyn Avenue,
Craig y Don,
Llandudno,
LL30 1YY

Report Reference: FTR 36565

Prepared by: Neil Aindow

ISSUE REF: 01

Issue Date: 15th June 2020

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Gwynedd,
LL57 4LH
☎ - 01248 355 269

FTR 36565

Contents

FTR 36565

1.0 Introduction

Following your instructions five (05) dynamic probe tests were carried out using a Dynamic Probe with Super Heavy hammer (DPSH-B) with 90° cone.

The test was carried out in with BS 1377: Part 9: clause 3.2 & BS EN ISO 22476-2 to determine the Dynamic Probe resistance of the underlying material.

It is assumed that the DPSH-B method has a direct correlation to the SPT.

NOTE: The SPT 'N' values should be used as guidelines only.

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited. These results relate only to the locations tested.

Site Address: Bron Eifion, Criccieth

Date of Test: 03rd June 2020

Weather Conditions: Dry

Tested By: Mr Mark Bullock and Mr Geraallt Jones

This report was prepared by: _____

Mr. Neil Aindow

This report is issued on behalf of Celtest Limited by: _____

(✓) *Mr. Jason Chinery – Operations Manager*

Date of issue: 15th June 2020

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2.0 Location Plan

Not Provided

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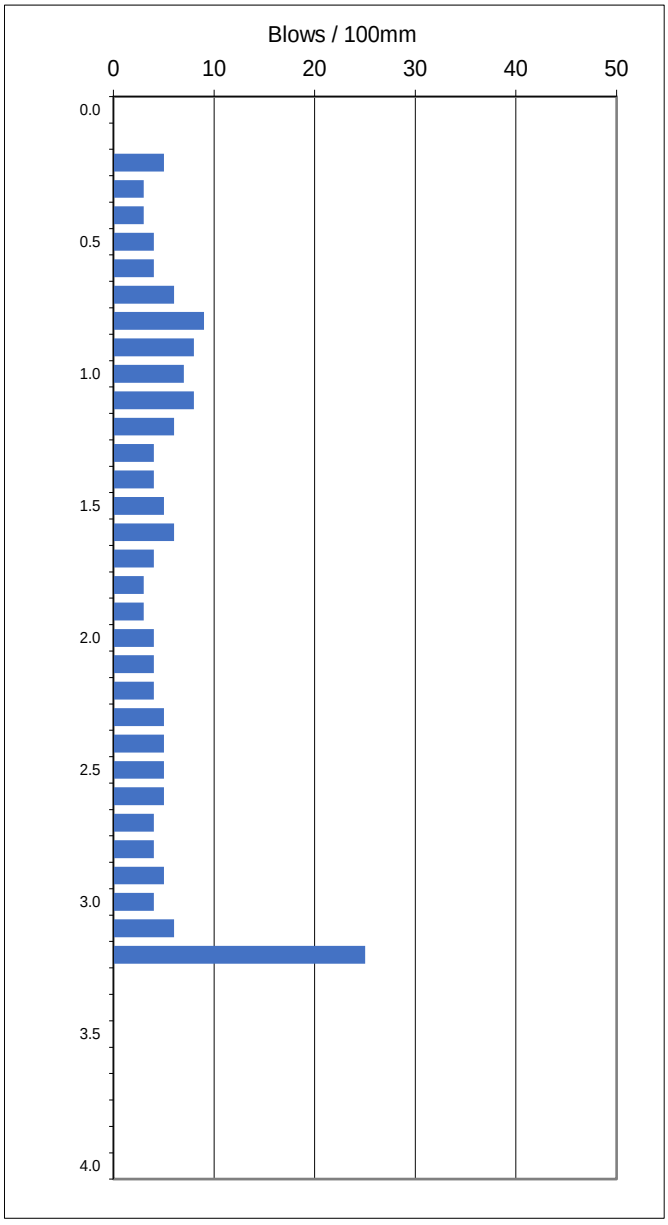
3.0 Test Results

3.1 – Test 1

LOCATION ON SITE :**DPT 1**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**

HOLES BACKFILLED :

Depth (m) From	Depth (m) To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	0.0
0.1	0.2	0	
0.2	0.3	5	11.0
0.3	0.4	3	
0.4	0.5	3	
0.5	0.6	4	14.0
0.6	0.7	4	
0.7	0.8	6	
0.8	0.9	9	24.0
0.9	1.0	8	
1.0	1.1	7	
1.1	1.2	8	18.0
1.2	1.3	6	
1.3	1.4	4	
1.4	1.5	4	15.0
1.5	1.6	5	
1.6	1.7	6	
1.7	1.8	4	10.0
1.8	1.9	3	
1.9	2.0	3	
2.0	2.1	4	12.0
2.1	2.2	4	
2.2	2.3	4	
2.3	2.4	5	15.0
2.4	2.5	5	
2.5	2.6	5	
2.6	2.7	5	13.0
2.7	2.8	4	
2.8	2.9	4	
2.9	3.0	5	15.0
3.0	3.1	4	
3.1	3.2	6	
3.2	3.3	25	25.0
3.3	3.4	end	
3.4	3.5	0	
3.5	3.6	0	0.0
3.6	3.7	0	
3.7	3.8	0	
3.8	3.9	0	0.0
3.9	4.0	0	
4.0	4.1	0	



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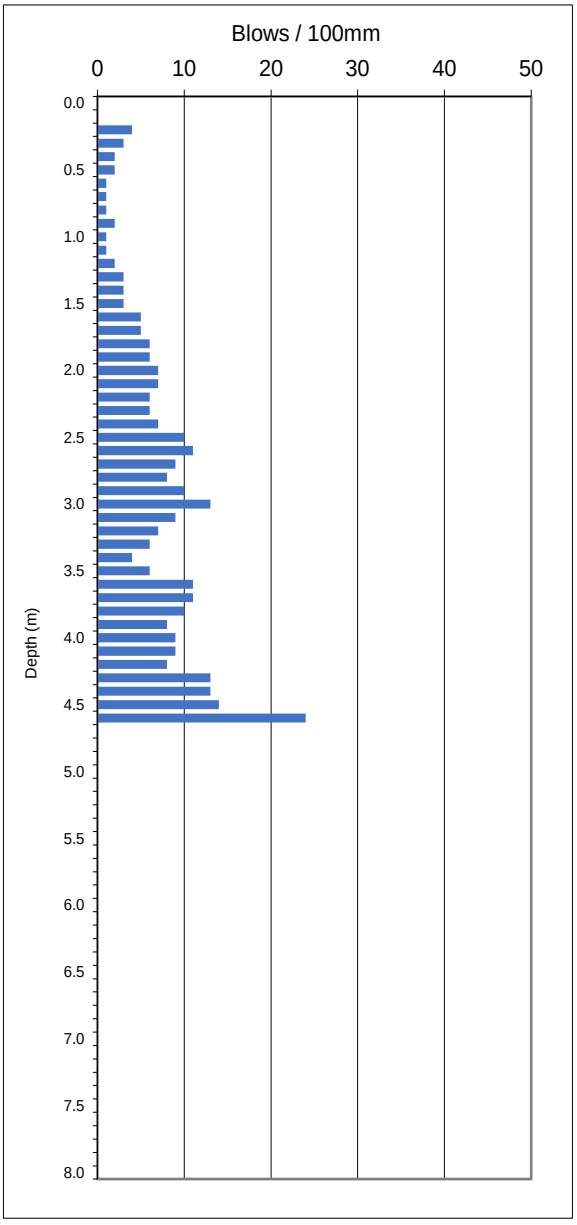
3.0 Test Results

3.2 – Test 2

LOCATION ON SITE : **DPT 2**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **NO**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	4	9.0
0.3	0.4	3	
0.4	0.5	2	
0.5	0.6	2	4.0
0.6	0.7	1	
0.7	0.8	1	
0.8	0.9	1	4.0
0.9	1.0	2	
1.0	1.1	1	
1.1	1.2	1	6.0
1.2	1.3	2	
1.3	1.4	3	
1.4	1.5	3	11.0
1.5	1.6	3	
1.6	1.7	5	
1.7	1.8	5	17.0
1.8	1.9	6	
1.9	2.0	6	
2.0	2.1	7	20.0
2.1	2.2	7	
2.2	2.3	6	
2.3	2.4	6	23.0
2.4	2.5	7	
2.5	2.6	10	
2.6	2.7	11	28.0
2.7	2.8	9	
2.8	2.9	8	
2.9	3.0	10	32.0
3.0	3.1	13	
3.1	3.2	9	
3.2	3.3	7	17.0
3.3	3.4	6	
3.4	3.5	4	
3.5	3.6	6	28.0
3.6	3.7	11	
3.7	3.8	11	
3.8	3.9	10	27.0
3.9	4.0	8	
4.0	4.1	9	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	9	30.0
4.2	4.3	8	
4.3	4.4	13	
4.4	4.5	13	51.0
4.5	4.6	14	
4.6	4.7	24	
4.7	4.8	END	0.0
4.8	4.9	0	
4.9	5.0	0	
5.0	5.1	0	0.0
5.1	5.2	0	
5.2	5.3	0	
5.3	5.4	0	0.0
5.4	5.5	0	
5.5	5.6	0	
5.6	5.7	0	0.0
5.7	5.8	0	
5.8	5.9	0	
5.9	6.0	0	0.0
6.0	6.1	0	
6.1	6.2	0	
6.2	6.3	0	0.0
6.3	6.4	0	
6.4	6.5	0	
6.5	6.6	0	0.0
6.6	6.7	0	
6.7	6.8	0	
6.8	6.9	0	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	



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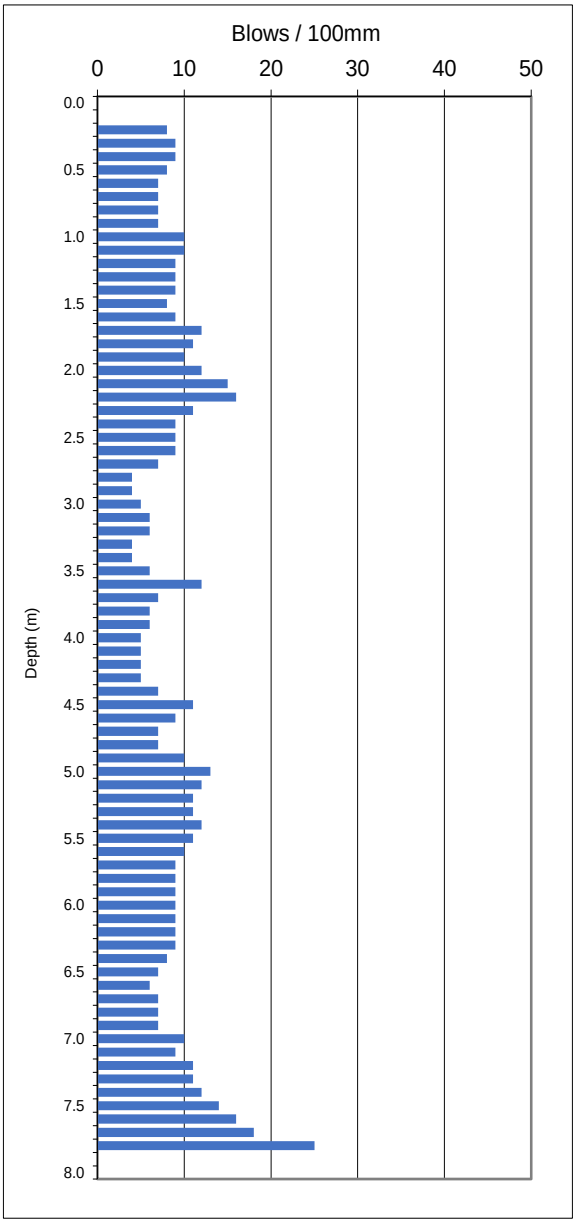
3.0 Test Results

3.2 – Test 3

LOCATION ON SITE : **DPT 3**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **NO**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	8	26.0
0.3	0.4	9	
0.4	0.5	9	
0.5	0.6	8	22.0
0.6	0.7	7	
0.7	0.8	7	
0.8	0.9	7	24.0
0.9	1.0	7	
1.0	1.1	10	
1.1	1.2	10	28.0
1.2	1.3	9	
1.3	1.4	9	
1.4	1.5	9	26.0
1.5	1.6	8	
1.6	1.7	9	
1.7	1.8	12	33.0
1.8	1.9	11	
1.9	2.0	10	
2.0	2.1	12	43.0
2.1	2.2	15	
2.2	2.3	16	
2.3	2.4	11	29.0
2.4	2.5	9	
2.5	2.6	9	
2.6	2.7	9	20.0
2.7	2.8	7	
2.8	2.9	4	
2.9	3.0	4	15.0
3.0	3.1	5	
3.1	3.2	6	
3.2	3.3	6	14.0
3.3	3.4	4	
3.4	3.5	4	
3.5	3.6	6	25.0
3.6	3.7	12	
3.7	3.8	7	
3.8	3.9	6	17.0
3.9	4.0	6	
4.0	4.1	5	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	5	15.0
4.2	4.3	5	
4.3	4.4	5	
4.4	4.5	7	27.0
4.5	4.6	11	
4.6	4.7	9	
4.7	4.8	7	24.0
4.8	4.9	7	
4.9	5.0	10	
5.0	5.1	13	36.0
5.1	5.2	12	
5.2	5.3	11	
5.3	5.4	11	34.0
5.4	5.5	12	
5.5	5.6	11	
5.6	5.7	10	28.0
5.7	5.8	9	
5.8	5.9	9	
5.9	6.0	9	27.0
6.0	6.1	9	
6.1	6.2	9	
6.2	6.3	9	26.0
6.3	6.4	9	
6.4	6.5	8	
6.5	6.6	7	20.0
6.6	6.7	6	
6.7	6.8	7	
6.8	6.9	7	24.0
6.9	7.0	7	
7.0	7.1	10	
7.1	7.2	9	31.0
7.2	7.3	11	
7.3	7.4	11	
7.4	7.5	12	42.0
7.5	7.6	14	
7.6	7.7	16	
7.7	7.8	18	43.0
7.8	7.9	25	
7.9	8.0	END	



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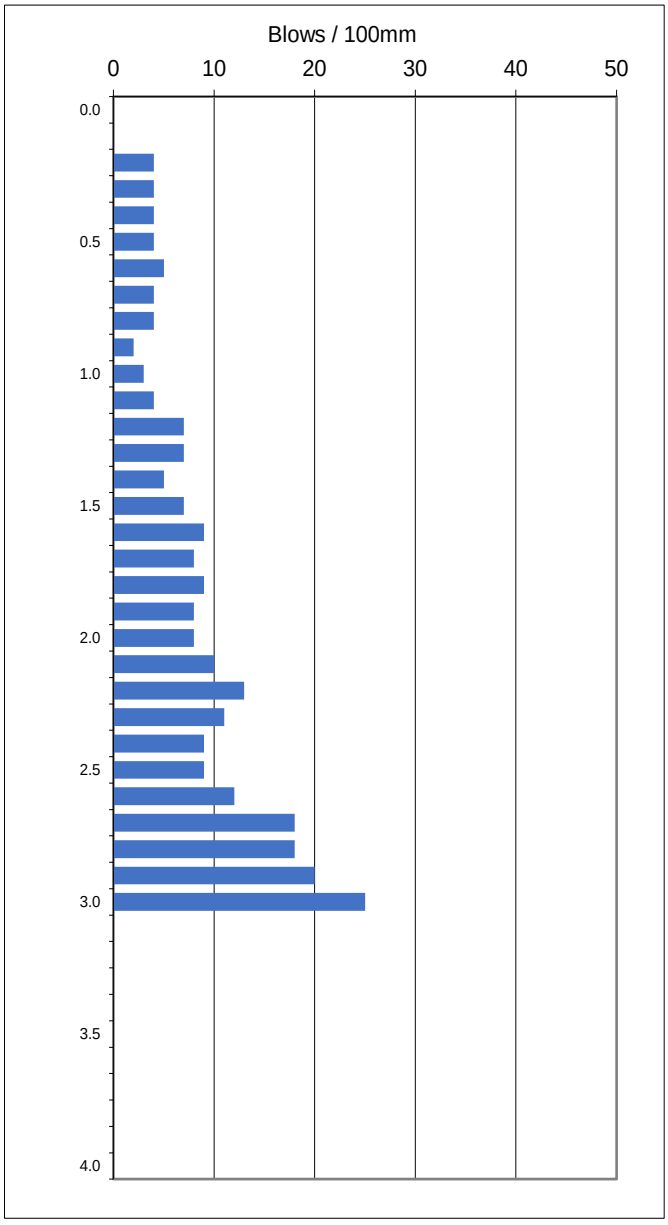
3.0 Test Results

3.1 – Test 4

LOCATION ON SITE : **DPT 4**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**

HOLES BACKFILLED :

Depth (m) From	Depth (m) To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	0.0
0.1	0.2	0	
0.2	0.3	4	12.0
0.3	0.4	4	
0.4	0.5	4	
0.5	0.6	4	13.0
0.6	0.7	5	
0.7	0.8	4	
0.8	0.9	4	9.0
0.9	1.0	2	
1.0	1.1	3	
1.1	1.2	4	18.0
1.2	1.3	7	
1.3	1.4	7	
1.4	1.5	5	21.0
1.5	1.6	7	
1.6	1.7	9	
1.7	1.8	8	25.0
1.8	1.9	9	
1.9	2.0	8	
2.0	2.1	8	31.0
2.1	2.2	10	
2.2	2.3	13	
2.3	2.4	11	29.0
2.4	2.5	9	
2.5	2.6	9	
2.6	2.7	12	48.0
2.7	2.8	18	
2.8	2.9	18	
2.9	3.0	20	45.0
3.0	3.1	25	
3.1	3.2	END	
3.2	3.3	0	0.0
3.3	3.4	0	
3.4	3.5	0	
3.5	3.6	0	0.0
3.6	3.7	0	
3.7	3.8	0	
3.8	3.9	0	0.0
3.9	4.0	0	
4.0	4.1	0	



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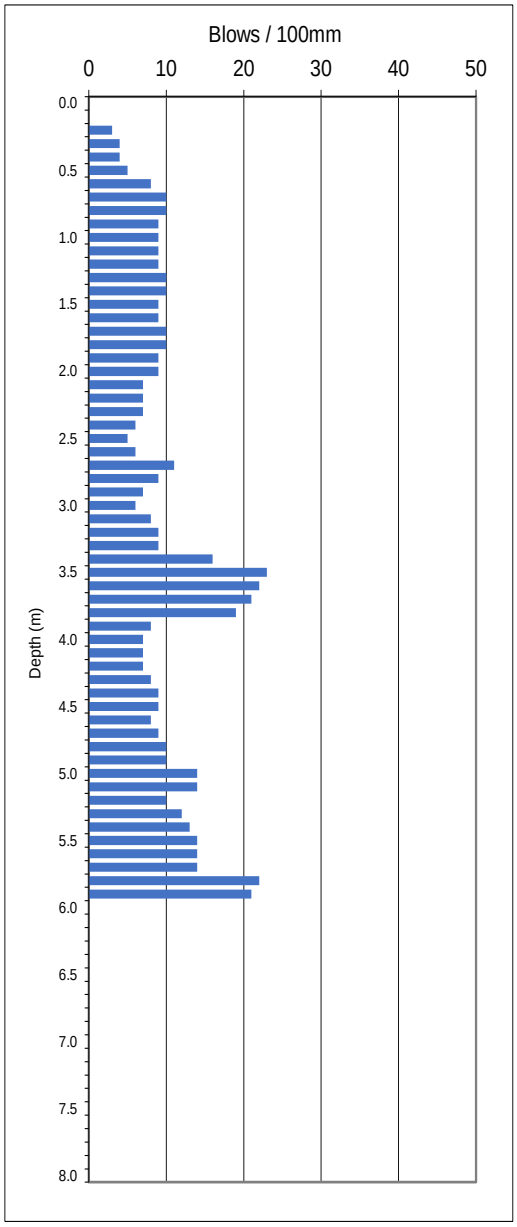
3.0 Test Results **Page 7**

3.2 – Test 5

LOCATION ON SITE : **DPT 5**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **NO**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	3	11.0
0.3	0.4	4	
0.4	0.5	4	
0.5	0.6	5	23.0
0.6	0.7	8	
0.7	0.8	10	
0.8	0.9	10	28.0
0.9	1.0	9	
1.0	1.1	9	
1.1	1.2	9	28.0
1.2	1.3	9	
1.3	1.4	10	
1.4	1.5	10	28.0
1.5	1.6	9	
1.6	1.7	9	
1.7	1.8	10	29.0
1.8	1.9	10	
1.9	2.0	9	
2.0	2.1	9	23.0
2.1	2.2	7	
2.2	2.3	7	
2.3	2.4	7	18.0
2.4	2.5	6	
2.5	2.6	5	
2.6	2.7	6	26.0
2.7	2.8	11	
2.8	2.9	9	
2.9	3.0	7	21.0
3.0	3.1	6	
3.1	3.2	8	
3.2	3.3	9	34.0
3.3	3.4	9	
3.4	3.5	16	
3.5	3.6	23	66.0
3.6	3.7	22	
3.7	3.8	21	
3.8	3.9	19	34.0
3.9	4.0	8	
4.0	4.1	7	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	7	22.0
4.2	4.3	7	
4.3	4.4	8	
4.4	4.5	9	26.0
4.5	4.6	9	
4.6	4.7	8	
4.7	4.8	9	29.0
4.8	4.9	10	
4.9	5.0	10	
5.0	5.1	14	38.0
5.1	5.2	14	
5.2	5.3	10	
5.3	5.4	12	39.0
5.4	5.5	13	
5.5	5.6	14	
5.6	5.7	14	50.0
5.7	5.8	14	
5.8	5.9	22	
5.9	6.0	21	21.0
6.0	6.1	END	
6.1	6.2	0	
6.2	6.3	0	0.0
6.3	6.4	0	
6.4	6.5	0	
6.5	6.6	0	0.0
6.6	6.7	0	
6.7	6.8	0	
6.8	6.9	0	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	



END OF REPORT

Appendix 5 - Permeability Test Results

POROSITY/PERMEABILITY TEST

SITE:	Site on A497, Criccieth
PROJECT No:	E1125
CLIENT:	Gwynedd County Council
DATE:	03/06/20
WEATHER:	Overcast, dry
PIT No: TP1 1.3m	

GMT	TIME ELAPSED (min)	DEPTH TO WATER	WATER DEPTH	FALL	WDx0.75	WDx0.25
10:25	0	0.27	1.03			
10:26	1	0.28	1.02			
10:30	5	0.29	1.01			
10:40	15	0.30	1.00			
10:55	30	0.31	0.99			
11:30	65	0.32	0.98			
12:05	100	0.33	0.97			
13.05	160	0.33	0.97			
					0.77	
						0.25

Pit Dimensions:	0.60W x 1.30L x 1.30D
Soil Description:	See Appendix 3 trial pit record

POROSITY/PERMEABILITY TEST

SITE:	Site on A497, Criccieth
PROJECT No:	E1125
CLIENT:	Gwynedd County Council
DATE:	03/06/20
WEATHER:	Overcast, dry
PIT No: TP2 1.9m	

GMT	TIME ELAPSED (min)	DEPTH TO WATER	WATER DEPTH	FALL	WDx0.75	WDx0.25
10:50	0	0.25	1.65			
10:52	2	0.28	1.62			
10:55	5	0.32	1.58			
11:05	15	0.40	1.50			
11:30	40	0.52	1.38			
12:00	70	0.62	1.28		1.23	
13:50	180	0.86	1.04			
14:36	226	0.93	0.97			
15:20	270	0.97	0.93			
						0.41

Pit Dimensions:	0.60W x 1.40L x 1.90D
Soil Description:	See Appendix 3 trial pit record

POROSITY/PERMEABILITY TEST

SITE:	Site on A497, Criccieth
PROJECT No:	E1125
CLIENT:	Gwynedd County Council
DATE:	03/06/20
WEATHER:	Overcast, dry
PIT No: TP3 1.35m	

GMT	TIME ELAPSED (min)	DEPTH TO WATER	WATER DEPTH	FALL	WDx0.75	WDx0.25
11:17	0	0.42	0.93			
11:19	2	0.44	0.91			
11:23	6	0.46	0.89			
11:57	40	0.53	0.82			
13:52	155	0.61	0.74		0.70	
15.17	240	0.63	0.72			
						0.23

Pit Dimensions:	0.75W x 1.40L x 1.35D
Soil Description:	See Appendix 3 trial pit record

POROSITY/PERMEABILITY TEST

SITE:	Site on A497, Criccieth
PROJECT No:	E1125
CLIENT:	Gwynedd County Council
DATE:	03/06/20
WEATHER:	Overcast, dry
PIT No: TP4 1.7m	

GMT	TIME ELAPSED (min)	DEPTH TO WATER	WATER DEPTH	FALL	WDx0.75	WDx0.25
11:47	0	0.39	1.31			
11:48	1	0.40	1.30			
11:53	6	0.41	1.29			
12:32	45	0.45	1.25			
13:57	130	0.51	1.19			
15.17	210	0.54	1.16			
					0.98	
						0.32

Pit Dimensions:	0.60W x 1.30L x 1.70D
Soil Description:	See Appendix 3 trial pit record

Appendix 6 - Chemical Analysis Results

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

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E-Geo Solutions
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0UN

Attention :	Huw Littler-Jones
Date :	22nd June, 2020
Your reference :	
Our reference :	Test Report 20/7134 Batch 1
Location :	Criccieth
Date samples received :	5th June, 2020
Status :	Final report
Issue :	1

Five samples were received for analysis on 5th June, 2020 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: E-Geo Solutions
Reference:
Location: Criccieth
Contact: Huw Littler-Jones
EMT Job No: 20/7134

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	4								LOD/LOR	Units	Method No.
Sample ID	TP1-0.40	TP2-0.40	TP3-0.20										
Depth	0.40	0.40	0.20										
COC No / misc													
Containers	J	J	J										
Sample Date	03/06/2020	03/06/2020	03/06/2020										
Sample Type	Clay	Clay	Clay										
Batch Number	1	1	1										
Date of Receipt	05/06/2020	05/06/2020	05/06/2020										
Arsenic #M	16.7	21.7	19.7								<0.5	mg/kg	TM30/PM15
Cadmium #M	<0.1	<0.1	<0.1								<0.1	mg/kg	TM30/PM15
Chromium #M	67.7	53.4	72.8								<0.5	mg/kg	TM30/PM15
Copper #M	26	19	18								<1	mg/kg	TM30/PM15
Lead #M	29	19	47								<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	<0.1								<0.1	mg/kg	TM30/PM15
Nickel #M	46.8	33.3	24.1								<0.7	mg/kg	TM30/PM15
Selenium #M	2	2	2								<1	mg/kg	TM30/PM15
Sulphur as S	<0.01	0.02	0.08								<0.01	%	TM30/PM15
Total Sulphate as SO4 #M	82	277	1169								<50	mg/kg	TM50/PM29
Water Soluble Boron #M	<0.1	0.3	1.0								<0.1	mg/kg	TM74/PM32
Zinc #M	102	94	108								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #M	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #M	<0.03	<0.03	0.06								<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.06								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #M	<0.02	<0.02	0.05								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	<0.07	<0.07	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6								<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	99	99								<0	%	TM4/PM8
EPH (C8-C40) #M	<30	-	157								<30	mg/kg	TM5/PM8
Phenol #M	<0.01	<0.01	0.02								<0.01	mg/kg	TM26/PM21
Natural Moisture Content	7.0	15.2	17.0								<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #M	0.0071	0.0169	0.0247								<0.0015	g/l	TM38/PM20
Total Cyanide #M	<0.5	<0.5	0.7								<0.5	mg/kg	TM89/PM45

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Element Materials Technology

Client Name: E-Geo Solutions
Reference:
Location: Criccieth
Contact: Huw Littler-Jones
EMT Job No: 20/7134

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	4								LOD/LOR	Units	Method No.
Sample ID	TP1-0.40	TP2-0.40	TP3-0.20										
Depth	0.40	0.40	0.20										
COC No / misc													
Containers	J	J	J										
Sample Date	03/06/2020	03/06/2020	03/06/2020										
Sample Type	Clay	Clay	Clay										
Batch Number	1	1	1										
Date of Receipt	05/06/2020	05/06/2020	05/06/2020										
Sulphide	<10	<10	<10								<10	mg/kg	TM107/PM45
pH #M	7.06	6.99	6.47								<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay									None	PM13/PM0
Sample Colour	Light Brown	Medium Brown	Light Brown									None	PM13/PM0
Other Items	stones	stones and roots	stones and roots									None	PM13/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: E-Geo Solutions
Reference:
Location: Criccieth
Contact: Huw Littler-Jones

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/7134	1	TP1-0.40	0.40	1	18/06/2020	**General Description (Bulk Analysis)**	Soil/Stone
					18/06/2020	**Asbestos Fibres**	NAD
					18/06/2020	**Asbestos ACM**	NAD
					18/06/2020	**Asbestos Type**	NAD
					18/06/2020	**Asbestos Level Screen**	NAD
20/7134	1	TP3-0.20	0.20	4	18/06/2020	**General Description (Bulk Analysis)**	Soil/Stone
					18/06/2020	**Asbestos Fibres**	NAD
					18/06/2020	**Asbestos ACM**	NAD
					18/06/2020	**Asbestos Type**	NAD
					18/06/2020	**Asbestos Level Screen**	NAD

Client Name: E-Geo Solutions
Reference:
Location: Criccieth
Contact: Huw Littler-Jones

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 20/7134						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/7134

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 20/7134

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes	Yes	AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes

EMT Job No: 20/7134

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes	Yes	AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes