DATRYS CONSULTING ENGINEERS LTD

LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU

GEOTECHNICAL, GROUND PERMEABILITY AND CONTAMINATION INVESTIGATION REPORT

REPORT No. E1957.GGPCI.R1

DECEMBER 2024

Client:	**DATRYS CONSULTING ENGINEERS LTD**
Project Title:	**LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU**
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Project No.	**E1957**
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Date.	**DECEMBER 2024**

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Distribution: **DATRYS CONSULTING ENGINEERS LTD**

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Report Ref:	**E1957.GGPCI.R1**		
Signed:			

1. INTRODUCTION.

1.1 Background and Terms of Reference

1.1.1 In October 2024 e-geo Solutions Ltd were commissioned by Datrys Consulting Ltd to undertake a combined geotechnical, ground permeability and ground contamination investigation on land at Tyddyn Fletcher on Llanberis Road, near Caernarfon, Gwynedd. The objective of the investigation was to determine the ground conditions at the site, the ground permeability and the geotechnical properties of the ground strata, and to assess the site with respect to potential contamination for a new residential development.

1.1.2 This report presents the findings of intrusive investigations with in-situ geotechnical tests, permeability tests and the chemical analysis of soil samples.

1.1.3 The site area comprises agricultural land which is to be developed with residential properties and the findings of the intrusive investigation have been assessed against this proposed end use.

1.1.4 The report has been prepared by e-geo Solutions Ltd for the sole use of the Client, for the purposes described and no extended duty of care applies to other parties. Any other party using this report for any purpose whatsoever do so at their own risk and any duty care to that party is specifically excluded.

1.1.5 The comments given, and opinions expressed, in this report are based on the information available at the time the report was compiled, however there may be additional information and data which becomes available at a later date which has an impact on the report content. Where data supplied by others has been used it has been assumed that the information is correct. No responsibility can be accepted by e-geo Solutions Ltd for inaccuracies within the data supplied by others.

1.2 Report Contents

1.2.1 The report includes sections on: -

- Present site description, profile and setting.
- The scope of the investigation, testing and analysis and its justification.
- The geological and hydro-geological conditions encountered in shallow boreholes and trial pits.
- The results of in-situ geotechnical tests in the boreholes
- The results of ground permeability tests
- Chemical analysis results and an assessment of contamination
- Comments on foundation design and development considerations

2. SITE LOCATION, DESCRIPTION AND PROFILE.

2.1 Site Location

2.1.1 The area of investigation is located 1.5Km east of the centre of Caernarfon and southeast of the A4086 adjacent to Cibyn Industrial Estate as shown on Figure 1. The site is centred at Grid Reference 249238, 362753.

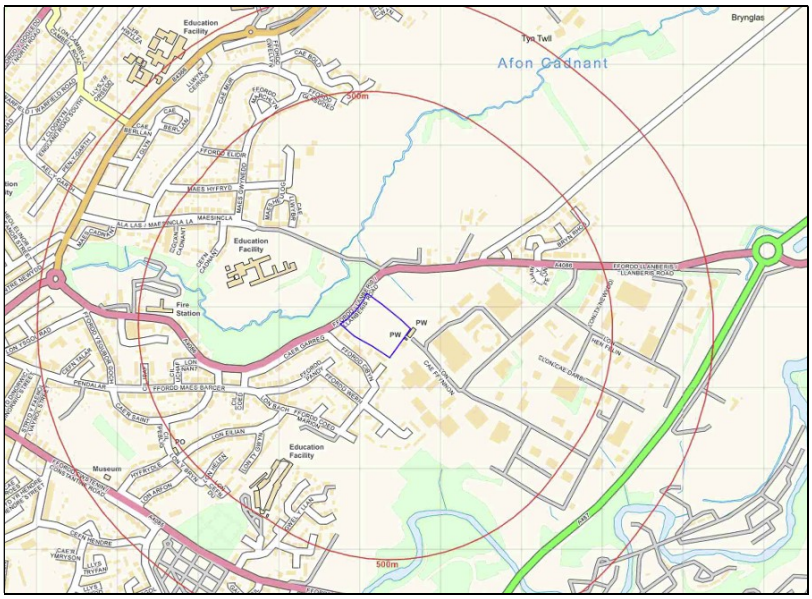

Figure 1 – Site Location

2.1.2 The extent of the site and the study area boundaries is shown on Figure 2.

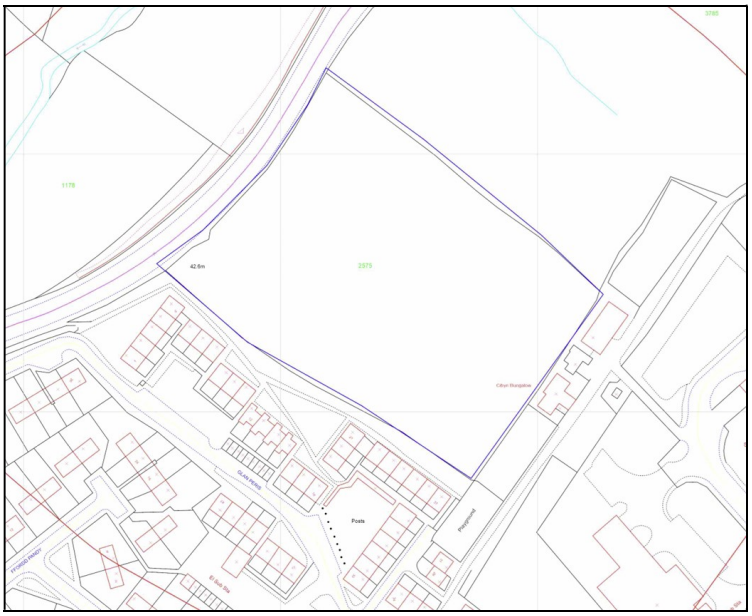
Figure 2 – Site Extent

2.2 Site Description and Topography

2.2.1 The area of investigation (site) is situated southeast of the A4086 on the outskirts of Caernarfon and immediately north west of an existing residential housing estate. The rectangular plot of land with its long axis orientated northwest to southeast comprises agricultural land used for grazing

which slopes from southeast to northwest. An aerial photograph is shown as Figure 3.

Figure 3 – Aerial photograph.

2.3 Site Profile

2.3.1 A desk-based study of the site has been undertaken. An indication of past land use with historical Ordnance Survey maps are presented in Appendix 7. Details of the geological and environmental setting are presented in Appendix 8. A summary of the findings and site profile are presented below.

Profile Item	LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON
Site Status:	The site comprises agricultural land used for grazing which slopes from southeast to northwest. The ground at the time of inspection was very wet and there is evidence of reeds. There are no structures on site.
Site History: (Historical OS Maps presented in Appendix 7)	**1889**: The site is agricultural land divided into three fields surrounded by similar agricultural land on all sides. There is a very small structure (shed?) on the southwest boundary. **1900**: The site is as in 1889 but comprises one field. **1965**: The site is as in 1900. Residential properties have been built to the southwest. **1972**: The site remains as in 1965. Industrial units (Light engineering works) have been built to the east. **1983**: The site remains as in 1972. **1995**: The site remains as in 1983. **2003**: The site is as in 1995.
Services:	There is a water main which crosses the site from midway along the northeast boundary to the southwest corner.
Geology: (Geological maps and data are presented in Appendix 8)	Information from the British Geological Survey Map indicates that drift (soil) deposits at the site comprise Glacial Till deposits of Diamicton age. The Glacial Till deposits extends for at least 500m in all directions but there is some alluvial deposit 50m north. The bedrock comprises siltstone of the Nant Francon Group. There is no record of any made ground within the site. There are no surface working features within 250. There are no underground workings within 500m.

	. There is a negligible risk of shrinkage and swelling clay at the site. There is a negligible risk of ground dissolution of soluble rocks below the site. There is a negligible risk of compressible deposits below the site. There is a very low risk of collapsible deposits below the site. There is a very low risk of running sand at the site. There is a moderate risk of landslides.
Radon:	The site is not in a radon affected area with less than 1% of properties above the action level. No radon protection measures are required.
Hydrogeology: (Environmental data is presented in Appendix 7)	The superficial deposits are not classed as an aquifer. The bedrock at depth is classed as a Secondary undifferentiated aquifer. In general these layers have previously been designated as both minor and non aquifer in different locations due to the variable characteristics of the rock type. There are no active Groundwater Abstraction Licence or Surface Water Abstraction Licence points within 1000m of the site.
Hydrology:	The nearest surface water feature is 62m northwest and is the Afon Cadnant.
Sensitive Land Uses:	There are no designated Sites of Special Scientific Interest within 1000m.
Landfills:	The nearest Environment Agency registered landfill site is Peblig Mill Tip at 410m south. The landfill closed in 1990.
Historical Industrial Sites:	The nearest historical industrial land use is 23m southeast and is the current Cibyn Industrial Estate.
Pollution Incidents:	There are no Environment Agency pollution incidents which originate at the site.
Potential Contamination:	The sites only known use is agricultural land.

3. GROUND INVESTIGATION WORKS.

3.1 Previous Investigations

3.1.1 A previous investigation was undertaken at the site in September 2008 and comprised 3 Nr trial pits and 5 Nr cable percussion boreholes. The findings are presented in a report by delta simons environmental consultants project ref: 07-3453.02.

3.1.2 The key findings from the investigation were:

The ground conditions encountered at the site generally comprised of a grassed/vegetated surface, underlain by topsoil to a maximum depth of 0.50 m bgl, underlain by gravelly clay to a maximum depth of 3.90 m bgl, overlying weathered mudstone reaching a maximum depth of 13.70 m bgl.

Groundwater was encountered at the site at depths of between 0.150 m bgl and 1.534 m bgl.

Topsoil at the site was found to be lacking in vital nutrients. WAC results indicated that the soils at the Site could be disposed of at an inert landfill site. From a review of the analytical results, contamination has been identified with a single elevated concentration of lead identified in TP4 at a depth of 0.30 m bgl recording a maximum concentration of 1200 mg/kg.

Slightly elevated concentrations of methane and carbon dioxide were detected across the site; and potentially unidentified areas of contamination, which may be present in localised regions that have not yet been directly investigated.

3.2 Scope of Work – Exploratory Holes

3.2.1 A geotechnical, permeability and ground contamination investigation was undertaken to provide information on the ground conditions at the site. The works were carried out by e-geo Solutions Ltd with the field work element undertaken on 28th October 2024. The investigation was designed by Datrys Consulting Engineers and supervised and administered by e-geo Solutions Ltd and undertaken in accordance with BS5930 (1999) – code of Practice for Site Investigations (Amendment 1).

3.2.2 The main scope of work involved:

- The excavation of 5 Nr trial pits to allow strata description and soil sampling. Trial pit records are presented in Appendix 1.
- The excavation of 2 Nr trial pits for permeability tests. Trial pit records are presented in Appendix 1 and permeability test results in Appendix 3.
- The construction of 6 Nr window sample boreholes with dynamic cone penetrometer tests with continuous SPTs to determine soil density and strength. Borehole records and the results of DCP tests giving SPT N values are presented in Appendix 2.
- The examination of ground strata by a geo-environmental engineer and the careful description of soil types. Detailed descriptions of the ground strata are presented on the trial pit records in Appendix 1 and borehole records Appendix 2.
- Undertaking 6 Nr handheld DCP tests to determine CBR values. The results are presented in Appendix 4.
- Collection of ground samples from near the ground surface for chemical analysis and laboratory geotechnical tests.

3.3 Scope of Work – Testing and Analysis

3.3.1 Eight ground samples from were submitted for Atterberg limit and particle size distribution tests. The results are presented in Appendix 5. A total of 12 Nr. ground samples were collected and submitted for chemical analysis at an accredited analytical laboratory. The analytical results are presented in Appendix 6.

3.4 Trial Hole Locations

3.4.1 Window sample boreholes (WS1-WS6), trial pit (TP1-TP5), permeability test (P1-P2) and DCP CBR test (CBR1-CBR6) locations are indicated in Figure 4.

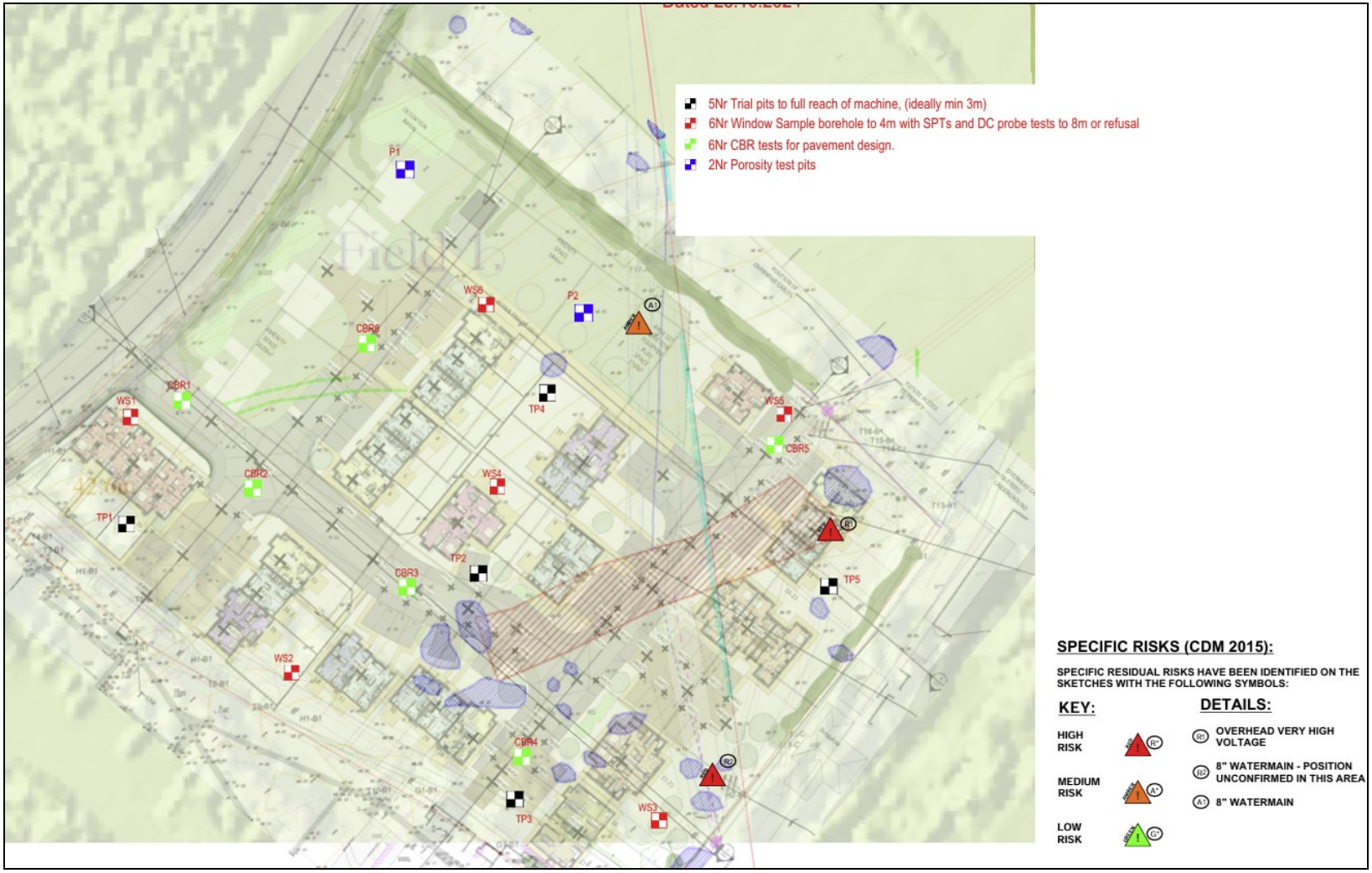

Figure 4 – Window sample boreholes (WS1-WS6), trial pit (TP1-TP5), permeability test (P1-P2) and DCP CBR test (CBR1-CBR6) locations

4. GROUND CONDITIONS AND GEOLOGY.

4.1 General

4.1.1 Details of the ground strata and depths are presented on the trial pit records in Appendix 1 and window sample boreholes in Appendix 2. A summary of the findings is presented below.

4.1.2 The results of in-situ standard penetration tests (SPTs) undertaken with a dynamic cone are presented in Appendix 2.

4.2 Stratigraphy

4.2.1 The strata and depths encountered during the investigation was:

Stratum	Description	Depth to base m range (average)
TOPSOIL	Dark brown gravelly silty TOPSOIL	0.25 to 0.30
CLAY1	Soft to firm occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies, predominantly siltstone and rare cobble	0.65 to 1.40
CLAY2	Firm medium greyish brown gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Low cobble content and some pockets of clayey fine to coarse sand and gravel	2.50 to 4.00+
SILTSTONE (weathered) TP2,P1,WS6	Moderately strong to weak slightly weathered dark greyish brown and brown very fractured SILTSTONE (excavates as medium to coarse gravel)	

4.3 Groundwater

4.3.1 Groundwater inflows were recorded as shown below.

WS/TP No.	Depth	Inflow	WS/TP No.	Depth	Inflow
TP1	1.50	Seepage	TP4	2.80	Moderate
TP1	2.50	Moderate	TP5	1.30	Slight
TP2	1.30	Slight	TP5	2.40	Large
TP3	0.30	Seepage	P2	2.00	Seepage
TP3	1.30	Slight	P2	2.50	Large

4.4 Contamination Observations

4.4.1 During the examination of the ground strata no obvious indications of contamination were noted. There was no indication of hydrocarbons, vapours or unusual odours.

4.5 Geotechnical Properties

4.5.1 The results of Dynamic probe tests are presented in Appendix 2. The following SPT N values were obtained in the various strata.

Stratum	Description	Depth (m)	SPT 'N' value
CLAY1	Soft to firm occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies, predominantly siltstone and rare cobble	0.50 0.80 1.10 1.40	9,6,0,6,6,5, 11,10,3,7,23,2, 14,15,9,9,12,6,
CLAY2	Firm medium greyish brown gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Low cobble content and some pockets	0.80 1.10 1.40 1.70	 18,12,12,25,22,8 15,13,10,15,31,16

	of clayey fine to coarse sand and gravel	2.00 2.30 2.60 2.90 3.20	20,23,9,13,15,16 39,39,12,10,9,7 50,51,15,13,8,8 54,71,21,9,12, 50+,50+,26,39,19,
SILTSTONE (weathered) TP2,P1,WS6	Moderately strong to weak slightly weathered dark greyish brown and brown very fractured SILTSTONE (excavates as medium to coarse gravel)	2.60 2.90 3.20 3.50 3.80	16 20 44 63 50+

4.5.2 The results of the insitu SPTs indicate N values in the soft to firm occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY to a depth of 0.65 to 1.40 in the range 5 to 9 and an average of 6.4. Using a correlation factor for the CLAY of 5.5 (Stroud, Sowers and Sivrikaya&E. Togrol) this gives a shear strength of 35 kN/m2. Foundations at this depth could be designed for an allowable bearing capacity of 65kN/m2 for a standard strip footing at standard depth.

4.5.3 From a depth greater than 0.65 to 1.40 in the firm medium greyish brown gravelly sandy silty CLAY the results of the in situ SPTs to a depth of 2.30m indicate N values in the range 7 to 39 and an average of 17. Using a correlation factor for the CLAY of 5.5 (Stroud, Sowers and Sivrikaya&E. Togrol) this gives a shear strength of 90 kN/m2. Foundations placed on or in the firm medium greyish brown gravelly sandy silty CLAY could be designed for an allowable bearing capacity of 175kN/m2.

4.5.4 The results of the particle size distribution tests and Atterberg limit tests are presented in Appendix 5. The results of the Atterberg limit tests are summarised below.

WS/TP No.	Depth	< 425um	PL%	LL%	PI%	Mod PI	Plasticity	Moisture Content %
TP3	1.00	55	20	28	8	4.4	Low	18.8
TP4	0.50	68	Non plastic					21
TP4	1.00	50	Non plastic					16.1
TP5	1.00	62	Non plastic					18.4
TP5	2.00	68	22	30	8	5.4	Low	14.4
WS6	0.80	64	Non plastic					19.3

4.6 Permeability Test Results

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4.6.1 The results of the permeability tests are presented on the Field Test Results sheets in Appendix 3.

4.7 Soil Infiltration Rate Calculations

4.7.1 The Soil Infiltration Rate (f) is based on the method described in the BRE Digest and is calculated from the time taken for the water level to fall from 75% to 25% of the actual water depth in the trial hole.

4.7.2 The Soil Infiltration Rate (f) is calculated by the equation:

f = Vp75 – 25/ ap50 x tp75 -25
Where - Vp75 -25 is the storage volume in the hole from 75% to 25% effective depth,
ap50 is the internal surface area of the hole to 50% effective depth plus the base area,
tp75 – 25 the time taken for water to fall from 75% to 25% effective depth.

4.7.3 In P1 the following results were obtained:

Test P1.1
Vp75 – 25 = 2.20 x 0.70 x (1.37 - 0.45) = 1.4168 cu.m

Ap50 = Base + (Int surface area to 50% eff depth)
Ap50 = (2.20 x 0.70) + (2 x 2.20 x 1.83/2 + 2 x 0.70 x 1.83/2) = 6.847 sq.m
tp75 – 25 = 131 – 16 = 115 min

Soil Infiltration Rate P1.1(f) = Vp75–25/ap50xtp75-25 = 1.4168/6.847x115x60 = 2.99 x 10^{-5} m/sec

Test P1.2
Vp75 – 25 = 2.20 x 0.70 x (1.35 - 0.45) = 1.386 cu.m
Ap50 = Base + (Int surface area to 50% eff depth)
Ap50 = (2.20 x 0.70) + (2 x 2.20 x 1.80/2 + 2 x 0.70 x 1.80/2) = 6.76 sq.m
tp75 – 25 = 169 – 19.5 = 149.5 min

Soil Infiltration Rate P1.2(f) = Vp75–25/ap50xtp75-25 = 1.386/6.76x149.5x60 = 2.28 x 10^{-5} m/sec

Test P1.3
Vp75 – 25 = 2.20 x 0.70 x (1.37 - 0.45) = 1.4168 cu.m
Ap50 = Base + (Int surface area to 50% eff depth)
Ap50 = (2.20 x 0.70) + (2 x 2.20 x 1.83/2 + 2 x 0.70 x 1.83/2) = 6.847 sq.m
tp75 – 25 = 143 – 16.5 = 126.5 min

Soil Infiltration Rate P1.3(f) = Vp75–25/ap50xtp75-25 = 1.4168/6.847x126.5x60 = 2.72 x 10 – 5 m/sec

4.7.4 In summary the Soil Infiltration Rates obtained in P1 were

P1.1(f) = 2.99 x 10 – 5 m/sec
P1.2(f) = 2.28 x 10 – 5 m/sec
P1.3(f) = 2.72 x 10 – 5 m/sec

4.7.5 In P2 the following results were obtained:

The permeability test failed. The water level dropped 330mm in the first 3 hours but in the following 24 hours dropped only 130mm and was 970mm above the 25% full mark (test finish point) when the test was terminated. The permeability would be less than 1.0 x 10 – 8 m/sec.

4.8 California Bearing Ratio Test Results

4.8.1 The results of insitu California Bearing Ratio (CBR) tests with a hand held dynamic probe are presented in Appendix 4.

5. CONTAMINATION ASSESSMENT

5.1 General

5.1.1 The results of the chemical analysis of soils samples are presented in Appendix 6. An assessment of the results of the analysis of samples has been undertaken to determine the presence and extent of any ground contamination. The assessment of contamination undertaken is a 'Tier 1 Generic Risk Assessment' which requires the comparison of contaminant concentrations to a set of generic Tier 1 Screening Values (TSV) risk-based screening concentrations.

5.2 Soils Reference Values

5.2.1 TSVs for soil derived to be protective of human health are defined for standard end use situations in accordance with UK CLR framework. The values chosen are dependant on the site use or proposed development. The site is to be developed with residential properties. For the purpose of assessment, the site use has been taken as residential with consumption of home grown produce.

5.2.2 The applicable TSVs for assessment of the analytical results are based on the following guideline criteria: CLEA 2009) Soil Guideline Values (SGVs) for as 'residential with consumption of home grown produce' end-use (where available), LQM CIEH Generic Assessment Criteria – 2nd Edition 2009, Welsh Assembly Government C4SL.

5.3 Soils Analysis Assessment

5.3.1 Comparison of the analytical results on soil samples from shallow depth for metals and non-metals using maximum concentrations as a means of assessment with the Tier 1 TSVs for 'residential use with consumption of homegrown produce' indicates that the shallow ground strata do not contain any significant concentrations of contaminants above available respective trigger concentrations with the exception of one sample TP5-0.20 which had elevated lead.

5.3.2 Concentrations of cadmium and chromium were significantly below the guideline concentrations or below detection limits.

5.3.3 Concentrations of arsenic were below the guideline concentration.

5.3.4 Concentrations of selenium and mercury were below the guideline concentrations.

5.3.5 Concentrations of copper, nickel, zinc were below the guideline concentrations.

5.3.6 Concentrations of lead in the gravelly sandy silty CLAY were significantly below the guideline concentrations. However, in the sample of topsoil at TP5-0.20 the lead concentration was slightly elevated with a value of 251mg/kg against a guideline of 200mg/kg. The topsoil at TP4-0.20 had a lead concentration of 135mg/kg. The average of the two results is 193mg/kg which is below the guideline concentration.

5.3.7 No elevated concentrations of sulphate or sulphur were found in the ground. Phenol and cyanide concentrations were below the detection limits.

5.3.8 Concentrations of total hydrocarbons and the fractions were below the guideline concentrations

5.3.9 Concentrations of polyaromatic hydrocarbons and the speciated fractions were below the guideline concentrations

5.3.10 No elevated concentrations of soluble sulphate were detected.

5.3.11 No asbestos was detected.

6 DEVELOPMENT CONSIDERATIONS.

6.1 Foundations

6.1.1 The ground conditions encountered across the site are uniform below the topsoil with a soft to firm and occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY with occasional cobbles found to a depth of 0.65m to 1.40m bgl. Below this is a firm medium greyish brown gravelly sandy silty CLAY with occasional cobbles and pockets of silty sand and gravel to a depth of 2.50m to greater than 4.00m bgl.

6.1.2 Standard strip foundations will be suitable and if placed at standard depth within the soft to firm occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY can be designed for an allowable bearing capacity of 65kN/m2. If the foundations are placed slightly deeper and on or in the firm medium greyish brown gravelly sandy silty CLAY, the foundations can be designed for an allowable bearing capacity of 175kN/m2.

6.2 Floor Slabs

6.2.1 Floor slabs can be ground bearing following removal of the topsoil.

6.3 Earthworks

6.3.1 The natural ground strata of soft to firm and occasionally stiff light brown and medium orangish brown very gravelly sandy silty CLAY and firm medium greyish brown gravelly sandy silty CLAY with occasional cobbles can be excavated with normal groundworks excavation plant to a depth of 3.00m, however as groundwater inflows were recorded with seepages at a depth of 1.30m to 1.50m bgl and large inflows at typically 2.40m bgl, groundwater control will be required for excavations greater than 1.40m depth that remain open for some time.

6.4 Concrete

6.4.1 The results of laboratory pH and sulphate content indicate that ACEC Class AC1 and sulphate class DS-1 conditions prevail at the site, in accordance with BRE Special Digest 1 ‘Concrete in Aggressive Ground 2005’

6.5 Surface-Water Soakaways

6.5.1 The results of in-situ permeability tests and findings of the borehole and trial pit investigation indicate that the majority of the site has poor drainage characteristics with soil infiltration values of 1 x 10 – 8 m/sec. However in the northern corner of the site, at P1, the deeper ground strata of very weathered siltstone that excavates as a gravel had a soil infiltration rate of 2.66 x 10 – 5 m/sec

6.6 Ground Contamination

6.6.1 The shallow natural ground strata of gravelly CLAY do not contain any significant concentrations of contaminants above available respective trigger concentrations and there are no contamination. In one sample of topsoil a slightly elevated concentration of lead was detected. However, the average lead concentration in all topsoil samples indicates no contamination and no risk to the proposed development.

6.6.2 It is recommended that prior to the reuse of topsoil in the development that additional sampling and analysis of the topsoil for metals is undertaken to confirm it is fit for use.

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Appendix 1 - Trial Pit Records

TRIAL PIT RECORD

						Trial Pit No:	**TP1**	
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU						Ref: E1957		
Excavator :JCB 3CX Excavator						Date: 28.10.24		
Pit size : 2.30 x 0.70m		Depth : 2.80m				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
	0.00	0.28	0.28	Dark brown gravelly silty TOPSOIL				
	0.28	1.00	0.68	Firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies	0.5			
					1.0			
	1.00	2.80	1.80	Firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subounded of various lithologies predominantly siltstone. Medium cobble content. Rare boulder		d	1.00	
					1.5	D	1.20	
					2.0			
					2.5			
		2.80		Base of pit at 2.80m	3.0			

Remarks

Sidewalls :	Sligt collapse of pit sides
Groundwater :	Seepage at 1.50m bgl. Moderate inflow at 2.50m bgl
In-situ testing :	Shear vane 1.00 - 35kN/m2. 1.50 - 40-50kN/m2
Contaminants :	None observed
Services :	None

e-geo solutions Ltd
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TRIAL PIT RECORD

Trial Pit No: **TP2**

Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU

Ref: E1957

Excavator :JCB 3CX Excavator

Date: 28.10.24

Pit size : 2.40 x 0.70m Depth : 2.60m

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
	0.00	0.25	0.25	Dark brown gravelly silty TOPSOIL				
	0.25	0.65	0.40	Orangish brown very silty gravelly medium to coarse SAND	0.5	D	0.50	
	0.65	1.50	1.35	Stiff medium brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies. Rare cobble.	1.0	d	0.75	
				pockets of clayey silty fine to coarse sand and gravel	1.5	d	1.20	
	1.50	2.60	1.10	Firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Medium cobble content (excavates as a gravel)	2.0			
				Large boulder at 2.60m bgl	2.5			
		2.60		Base of pit at 2.60m	3.0			

Remarks

Sidewalls :	Sligt collapse of pit sides
Groundwater :	Slight water inflow 1.30m bgl.
In-situ testing :	Shear vane 1.00 - 55-70kN/m2.
Contaminants :	None observed
Services :	None

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TRIAL PIT RECORD

						Trial Pit No:	**TP3**	
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU						Ref: E1957		
Excavator :JCB 3CX Excavator						Date: 28.10.24		
Pit size : 2.30 x 0.70m			Depth : 2.90m			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
	0.00	0.27	0.27	Dark brown gravelly silty TOPSOIL				
	0.27	1.30	1.03	Firm to stiff light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies, predominantly siltstone and rare cobble	0.5	d	0.50	
					1.0	D	1.00	
	1.30	2.90	1.60+	Firm medium greyish brown gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Low cobble content	1.5			
				some pockets of clayey fine to coarse sand and gravel	2.0			
					2.5			
		2.90			3.0			
				Base of pit at 2.90m				

Remarks

Sidewalls :	Sligt collapse of pit sides
Groundwater :	Seep at 0.30m bgl. Slight water inflow 1.30m bgl.
In-situ testing :	Shear vane 1.00 - 50-65kN/m2. 1.50 - 65kN/m2
Contaminants :	None observed
Services :	None

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Tel : 01745 828494 Fax : 01745 828493

TRIAL PIT RECORD

							Trial Pit No:	**TP4**	
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU							Ref: E1957		
Excavator :JCB 3CX Excavator							Date: 28.10.24		
Pit size : 2.30 x 0.70m			Depth : 3.00m				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
	0.00	0.25	0.25	Dark brown gravelly silty TOPSOIL			d	0.20	
	0.25	0.65	0.40	Firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies	0.5		d D	0.40 0.50	
	0.65	1.55	1.40	Stiff medium brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies. Rare cobble.	1.0				
				pockets of clayey silty fine to coarse sand and gravel			d D	1.00 1.00	
	1.55	2.80	1.25	Firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Low cobble content	1.5 2.0 2.5				
	2.80	3.00+	0.20+	Moderately strong to weak slightly weathered dark greyish brown and brown very fractured SILTSTONE (excavates as medium to coarse gravel)	3.0				
		3.00		Base of pit at 3.00m					

Remarks

Sidewalls :	Sligt collapse of pit sides
Groundwater :	Moderate inflow 2.80m bgl.
In-situ testing :	Shear vane 1.00 - 50kN/m2.
Contaminants :	None observed
Services :	None

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TRIAL PIT RECORD

	Trial Pit No: **TP5**
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	Ref: E1957
Excavator :JCB 3CX Excavator	Date: 28.10.24
Pit size : 2.30 x 0.70m Depth : 3.00m	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
	0.00	0.27	0.27	Dark brown gravelly silty TOPSOIL		d	0.20	
	0.27	1.40	1.13	Soft to firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies, predominantly siltstone and rare cobble	0.5			
						d	0.75	
					1.0	D	1.00	
	1.40	3.00+	1.60	Firm medium greyish brown gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies predominantly siltstone. Low cobble content	1.5	d	1.50	
					2.0	D	2.00	
					2.5			
		3.00		Base of pit at 3.00m	3.0			

Remarks

Sidewalls :	Stable
Groundwater :	Slight inflow 1.30m bgl. Large water inflow 2.40m bgl.
In-situ testing :	Shear vane 1.00 - 30kN/m2. 1.50 - 60kN/m2
Contaminants :	None observed
Services :	None

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TRIAL PIT RECORD

						Trial Pit No:	**P1**	
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU						Ref: E1957		
Excavator :JCB 3CX Excavator						Date: 28.10.24		
Pit size : 2.20 x 0.70m		Depth : 2.30m				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
	0.00	0.25	0.25	Dark brown gravelly silty TOPSOIL				
	0.25	1.10	0.85	Firm medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular predominantly siltstone	0.5			
					1.0			
	1.10	2.30+	1.30+	Moderately strong to weak slightly weathered dark greyish brown and brown very fractured SILTSTONE (excavates as medium to coarse gravel)	1.5			
					2.0			
		2.30		Base of pit at 2.30m	2.5			
					3.0			

Remarks

Sidewalls :	Sides collapsing in siltstone
Groundwater :	None
In-situ testing :	Permeability test
Contaminants :	None observed
Services :	None

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TRIAL PIT RECORD

	Trial Pit No: **P2**
Site : LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	Ref: E1957
Excavator :JCB 3CX Excavator	Date: 28.10.24
Pit size : 2.30 x 0.70m Depth : 2.50m	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
	0.00	0.25	0.25	Dark brown gravelly silty TOPSOIL				
	0.25	0.70	0.45	Firm medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subrounded to subangular predominantly siltstone	0.5			
	0.70	1.20	0.50	Soft to firm medium brown very gravelly sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Rare cobble.	1.0			
	1.20	2.50+	1.30+	Soft to firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular predominantly siltstone	1.5			
					2.0			
		2.30			2.5			
				Base of pit at 2.50m				
					3.0			

Remarks

Sidewalls :	Stable
Groundwater :	Seep at 2.00m bgl. Large inflow 2.50m bgl
In-situ testing :	Permeability test
Contaminants :	None observed
Services :	None

e-geo solutions Ltd
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Appendix 2 - WS Borehole Records

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

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS1**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=9	0.30	Firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies		
0.50 - 0.80		SPT N=11				
0.80 - 1.10		SPT N=14				
1.10 - 1.40		SPT N=18	1.20	Stiff medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of siltstone.		
1.40 - 1.70		SPT N=15				
1.70 - 2.00		SPT N=20				
2.00 - 2.30		SPT N=39				
2.30 - 2.60		SPT N=50				
2.60 - 2.90		SPT N=54				
2.90 - 3.00		SPT N=50+	3.00	Base of DP at 3.00m		

Remarks
DCP with SPTs carried out to 3.00m 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 AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS2**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=6	0.30	Firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to		
0.50 - 0.80		SPT N=10		coarse subangular to subrounded of various lithologies		
0.80 - 1.10		SPT N=15	1.00	Firm medium greyish brown very gravelly sandy		
1.10 - 1.40		SPT N=12		silty CLAY. Gravel is fine to coarse subangular to subrounded of siltstone.		
1.40 - 1.70		SPT N=13				
1.70 - 2.00		SPT N=23				
2.00 - 2.30		SPT N=39				
2.30 - 2.60		SPT N=51		becoming stiff		
2.60 - 2.90		SPT N=71				
2.90 - 3.00		SPT N=50+	3.00	Base of DP at 3.00m		

Remarks
DCP with SPTs carried out to 3.00m 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 AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS3**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=0	0.30	Firm to stiff light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to		
0.50 - 0.80		SPT N=3		coarse subangular to subrounded of various lithologies		
0.80 - 1.10		SPT N=9	0.80	Stiff medium brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subangular		
1.10 - 1.40		SPT N=12		to subrounded of various lithologies.		
1.40 - 1.70		SPT N=10	1.40	Firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular		
1.70 - 2.00		SPT N=9		to subrounded of siltstone. Rare cobble		
2.00 - 2.30		SPT N=12				
2.30 - 2.60		SPT N=15				
2.60 - 2.90		SPT N=21				
2.90 - 3.20		SPT N=26	3.00			
3.20 - 3.50		SPT N=45				
3.50 - 3.80		SPT N=49				
3.80 - 4.10		SPT N=65				
4.10 - 4.40		SPT N=46				
4.40 - 4.50		SPT N=50+	4.50	Base of DP at 4.50m		

Remarks
DCP with SPTs carried out to 4.50m adjacent to window sample borehole

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Tel: 01745 828494. Mob: 07899980958

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS4**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=6	0.30	Firm light brown and medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to		
0.50 - 0.80		SPT N=7		coarse subangular to subrounded of various lithologies		
0.80 - 1.10		SPT N=9	0.80	Stiff medium brown very gravelly very sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies.		
1.10 - 1.40		SPT N=25				
1.40 - 1.70		SPT N=15				
1.70 - 2.00		SPT N=13	1.60	Firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of siltstone		
2.00 - 2.30		SPT N=10				
2.30 - 2.60		SPT N=13				
2.60 - 2.90		SPT N=9				
2.90 - 3.20		SPT N=39				
3.20 - 3.50		SPT N=45	3.00			
3.50 - 3.60		SPT N=50+	3.50	Base of DP at 3.50m		

Remarks
DCP with SPTs carried out to 3.50m 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 AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS5**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=6	0.30			
0.50 - 0.80		SPT N=22		Firm light brown and medium orangish brown gravelly sandy silty CLAY. Gravel is fine to coarse subangular to subrounded of various lithologies		
0.80 - 1.10		SPT N=12				
1.10 - 1.40		SPT N=22				
1.40 - 1.70		SPT N=31	1.40	Firm medium greyish brown gravelly sandy silty CLAY Gravel is fine to coarse subangular to subrounded to subrounded of siltstone		
1.70 - 2.00		SPT N=15				
2.00 - 2.30		SPT N=9				
2.30 - 2.60		SPT N=8				
2.60 - 2.90		SPT N=12				
2.90 - 3.20		SPT N=19	3.00			
3.20 - 3.50		SPT N=31				
3.50 - 3.80		SPT N=28				
3.80 - 4.10		SPT N=34				
4.10 - 4.40		SPT N=57				
4.40 - 4.60		SPT N=50+				
			4.60	Base of DP at 4.60m		

Remarks
DCP with SPTs carried out to 4.60m adjacent to window sample borehole
Groundwater monitoring standpipe to 3.00m

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

WINDOW SAMPLE BOREHOLE RECORD

SITE: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	BOREHOLE No:
PROJECT: LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU	**WS6**
CLIENT: DATRYS CONSULTING ENGINEERS LTD	Sheet 1 of 1
Dates : 29/12/2024	Project Ref:
Elev (maOD) :	E1957
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		Dark brown gravelly silty TOPSOIL		
0.20 - 0.50		SPT N=5	0.30	Firm light brown gravelly sandy silty CLAY		
0.50 - 0.80		SPT N=3				
0.80 - 1.10		SPT N=6				
1.10 - 1.40		SPT N=8				
1.40 - 1.70		SPT N=16	1.40	Firm medium greyish brown gravelly sandy silty CLAY Gravel is fine to coarse subangular to subrounded to subrounded of siltstone		
1.70 - 2.00		SPT N=16				
2.00 - 2.30		SPT N=7				
2.30 - 2.60		SPT N=8				
2.60 - 2.90		SPT N=16	2.50	Dark greyish brown slightly silty fine to coarse GRAVEL of siltstone		
2.90 - 3.20		SPT N=20				
3.20 - 3.50		SPT N=44				
3.50 - 3.80		SPT N=63				
3.80 - 3.90		SPT N=50+				
			3.90	Base of DP at 3.90m		

Remarks
DCP with SPTs carried out to 3.90m adjacent to window sample borehole
Groundwater monitoring standpipe to 3.00m

Appendix 3 - Permeability Test Results

POROSITY/PERMEABILITY TEST

SITE:	LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU
PROJECT No:	E1957
CLIENT:	DATRYS CONSULTING ENGINEERS LTD
DATE:	28/29.10.24
WEATHER:	DRY, OVERCAST
PIT No: P1 2.3m	

GMT	Time Elapsed	Depth to Water	Water Depth	Fall	WDx0.75	WDx0.25
28.10.24						
10.20	0	0.47	1.83			
10.24	4	0.63	1.67		1.37	
11.00	40	1.35	0.95			
12.00	100	1.73	0.57			0.45
13.00	160	1.95	0.35			
13.30	0	0.50	1.80			
13.40	5	0.68	1.62		1.35	
14.00	30	1.22	1.08			
15.00	90	1.68	0.62			
16.00	150	1.87	0.43			0.45
29.10.24						
9.05	0	0.27	1.83			
9.10	5	0.47	1.63			
9.30	25	0.94	1.16		1.37	
10.00	55	1.21	0.89			
10.30	85	1.44	0.66			
11.00	115	1.55	0.55			
12.00	175	1.66	0.44			0.45

Pit Dimensions:	0.70w X 2.20L X 2.30D		
Soil Description:	0.00	0.25	Dark brown gravelly silty TOPSOIL
	0.25	1.10	Firm medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular predominantly siltstone
	1.10	2.30+	Moderately strong to weak slightly weathered dark greyish brown and brown very fractured SILTSTONE (excavates as medium to coarse gravel)

POROSITY/PERMEABILITY TEST

SITE:	LAND AT TYDDYN FLETCHER, LLANBERIS ROAD, CAERNARFON, LL55 2DU
PROJECT No:	E1957
CLIENT:	DATRYS CONSULTING ENGINEERS LTD
DATE:	28/29.10.24
WEATHER:	DRY, OVERCAST
PIT No: P2 2.50m	

GMT	Time Elapsed	Depth to Water	Water Depth	Fall	WDx0.75	WDx0.25
10.05	0	0.60	1.90			
10.55	50	0.78	1.72			
11.55	110	0.86	1.64			
12.55	170	0.93	1.57			
29.10.24						
10.55	1490	1.06	1.44		1.425	
						0.475

Pit Dimensions:	0.70w X 2.30L X 2.50D		
Soil Description:	0.00	0.25	Dark brown gravelly silty TOPSOIL
	0.25	0.70	Firm medium orangish brown very gravelly sandy silty CLAY. Gravel is fine to coarse surrounded to subangular predominantly siltstone
	0.70	1.20	Soft to firm medium brown very gravelly sandy silty CLAY. Gravel is fine to coarse subrounded to subangular of various lithologies. Rare cobble.
	1.20	2.50+	Soft to firm medium greyish brown very gravelly sandy silty CLAY. Gravel is fine to coarse subangular predominantly siltstone

Appendix 4 - DCP CBR Test Results Report

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
LL17 0RD

Date: 30th October 2024

Report No: DCP FTR 13-02027 - 13-02032

DYNAMIC CONE PENETROMETER TEST REPORT

INTRODUCTION:

Requirements: To determination of Penetration Value / CBR Value and Subgrade Surface Modulus of Unbound Soils using a Dynamic Cone Penetrometer (DCP) in accordance with method statement ref; MS-G-ST-38 based on CS 229 Data for Pavement Assessment.

Procedure: The depth is recorded after each blow until approximately 1.0m is reached or penetration ceases. The results are presented in graphical form showing depth versus Blows with DCP. The CBR (California Bearing Ratio) and Subgrade Surface Modulus is calculated using Equation 8/1 and Equation 8/2 in accordance with SHW Clause 882. It is possible to calculate CBR for each layer of material defined as a change in slope on the graph, indicated by different strength layers and/or material type. For reporting purposes, the CBR's have been calculated at any change in slope; however, trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Soil strength expressed as penetration depth mm/blow per layer is converted to CBR using the following Calculation: -

Equation 8/1 - $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$

CBR Value is converted to Surface Modulus € using the following calculation: -

Equation 8/2 - $E = 17.6(\text{CBR})^{0.64}$ MPa

Site Address: **Tyddyn Fletcher, Caernarfon**

Test details:-

Date of test:	**29/10/2024**
Test location:	**Tyddyn Fletcher, Caernarfon**
Technicians' name(s):	**JSW/MVB**

Prepared by:
Mr Hari T Williams
Site Testing Administrator

Approved by:
Mr Irfon L Owen
Site Testing Team Manager

Test location Plan
(Not Provided)

Test Results
Test 1

Site:	Tyddyn Fletcher		**Test Location:**	1	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1406120677042, -4.25591225736239	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW

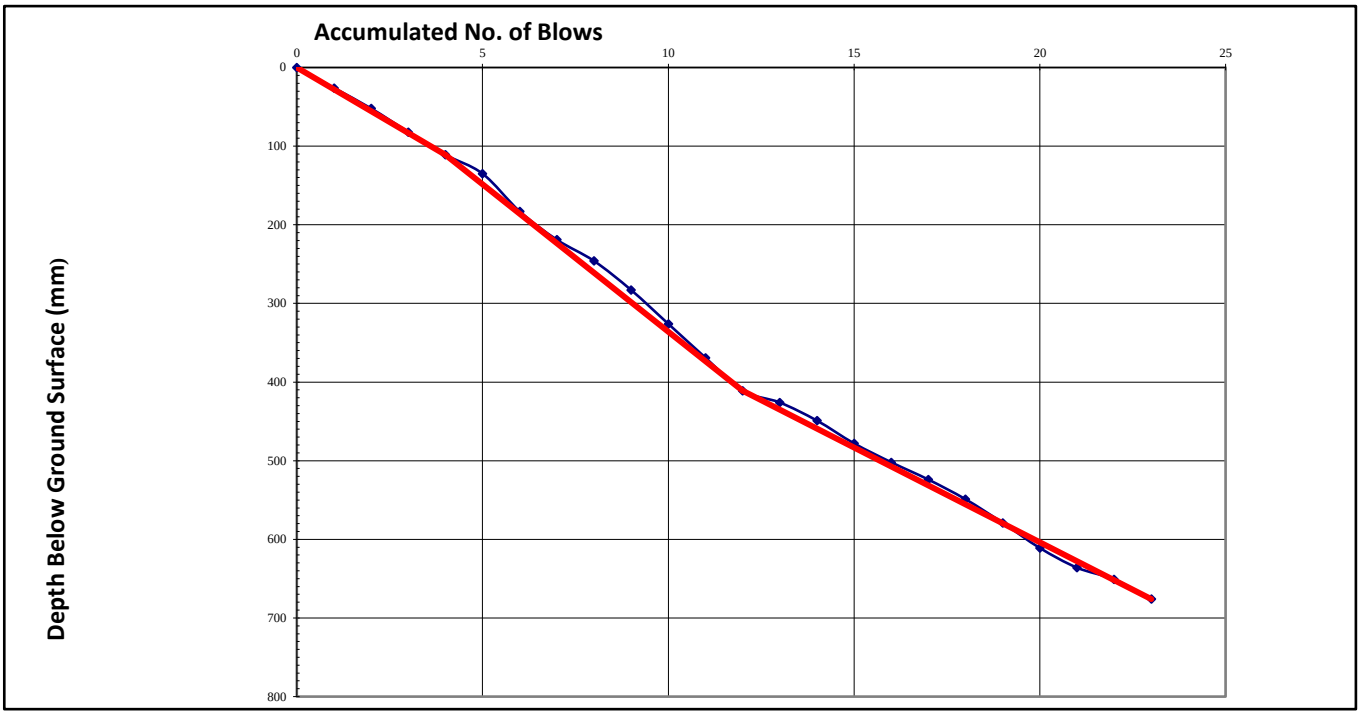
Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	159	344	440	660		
Finish depth of layer (mm)	159	344	440	660	790		
Layer depth (mm)	159	185	96	220	130	0	0
Blow per layer (No)	3	6	21	57	14	0	0
DCP (mm/blow)	53.0	30.8	4.6	3.9	9.3	#DIV/0!	#DIV/0!
CBR (%)	**4.5**	**8.1**	**60.6**	**72.4**	**28.6**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**46.4**	**66.9**	**243.3**	**272.9**	**150.7**	**#DIV/0!**	**#DIV/0!**

Comments:

CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Test Results
Test 2

Site:	Tyddyn Fletcher		**Test Location:**	2	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1402869193871, -4.2562993019215	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW



Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	111	411				
Finish depth of layer (mm)	111	411	676				
Layer depth (mm)	111	300	265	0	0	0	0
Blow per layer (No)	4	8	11	0	0	0	0
DCP (mm/blow)	27.8	37.5	24.1	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CBR (%)	**9.0**	**6.6**	**10.5**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**71.8**	**58.6**	**79.1**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Comments:
CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Test Results
Test 3

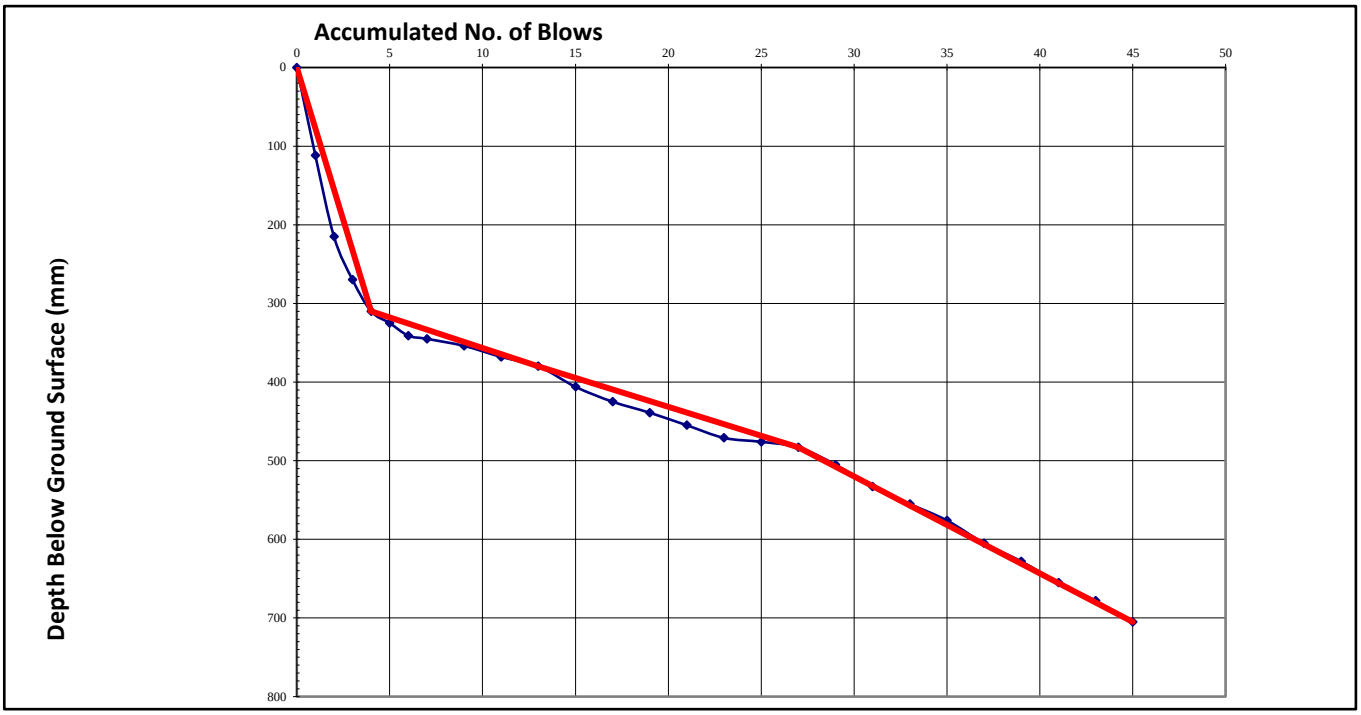
Site:	Tyddyn Fletcher		**Test Location:**	3	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1406494090828, -4.25611786544719	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW

Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	123	150	306			
Finish depth of layer (mm)	123	150	306	685			
Layer depth (mm)	123	27	156	379	0	0	0
Blow per layer (No)	4	5	4	13	0	0	0
DCP (mm/blow)	30.8	5.4	39.0	29.2	#DIV/0!	#DIV/0!	#DIV/0!
CBR (%)	**8.1**	**50.8**	**6.3**	**8.5**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**67.0**	**217.4**	**57.1**	**69.5**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Comments:
CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Test Results
Test 4

Site:	Tyddyn Fletcher		**Test Location:**	4	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1402988349738, -4.25629826800045	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW

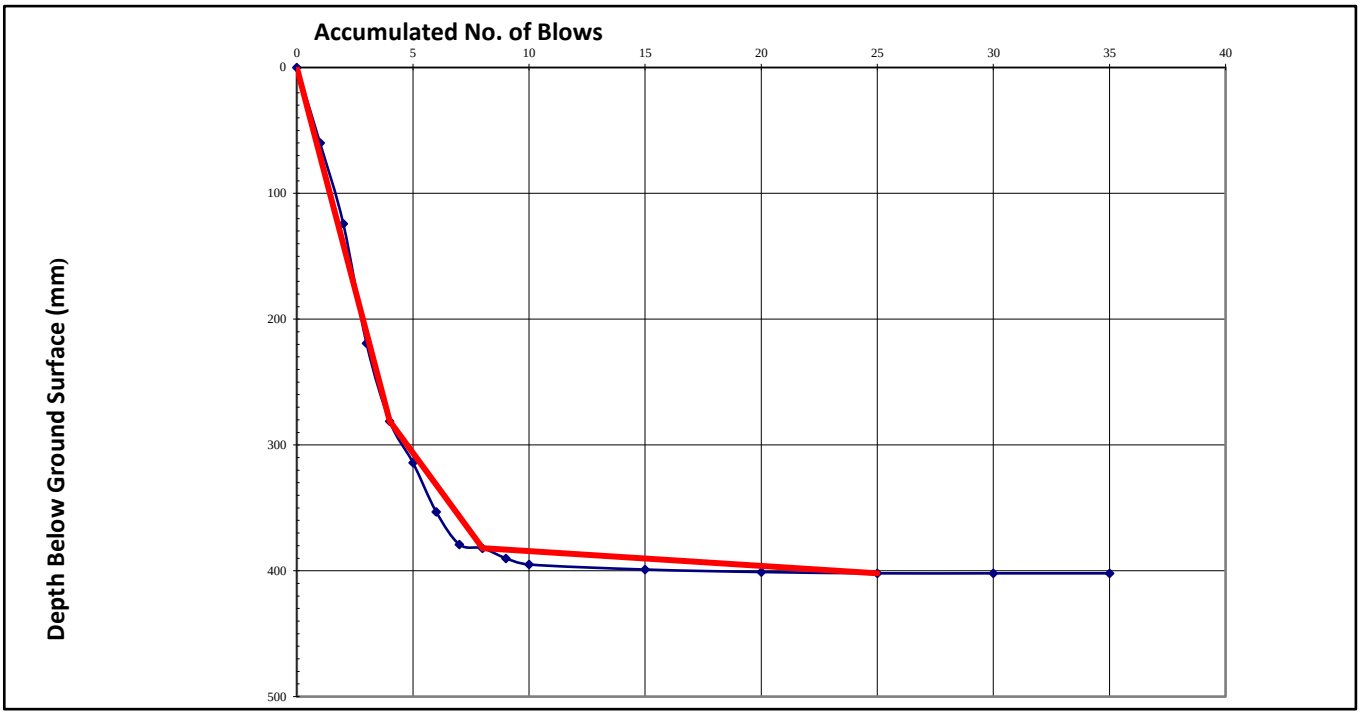


Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	310	380	483			
Finish depth of layer (mm)	310	380	483	705			
Layer depth (mm)	310	70	103	222	0	0	0
Blow per layer (No)	4	9	14	18	0	0	0
DCP (mm/blow)	77.5	7.8	7.4	12.3	#DIV/0!	#DIV/0!	#DIV/0!
CBR (%)	**3.0**	**34.5**	**36.6**	**21.2**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**35.9**	**169.9**	**176.4**	**124.3**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Comments:
CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Test Results
Test 5

Site:	Tyddyn Fletcher		**Test Location:**	5	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1400859459171, -4.25573716803148	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW



Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	281	382				
Finish depth of layer (mm)	281	382	402				
Layer depth (mm)	281	101	20	0	0	0	0
Blow per layer (No)	4	4	17	0	0	0	0
DCP (mm/blow)	70.3	25.3	1.2	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CBR (%)	**3.4**	**9.9**	**254.3**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**38.3**	**76.6**	**609.5**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Comments:
CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Test Results
Test 6

Site:	Tyddyn Fletcher		**Test Location:**	6	
Material Description:	Grass Soil		**GPS co-ordinates**	53.1402988460858, -4.25629833874527	
DCP Reference:	5195	**Date Tested:**	29/10/2024	**Tested By:**	JSW

Layer	1	2	3	4	5	6	7
Start depth of layer (mm)	0	87	190	479	560		
Finish depth of layer (mm)	87	190	479	560	720		
Layer depth (mm)	87	103	289	81	160	0	0
Blow per layer (No)	1	2	4	3	8	0	0
DCP (mm/blow)	87.0	51.5	72.3	27.0	20.0	#DIV/0!	#DIV/0!
CBR (%)	**2.7**	**4.7**	**3.3**	**9.3**	**12.7**	**#DIV/0!**	**#DIV/0!**
Surface Modulus (Mpa)	**33.2**	**47.3**	**37.6**	**73.2**	**89.7**	**#DIV/0!**	**#DIV/0!**

Comments:
CS 229 requires calculation of CBR for each layer of material defined as a change in slope on the graph, indicating different strength layers and/or material type. For reporting purposes the CBR's have been calculated at any change in slope; however trial pit inspections were not carried out to confirm if the change is due to the presence of different layers.

Appendix 5 - Laboratory Geotechnical Test Results

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077677

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**TP3 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**55**
Plastic Limit	**=**	**20**
Liquid Limit	**=**	**28**
Plasticity Index	**=**	**8**

These results relate only to the items tested.

Comments:	Report checked and approved by:
None	Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077678

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**TP3 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) =	**18.8**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	 Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077679

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**TP4 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**50**
Plastic Limit	**=**	**Non-Plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

These results relate only to the items tested.

Comments:	Report checked and approved by:  Izabella Kantor CS Team

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E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077680

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**TP4 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) =	**16.1**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	Izabella Kantor CS Team

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E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 26 November 2024
Test Report Ref: TR 1077681

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**TP4 0.5m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**68**
Plastic Limit	**=**	**Non-Plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

These results relate only to the items tested.

Comments:	Report checked and approved by:
Sample was very silty	 Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077682

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**TP4 0.5m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) = **21**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	Izabella Kantor CS Team

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E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 12 November 2024
Test Report Ref: TR 1077683

Contract: Tyddyn Fletcher

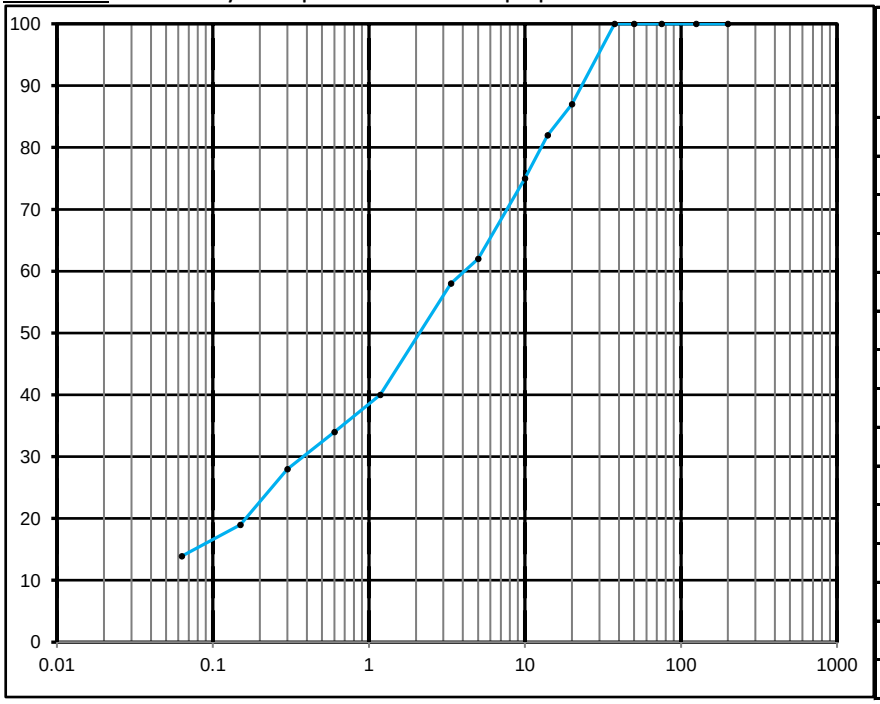
LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample- washing and sieving method in accordance with **BS1377-Part2-1990**

SAMPLE DETAILS:

Certificate of sampling received:	**No**	Name of Source:	**Tyddyn Fletcher**
Laboratory Ref. No:	**S126816**	Method of Sampling:	**Unknown**
Client Ref. No:	**TP2 0.5m**	Sampled By:	**Client (Test results apply to sample as received)**
Date and Time of Sampling:	**28/10/2024**	Tested By:	**LT**
Date of Receipt at Lab:	**28/10/2024**		
Date of Start of Test:	**29/10/2024**		
Sampling Location:	**Unknown**		
Material Description:	**Clay**		
Target Specification:			

RESULTS: Were any unrepresentative lumps present? No



BS Test Sieve Size	Percentage By Mass Passing	Specification Limits
200.0 mm	100	
125.0 mm	100	
75.0 mm	100	
50.0 mm	100	
37.5 mm	100	
20.0 mm	87	
14.0 mm	82	
10.0 mm	75	
5.0 mm	62	
3.35 mm	58	
1.18 mm	40	
0.600 mm	34	
0.300 mm	28	
0.150 mm	19	
0.063 mm	13.9	

These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Izabella Kantor
CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077684

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**TP5 2.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**68**
Plastic Limit	**=**	**22**
Liquid Limit	**=**	**30**
Plasticity Index	**=**	**8**

These results relate only to the items tested.

Comments:	Report checked and approved by:  Izabella Kantor CS Team

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E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077685

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**TP5 2.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) =	**14.4**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	Izabella Kantor CS Team

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A PHENNA GROUP COMPANY

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077686

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**TP5 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**62**
Plastic Limit	**=**	**Non-Plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

These results relate only to the items tested.

Comments:	Report checked and approved by:  Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1077687

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**TP5 1.0m**
Date and Time of Sampling:	**28/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) =	**18.4**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	 Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1078048

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Moisture Content of a soil sample (definitive oven-drying method) in accordance with **BS 1377 : Part 2 : 1990 : clause 3.2**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. No:	**WS6 0.8m**
Date and Time of Sampling:	**29/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**03/12/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**ME**
Material Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

Moisture Content (%) =	**19.3**

These results relate only to the items tested.

Comments	Report checked and approved by:
None	Izabella Kantor CS Team

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 03 December 2024
Test Report Ref: TR 1078049

Contract: Tyddyn Fletcher

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with **BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S126816**
Client Ref. :	**WS6 0.8m**
Date and Time of Sampling:	**29/10/2024**
Date of Receipt at Lab:	**28/10/2024**
Date of Start of Test:	**20/11/2024**
Sampling Location:	**Unknown**
Name of Source:	**Tyddyn Fletcher**
Method of Sampling:	**Unknown**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**GDW**
Soil Description:	**Clay**
Target Specification:	**N/A**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**64**
Plastic Limit	**=**	**Non-Plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

These results relate only to the items tested.

Comments:	Report checked and approved by:  Izabella Kantor CS Team

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E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 12 November 2024
Test Report Ref: TR 1078050

Contract: Tyddyn Fletcher

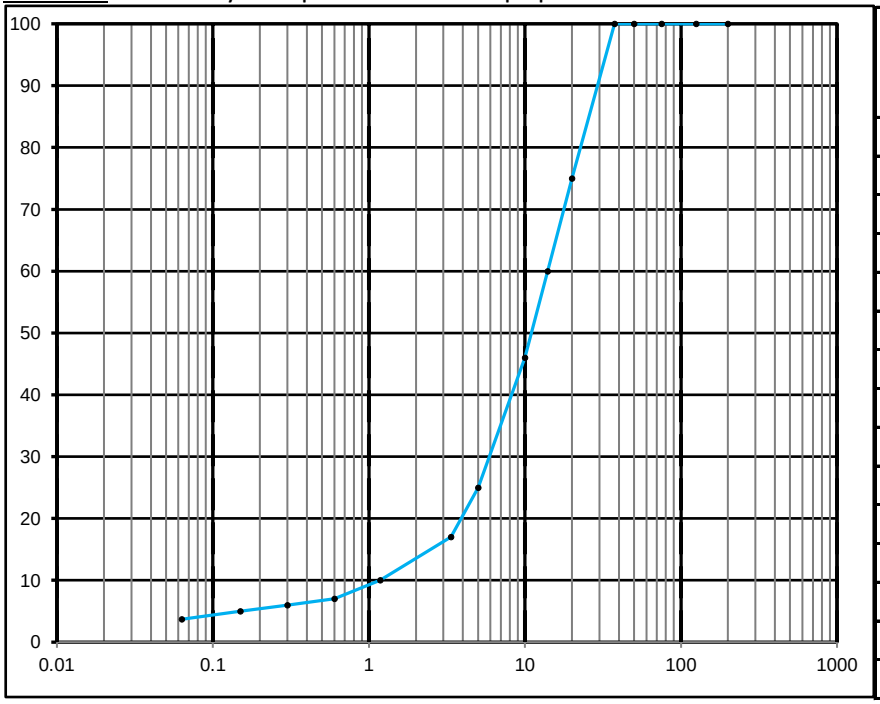
LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample- washing and sieving method in accordance with **BS1377-Part2-1990**

SAMPLE DETAILS:

Certificate of sampling received:	**No**	Name of Source:	**Tyddyn Fletcher**
Laboratory Ref. No:	**S126816**	Method of Sampling:	**Unknown**
Client Ref. No:	**WS6 3.0m**	Sampled By:	**Client (Test results apply to sample as received)**
Date and Time of Sampling:	**29/10/2024**	Tested By:	**LT**
Date of Receipt at Lab:	**28/10/2024**		
Date of Start of Test:	**30/10/2024**		
Sampling Location:	**Unknown**		
Material Description:	**Clay**		
Target Specification:	**N/A**		

RESULTS: Were any unrepresentative lumps present? No



BS Test Sieve Size	Percentage By Mass Passing	Specification Limits
200.0 mm	100	
125.0 mm	100	
75.0 mm	100	
50.0 mm	100	
37.5 mm	100	
20.0 mm	75	
14.0 mm	60	
10.0 mm	46	
5.0 mm	25	
3.35 mm	17	
1.18 mm	10	
0.600 mm	7	
0.300 mm	6	
0.150 mm	5	
0.063 mm	3.7	

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
N. Hughes
Neil Hughes
Assistant Technical Manager

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
United Kingdom
LL17 0UN

Attention :	Huw Littler-Jones
Date :	18th November, 2024
Your reference :	Tyddyn Fletcher
Our reference :	Test Report 24/18360 Batch 1
Location :	Tyddyn Fletcher
Date samples received :	29th October, 2024
Status :	Final Report
Issue :	202411181342

Ten samples were received for analysis on 29th October, 2024 of which nine 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.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 16.362 kg of CO2

Scope 1&2&3 emissions - 38.669 kg of CO2

Authorised By:

Bruce Leslie
Project Manager

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Element Materials Technology

Client Name: E-Geo Solutions
Reference: Tyddyn Fletcher
Location: Tyddyn Fletcher
Contact: Huw Littler-Jones
EMT Job No: 24/18360

Report : Solid

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

EMT Sample No.	1	2	4	5	6-7	8	9-10	11	12		LOD/LOR	Units	Method No.
Sample ID	TP1	TP2	TP3	TP4	TP4	TP4	TP5	TP5	TP5				
Depth	1.00	0.75	0.50	0.20	0.40	1.00	0.20	0.75	1.50				
COC No / misc													
Containers	B	J	J	J	J B	J	J B	J	J				
Sample Date	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024				
Sample Type	Sandy Clay	Clay	Clay	Clayey Loam	Clay	Clay	Clay	Sandy Clay	Clay				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024				
Arsenic #M	-	20.8	33.3	17.5	15.5	-	23.9	22.2	-		<0.5	mg/kg	TM30/PM15
Cadmium #M	-	<0.1	<0.1	<0.1	<0.1	-	0.2	<0.1	-		<0.1	mg/kg	TM30/PM15
Chromium #M	-	43.3	76.4	64.4	69.5	-	82.8	63.9	-		<0.5	mg/kg	TM30/PM15
Copper #M	-	22	19	30	16	-	39	22	-		<1	mg/kg	TM30/PM15
Lead #M	-	37	18	135	29	-	251	22	-		<5	mg/kg	TM30/PM15
Mercury #M	-	<0.1	<0.1	<0.1	<0.1	-	0.3	<0.1	-		<0.1	mg/kg	TM30/PM15
Nickel #M	-	21.0	19.1	18.1	27.8	-	18.4	22.2	-		<0.7	mg/kg	TM30/PM15
Selenium #M	-	<1	<1	1	2	-	1	1	-		<1	mg/kg	TM30/PM15
Sulphur as S	-	-	0.02	-	0.02	-	0.08	-	-		<0.01	%	TM30/PM15
Total Sulphate as SO4 #M	-	-	89	-	241	-	1058	-	-		<50	mg/kg	TM50/PM29
Water Soluble Boron #M	-	0.2	0.2	0.4	0.2	-	0.7	0.2	-		<0.1	mg/kg	TM74/PM32
Zinc #M	-	64	44	98	95	-	129	66	-		<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	-	0.14	-	-		<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	-	0.51	-	-		<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	<0.03	-	<0.03	-	0.47	-	-		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	<0.06	-	<0.06	-	0.39	-	-		<0.06	mg/kg	TM4/PM8
Chrysene #M	-	-	<0.02	-	<0.02	-	0.39	-	-		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	-	-	<0.07	-	<0.07	-	0.64	-	-		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	<0.04	-	<0.04	-	0.39	-	-		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	-	-	<0.04	-	<0.04	-	0.23	-	-		<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	-	0.23	-	-		<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	<0.6	-	<0.6	-	3.4	-	-		<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	<0.05	-	<0.05	-	0.46	-	-		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	<0.02	-	<0.02	-	0.18	-	-		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	96	-	96	-	97	-	-		<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: E-Geo Solutions
Reference: Tyddyn Fletcher
Location: Tyddyn Fletcher
Contact: Huw Littler-Jones
EMT Job No: 24/18360

Report : Solid

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

EMT Sample No.	1	2	4	5	6-7	8	9-10	11	12		LOD/LOR	Units	Method No.
Sample ID	TP1	TP2	TP3	TP4	TP4	TP4	TP5	TP5	TP5				
Depth	1.00	0.75	0.50	0.20	0.40	1.00	0.20	0.75	1.50				
COC No / misc													
Containers	B	J	J	J	J B	J	J B	J	J				
Sample Date	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024	28/10/2024				
Sample Type	Sandy Clay	Clay	Clay	Clayey Loam	Clay	Clay	Clay	Sandy Clay	Clay				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024				
TPH CWG													
Aliphatics													
>C5-C6 #M	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>C6-C8 #M	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>C8-C10	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>C10-C12 #M	-	-	-	-	<0.2	-	<0.2	-	-		<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	-	-	-	-	<4	-	<4	-	-		<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	-	-	-	-	<7	-	<7	-	-		<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	-	-	-	-	<7	-	<7	-	-		<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	-	-	-	-	<19	-	<19	-	-		<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 #	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	-	-	-	-	<0.1	-	<0.1	-	-		<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-	-	-	-	<0.2	-	<0.2	-	-		<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	-	-	-	-	<4	-	<4	-	-		<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	-	-	-	-	<7	-	<7	-	-		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	-	-	-	-	<7	-	<7	-	-		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	-	-	-	-	<19	-	<19	-	-		<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	-	-	-	<38	-	<38	-	-		<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
Benzene #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
Toluene #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
Ethylbenzene #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
m/p-Xylene #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
o-Xylene #	-	-	-	-	<5	-	<5	-	-		<5	ug/kg	TM36/PM12
Phenol #M	-	-	<0.01	-	<0.01	-	<0.01	-	-		<0.01	mg/kg	TM26/PM21B
Natural Moisture Content	-	-	16.3	-	21.5	-	42.7	-	-		<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #M	0.0044	0.0103	-	-	-	0.0071	-	-	<0.0015		<0.0015	g/l	TM38/PM20
Total Cyanide #M	-	-	<0.5	-	<0.5	-	0.9	-	-		<0.5	mg/kg	TM89/PM45
Sulphide	-	-	<10	-	<10	-	<10	-	-		<10	mg/kg	TM107/PM45
pH #M	-	6.24	7.11	5.76	6.51	-	6.01	7.94	-		<0.01	pH units	TM73/PM11
Sample Type	Sandy Clay	Clay	Clay	Clayey Loam	Clay	Clay	Clay	Sandy Clay	Clay			None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown			None	PM13/PM0
Other Items	stones	stones, vegetation	stones	stones, vegetation	stones, vegetation	stones	stones, vegetation	stones	stones			None	PM13/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: E-Geo Solutions
Reference: Tyddyn Fletcher
Location: Tyddyn Fletcher
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). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

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

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
24/18360	1	TP4	0.40	7	Simon Postlewhite	11/11/2024	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	11/11/2024	**Asbestos Fibres**	NAD
					Simon Postlewhite	11/11/2024	**Asbestos ACM**	NAD
					Simon Postlewhite	11/11/2024	**Asbestos Type**	NAD
24/18360	1	TP5	0.20	10	Simon Postlewhite	11/11/2024	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	11/11/2024	**Asbestos Fibres**	NAD
					Simon Postlewhite	11/11/2024	**Asbestos ACM**	NAD
					Simon Postlewhite	11/11/2024	**Asbestos Type**	NAD

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 24/18360						

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.
It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 24/18360

SOILS and ASH

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. Asbestos samples are retained for 6 months.

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. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil 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 is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

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 for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

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 requirement of our Accreditation Body 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.
Laboratory records are kept for a period of no less than 6 years.

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.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).
Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitively, with a matrix specific limit of detection. Note, other compounds may be present but are not reported.

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 quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
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: 24/18360

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 degrees Celsius or 105 degrees Celsius. 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/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	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/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	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.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.	Yes	Yes	AR	Yes

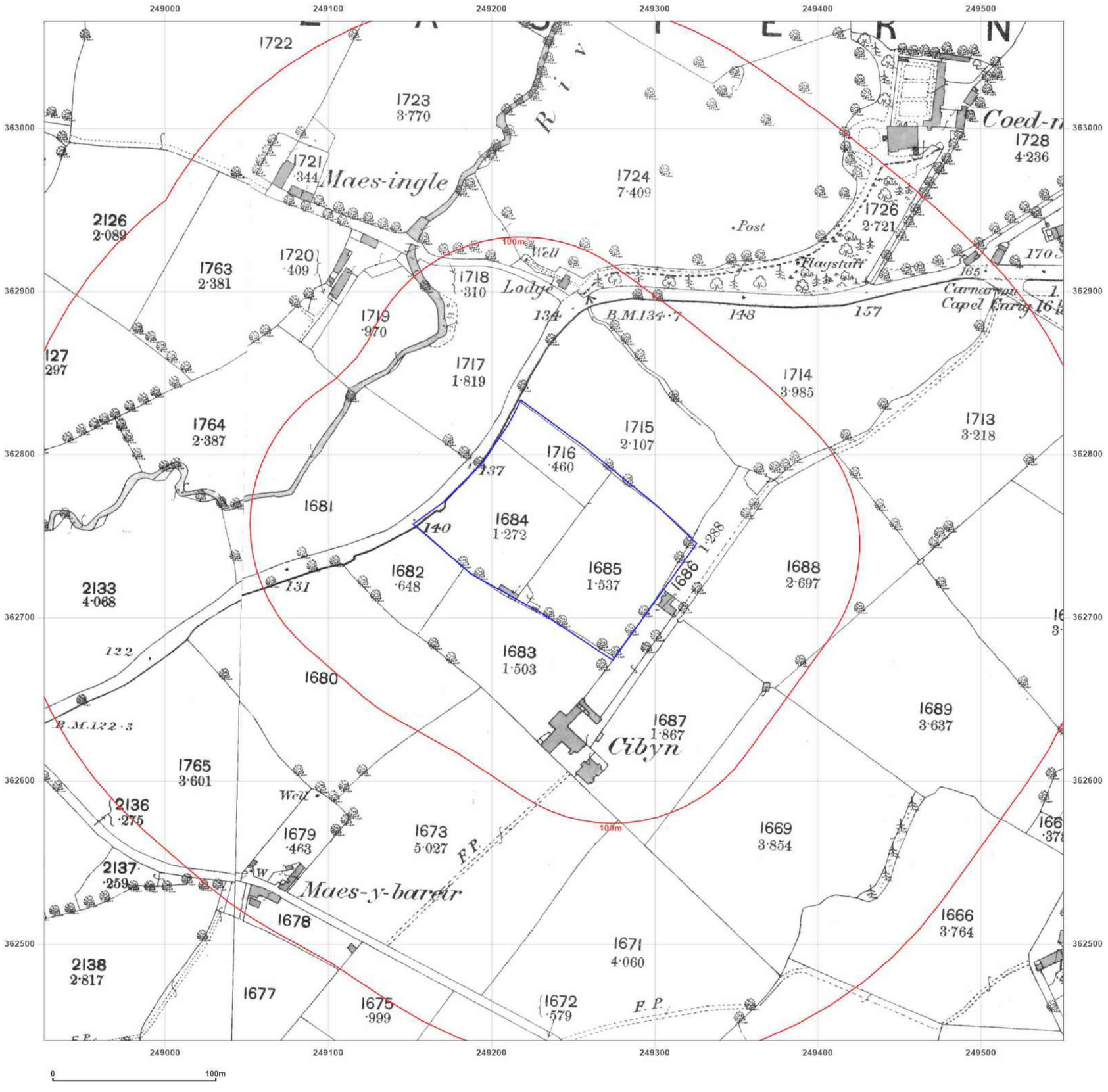
EMT Job No: 24/18360

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
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 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. 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 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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) - All anions comparable to BS ISO 15923-1: 2013I	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
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 Second edition (2021)	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

EMT Job No: 24/18360

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
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

Appendix 7 - Historical Ordnance Survey Maps



Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: County Series

Map date: **1889-1890**

Scale: 1:2,500

Printed at: 1:2,500

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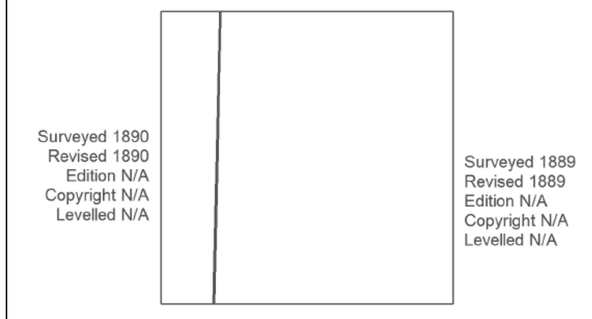

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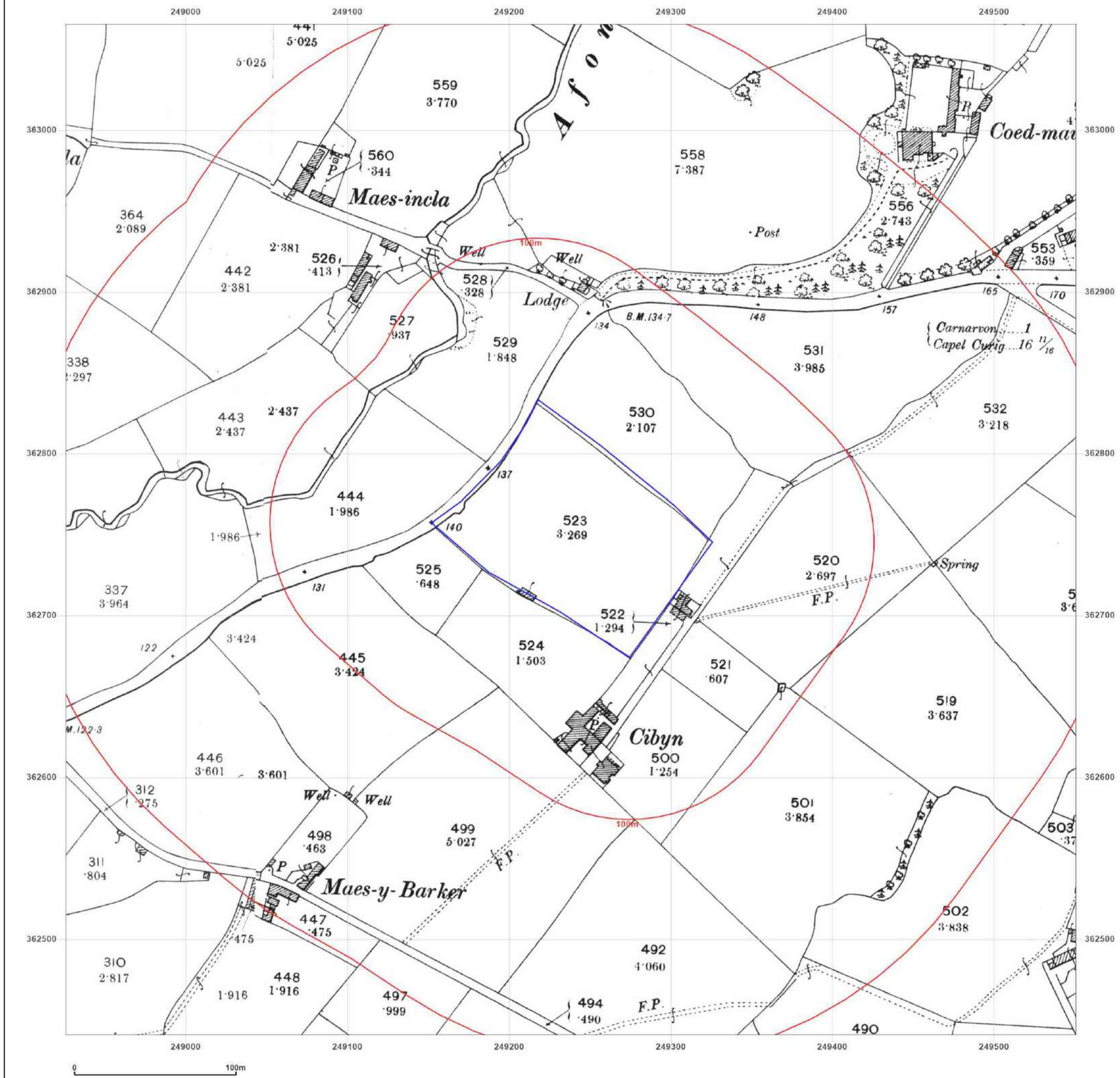

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Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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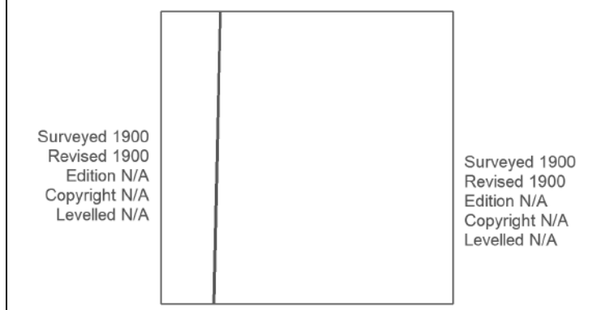

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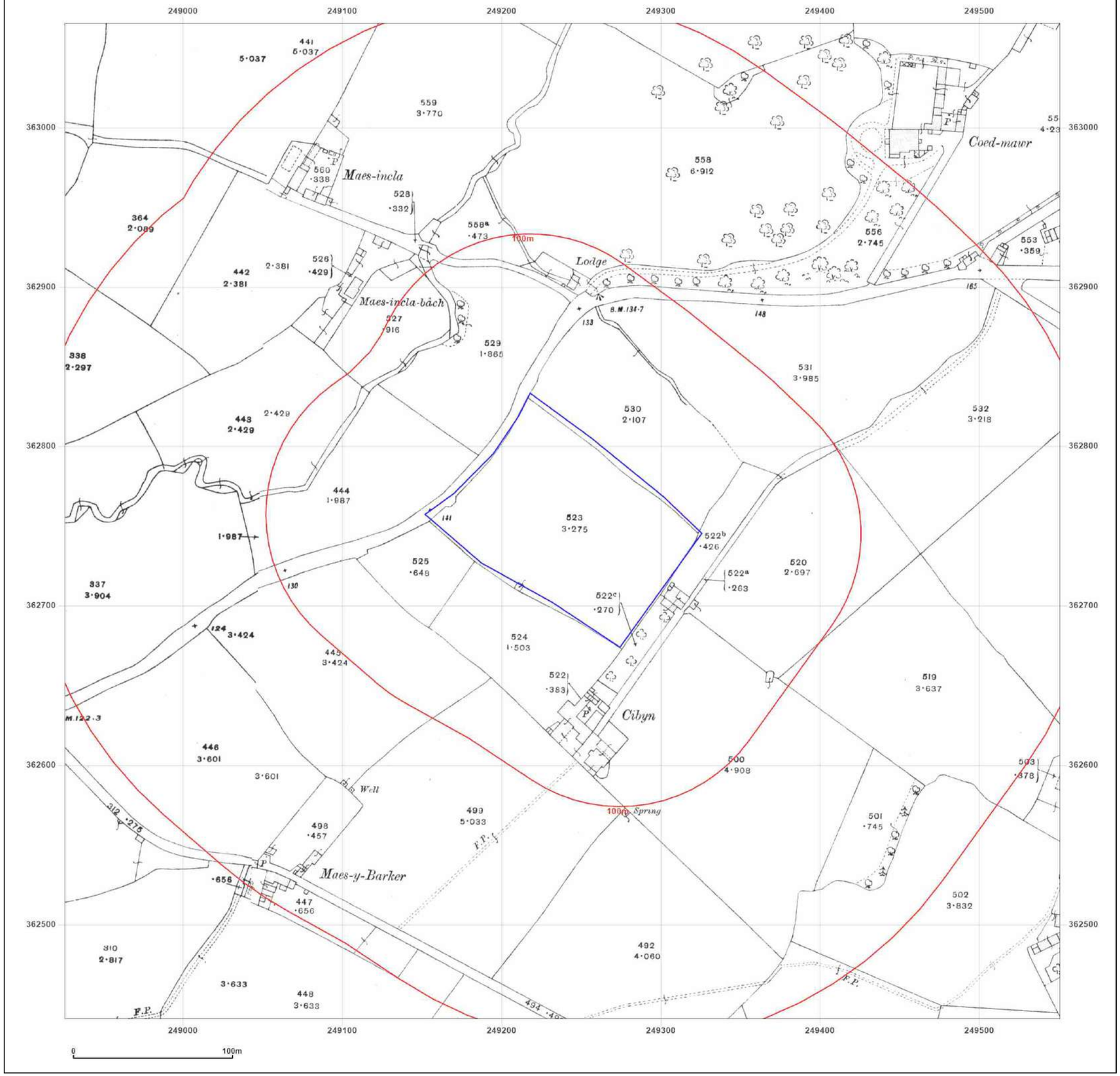

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: County Series

Map date: **1914-1918**

Scale: 1:2,500

Printed at: 1:2,500

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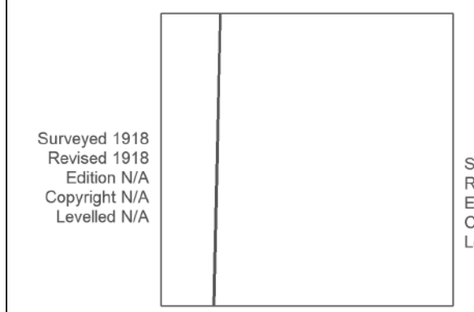

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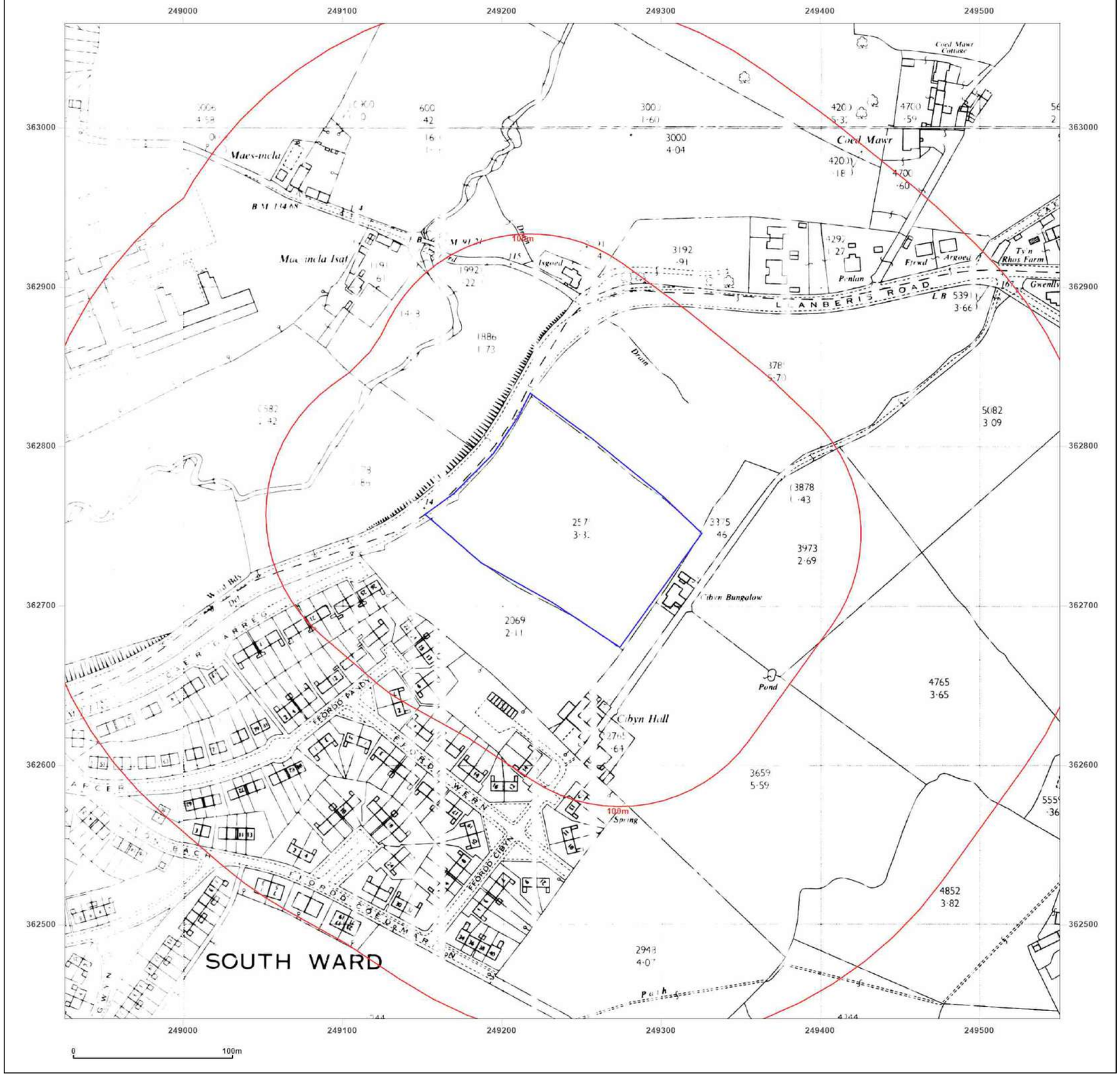

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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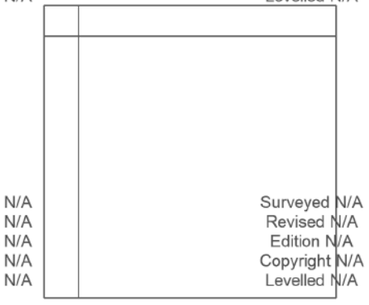
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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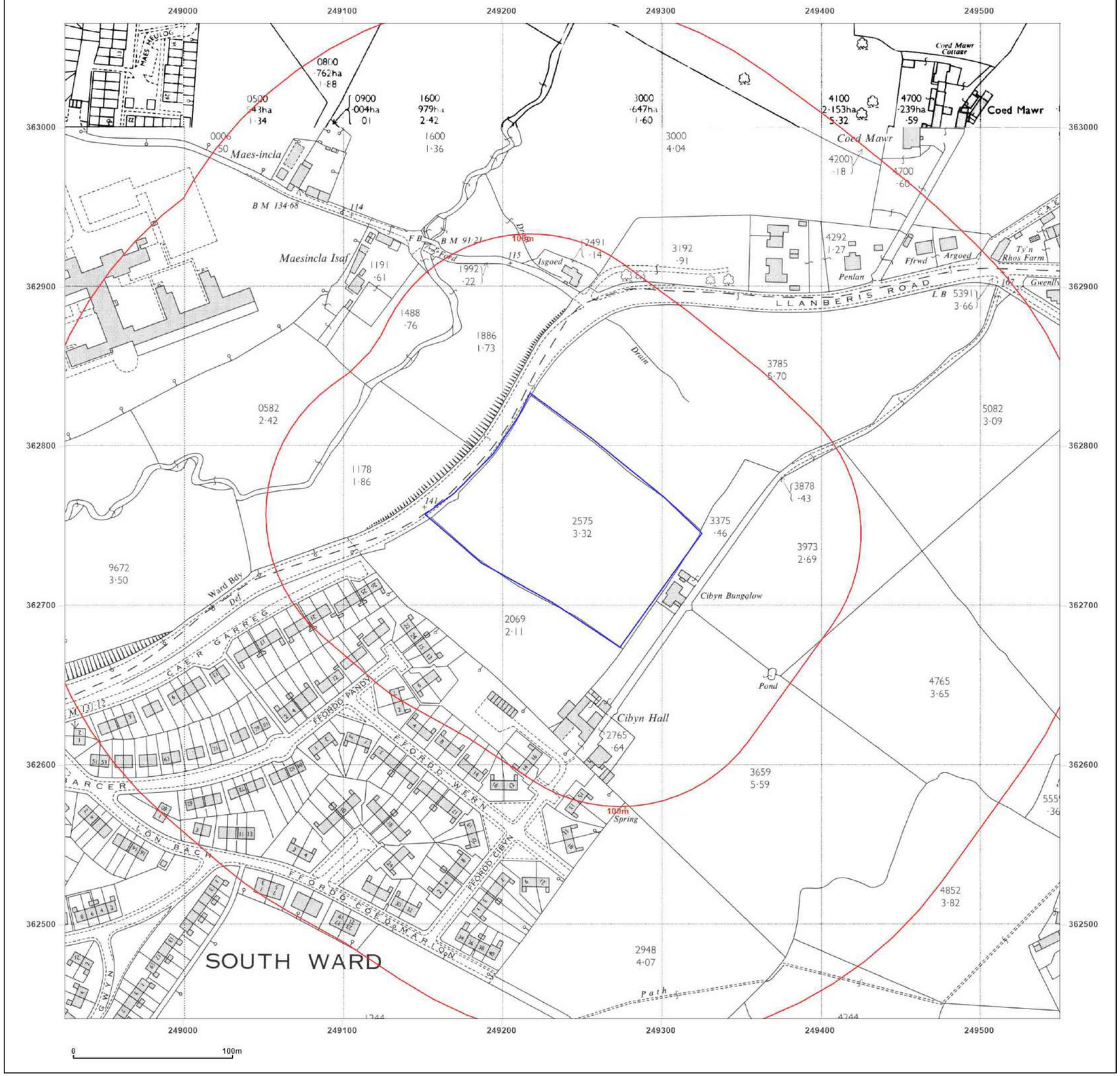

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Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1964
Revised 1964
Edition N/A
Copyright 1965
Levelled 1955

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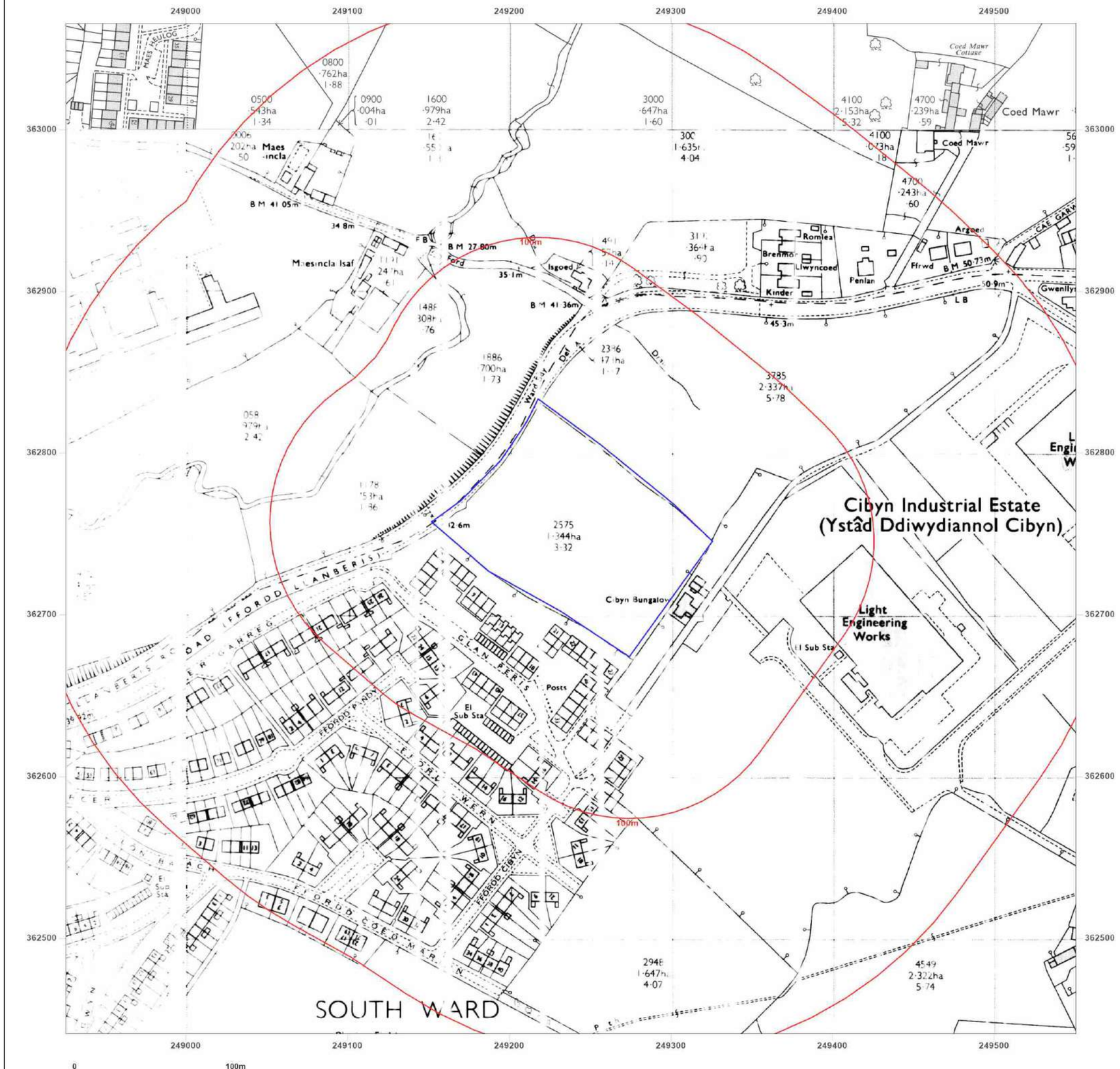

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Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1972-1973**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised 1964
Edition N/A
Copyright 1965
Levelled 1973

Surveyed N/A
Revised 1971
Edition N/A
Copyright 1972
Levelled 1969

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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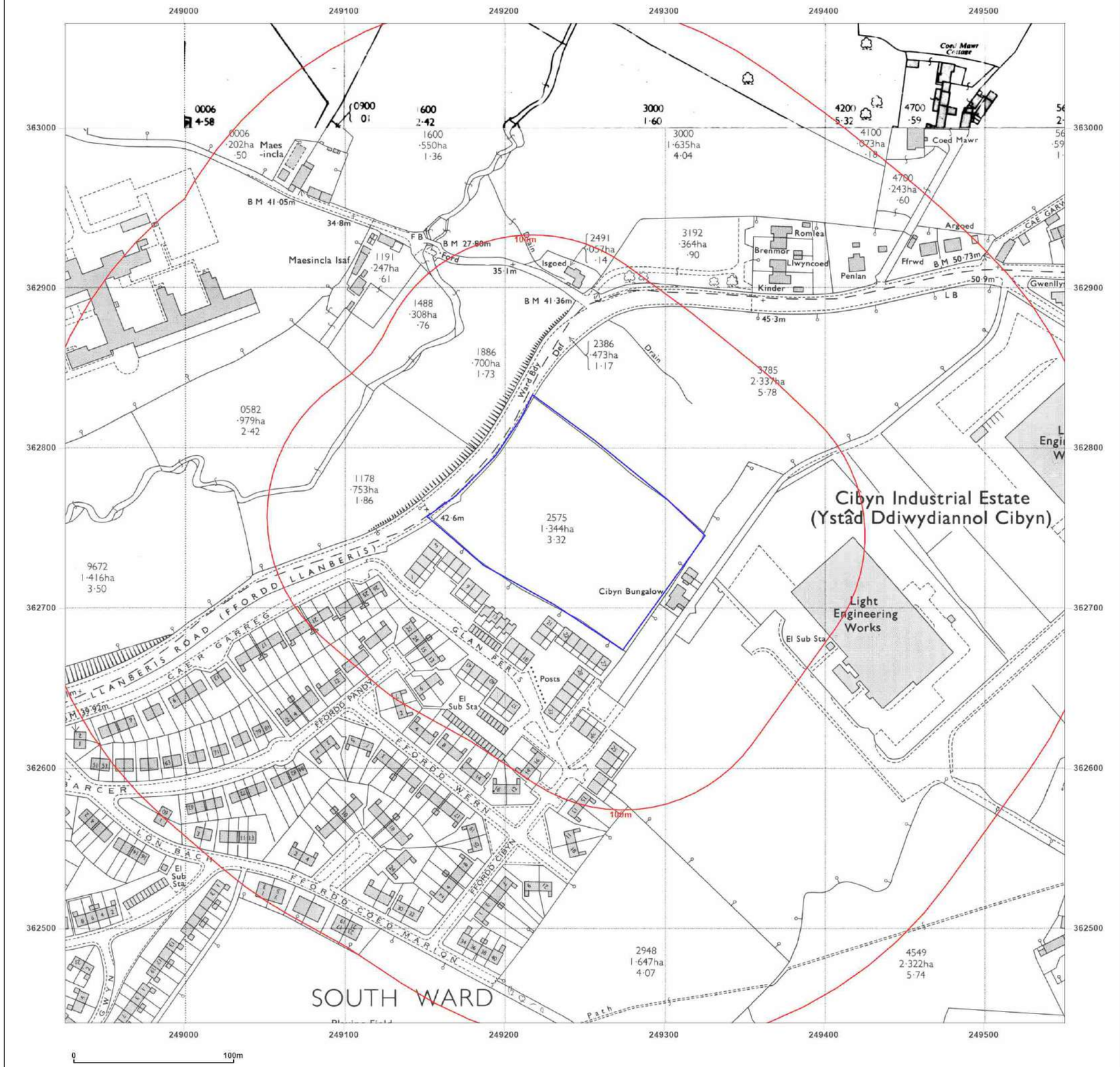

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Site Details:

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CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1972-1974**

Scale: 1:2,500

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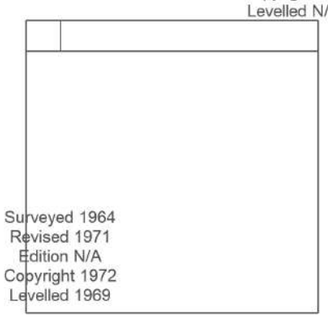
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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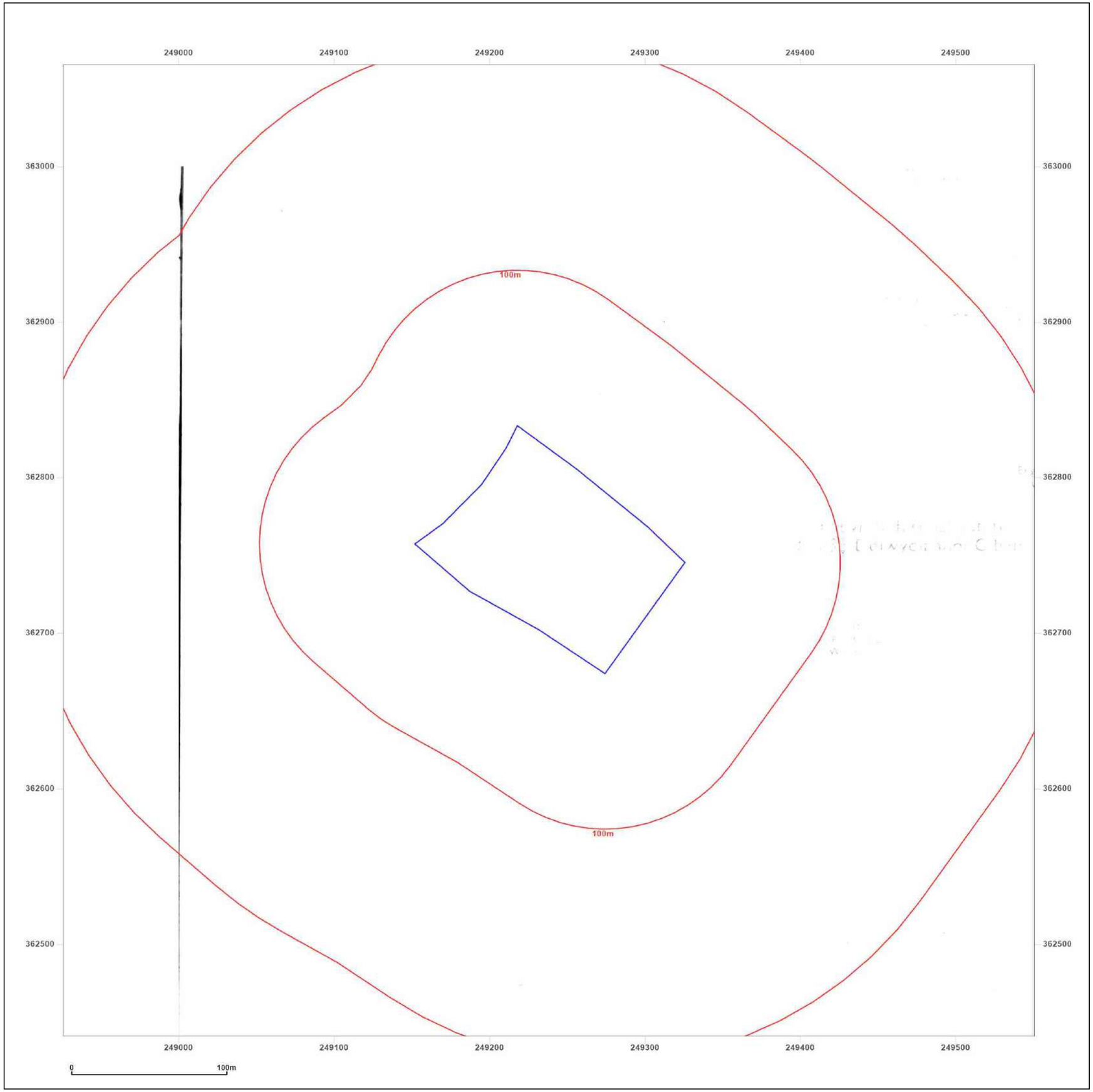

Groundsure INSIGHTS

Site Details:

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CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1974-1977**

Scale: 1:2,500

Printed at: 1:2,500

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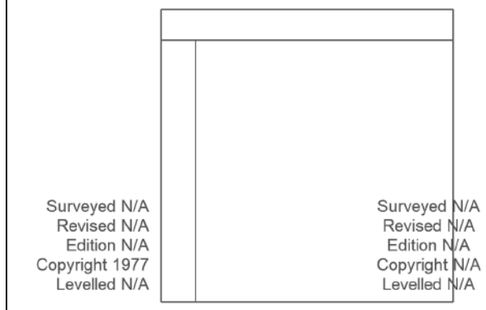

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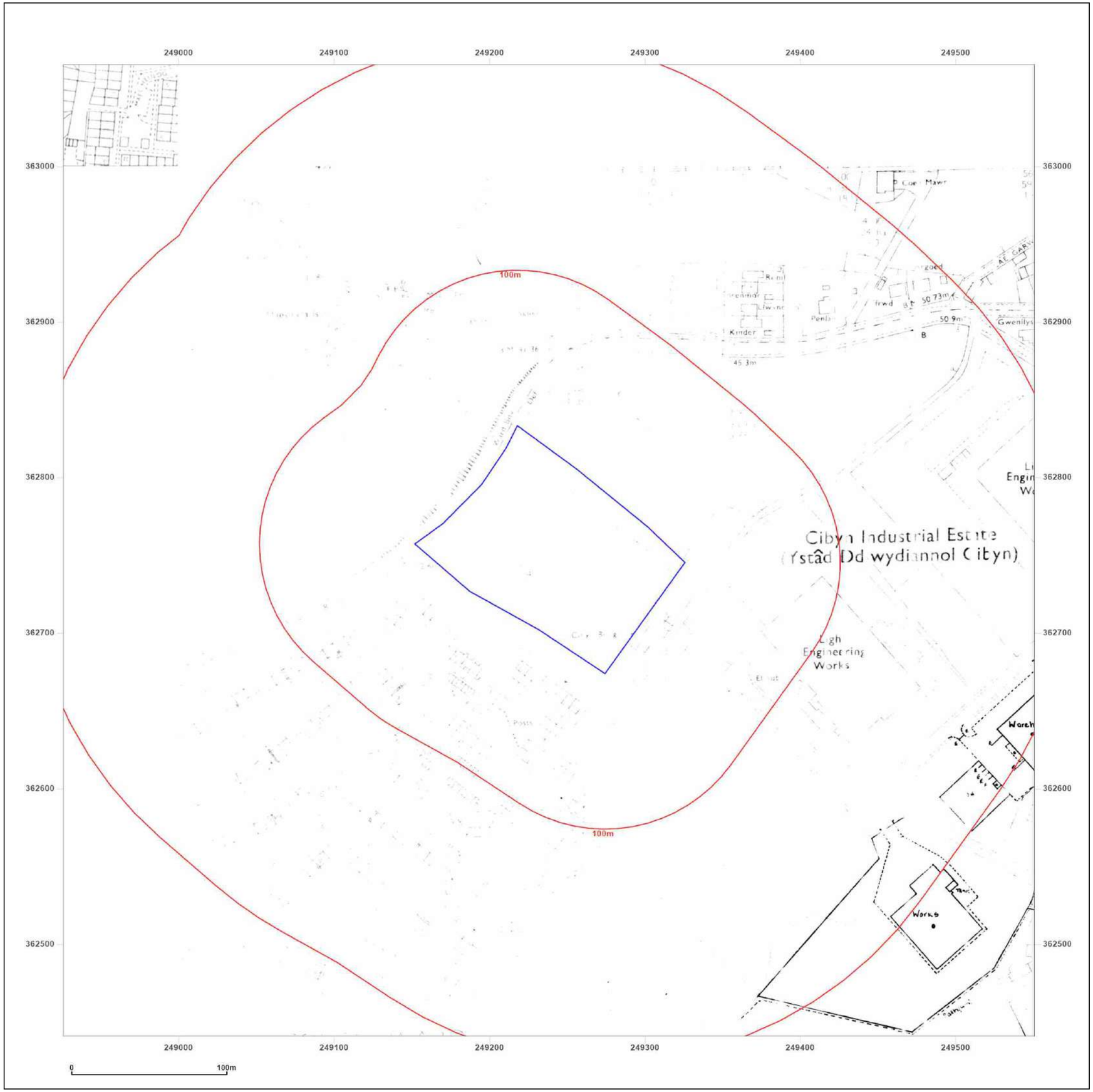

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Site Details:

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Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1977-1982**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973
Revised 1982
Edition N/A
Copyright 1982
Levelled 1973

Surveyed N/A
Revised N/A
Edition N/A
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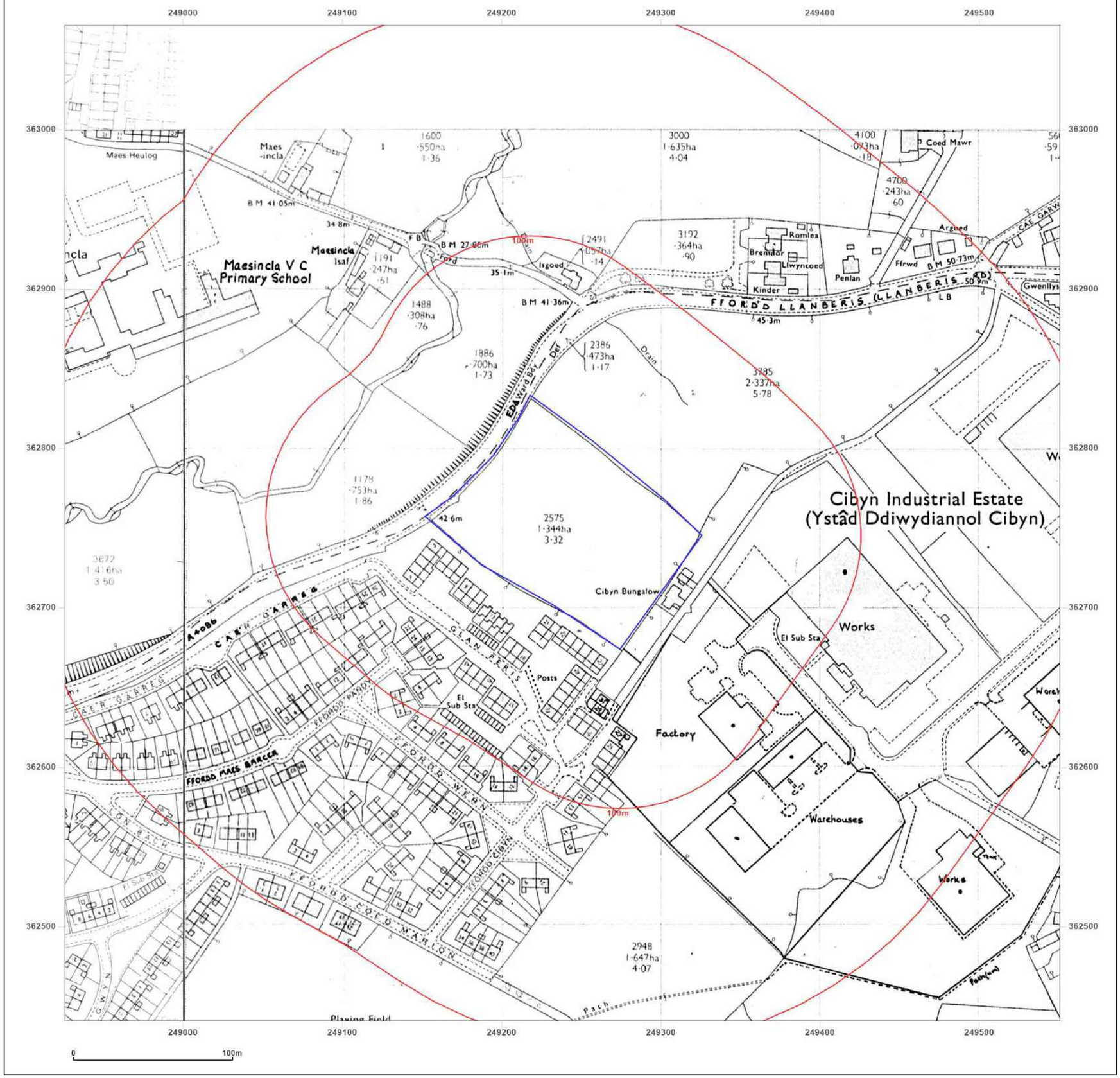

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Site Details:

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CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1980-1983**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1982
Edition N/A
Copyright 1983
Levelled 1973

Surveyed 1973
Revised 1980
Edition N/A
Copyright 1980
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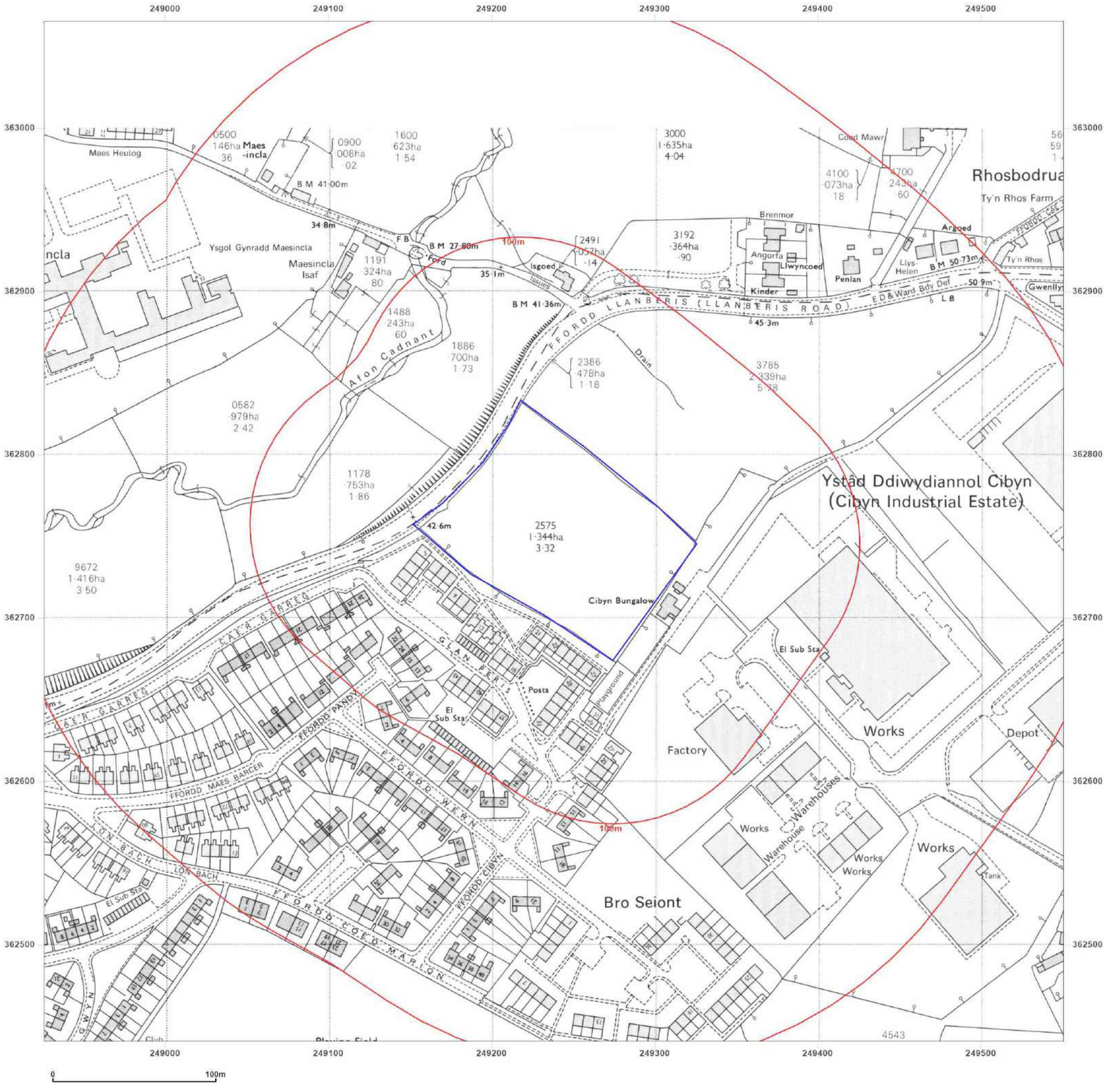

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

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Edition N/A
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Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1980-1985**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973
Revised 1985
Edition N/A
Copyright 1985
Levelled 1973

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1980
Edition N/A
Copyright 1980
Levelled 1973

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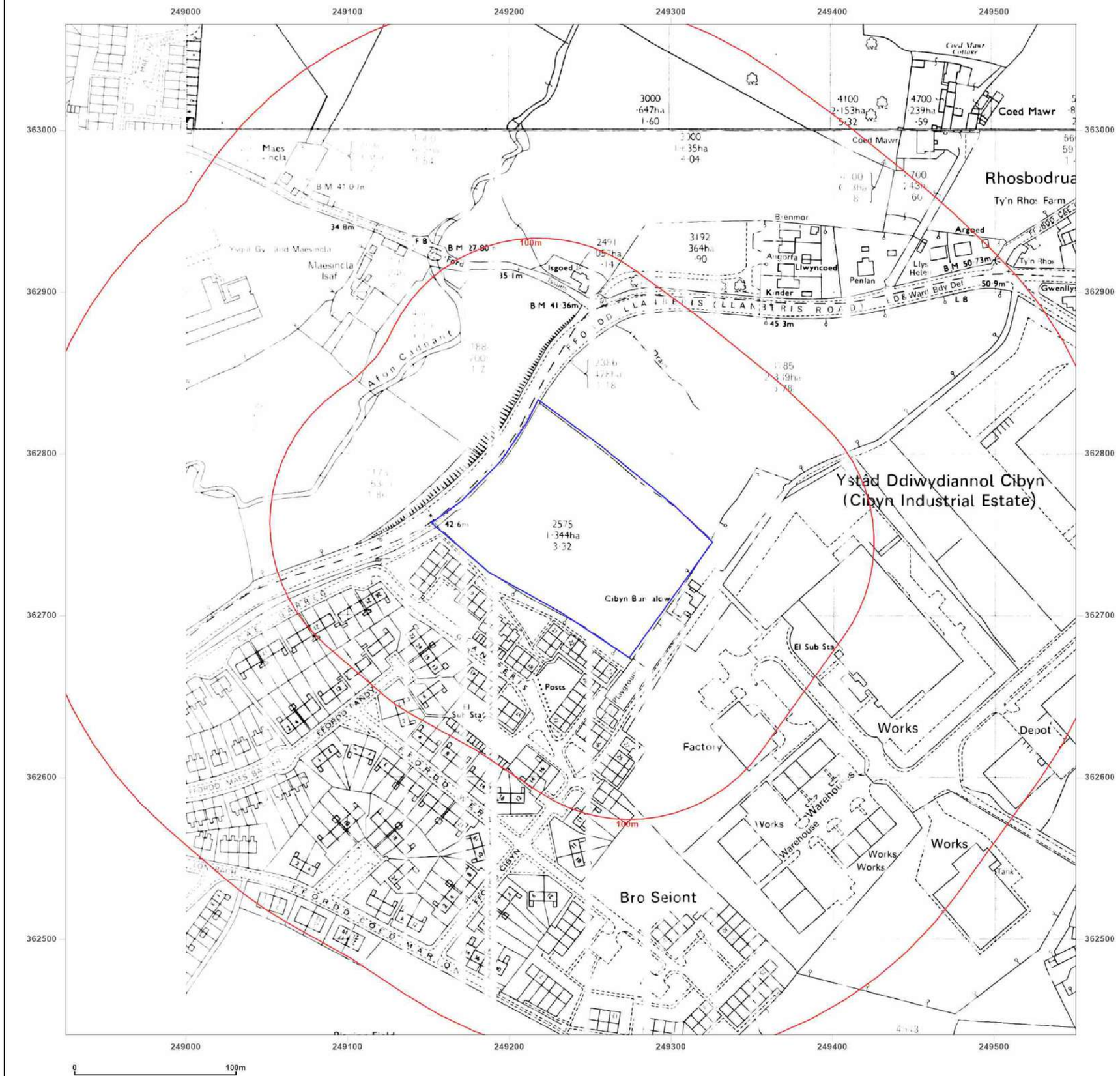

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1983-1988**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1973

Surveyed 1973
Revised 1986
Edition N/A
Copyright 1986
Levelled 1973

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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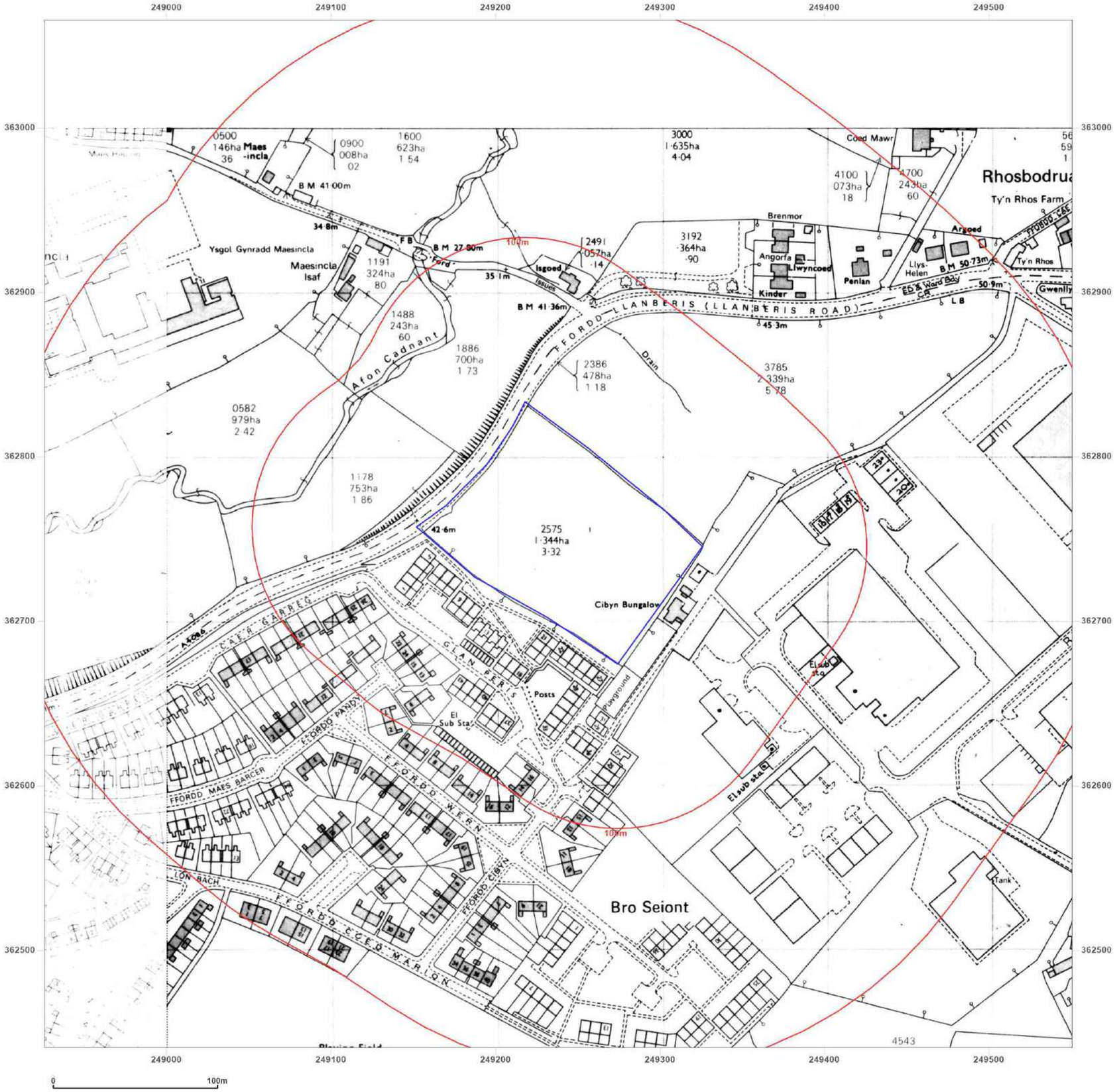

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1986-1990**

Scale: 1:2,500

Printed at: 1:2,500

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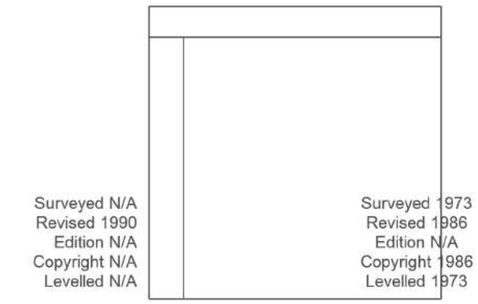

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Production date: 07 November 2024

Map legend available at:
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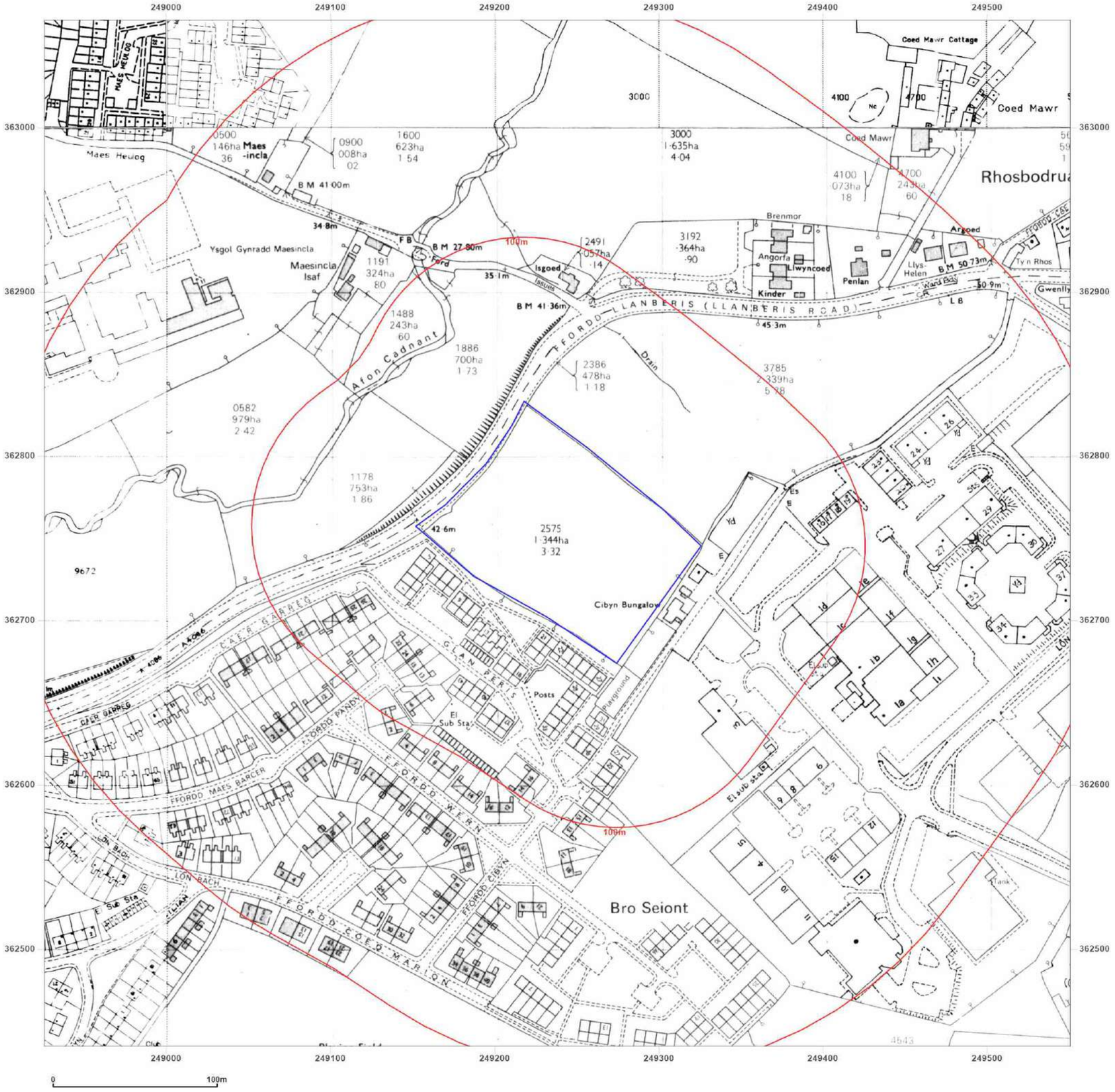

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
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Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
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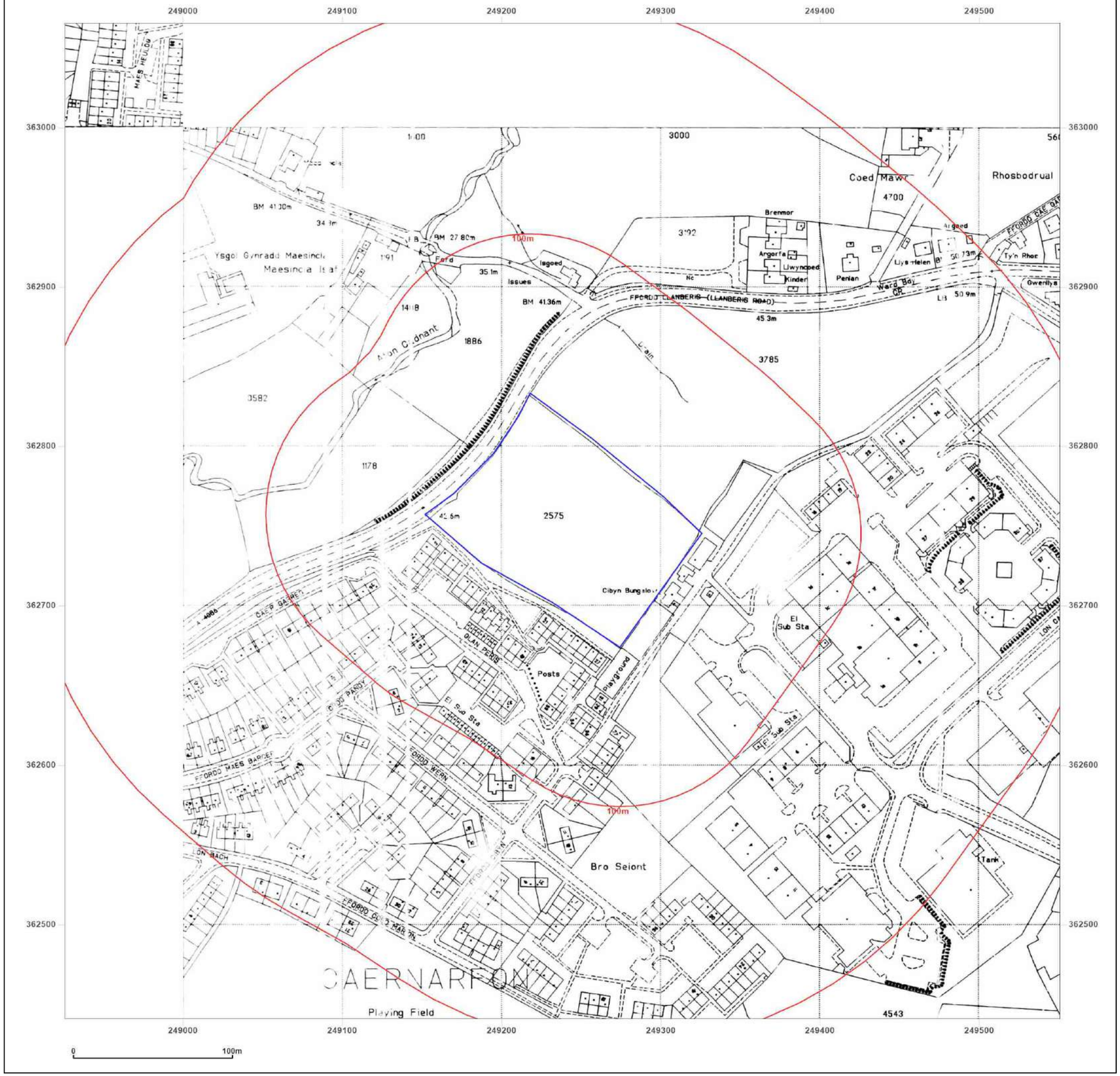

Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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Groundsure INSIGHTS

Site Details:

TYDDYN FLETCHER,
CAERNARFON

Client Ref: E1957
Report Ref: GS-QUQ-PQL-2WM-ZRR
Grid Ref: 249238, 362753

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
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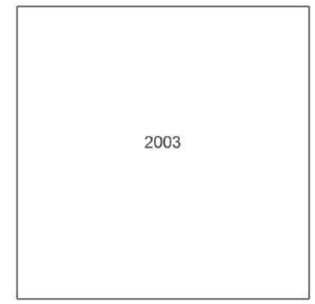
S



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Appendix 8 - Enviro and Geo Insight Report

Groundsure
LOCATION INTELLIGENCE

Geo
Insight

TYDDYN FLETCHER, CAERNARFON

Order Details

Date: 07/11/2024

Your ref: E1957

Our Ref: GS-855-LYX-JJL-G9F

Site Details

Location: 249242 362751

Area: 1.36 ha

Authority: Gwynedd County Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
11 >	1.1 >	10k Availability >	Identified (within 500m)				
12	1.2	Artificial and made ground (10k)	0	0	0	0	-
13	1.3	Superficial geology (10k)	0	0	0	0	-
13	1.4	Landslip (10k)	0	0	0	0	-
14	1.5	Bedrock geology (10k)	0	0	0	0	-
14	1.6	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
15 >	2.1 >	50k Availability >	Identified (within 500m)				
16	2.2	Artificial and made ground (50k)	0	0	0	0	-
16	2.3	Artificial ground permeability (50k)	0	0	-	-	-
17 >	2.4 >	Superficial geology (50k) >	1	0	2	3	-
18 >	2.5 >	Superficial permeability (50k) >	Identified (within 50m)				
18 >	2.6 >	Landslip (50k) >	0	0	0	1	-
18	2.7	Landslip permeability (50k)	None (within 50m)				
19 >	2.8 >	Bedrock geology (50k) >	1	0	0	1	-
20 >	2.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
20	2.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
21 >	3.1 >	BGS Boreholes >	0	0	1	-	-
Page	Section	Natural ground subsidence >					
22 >	4.1 >	Shrink swell clays >	Negligible (within 50m)				
23 >	4.2 >	Running sands >	Very low (within 50m)				
24 >	4.3 >	Compressible deposits >	Negligible (within 50m)				
25 >	4.4 >	Collapsible deposits >	Very low (within 50m)				
26 >	4.5 >	Landslides >	Moderate (within 50m)				
28 >	4.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				

Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
30	5.1	BritPits	0	0	0	0	-
31	5.2	Surface ground workings	0	0	0	-	-
31	5.3	Underground workings	0	0	0	0	0
31	5.4	Underground mining extents	0	0	0	0	-
31	5.5	Historical Mineral Planning Areas	0	0	0	0	-
31 >	5.6 >	Non-coal mining >	1	0	0	0	1
32	5.7	JPB mining areas	None (within 0m)				
32	5.8	The Coal Authority non-coal mining	0	0	0	0	-
32	5.9	Researched mining	0	0	0	0	-
33	5.10	Mining record office plans	0	0	0	0	-
33	5.11	BGS mine plans	0	0	0	0	-
33	5.12	Coal mining	None (within 0m)				
33	5.13	Brine areas	None (within 0m)				
33	5.14	Gypsum areas	None (within 0m)				
34	5.15	Tin mining	None (within 0m)				
34	5.16	Clay mining	None (within 0m)				

Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
35	6.1	Natural cavities	0	0	0	0	-
35	6.2	Mining cavities	0	0	0	0	0
35	6.3	Reported recent incidents	0	0	0	0	-
35	6.4	Historical incidents	0	0	0	0	-
36	6.5	National karst database	0	0	0	0	-

Page	Section	Radon >	
37 >	7.1 >	Radon >	Less than 1% (within 0m)

Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
39 >	8.1 >	BGS Estimated Background Soil Chemistry >	1	1	-	-	-
39	8.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
39	8.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
40	9.1	Underground railways (London)	0	0	0	-	-
40	9.2	Underground railways (Non-London)	0	0	0	-	-
40	9.3	Railway tunnels	0	0	0	-	-
40	9.4	Historical railway and tunnel features	0	0	0	-	-
40	9.5	Royal Mail tunnels	0	0	0	-	-
41	9.6	Historical railways	0	0	0	-	-
41	9.7	Railways	0	0	0	-	-
41	9.8	Crossrail 2	0	0	0	0	-
41	9.9	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 27/05/2021

Site Area: 1.36ha

Recent site history - 2018 aerial photograph

Capture Date: 06/06/2018

Site Area: 1.36ha

Recent site history - 2015 aerial photograph

Capture Date: 18/04/2015

Site Area: 1.36ha

Recent site history - 2009 aerial photograph

Capture Date: 11/05/2009

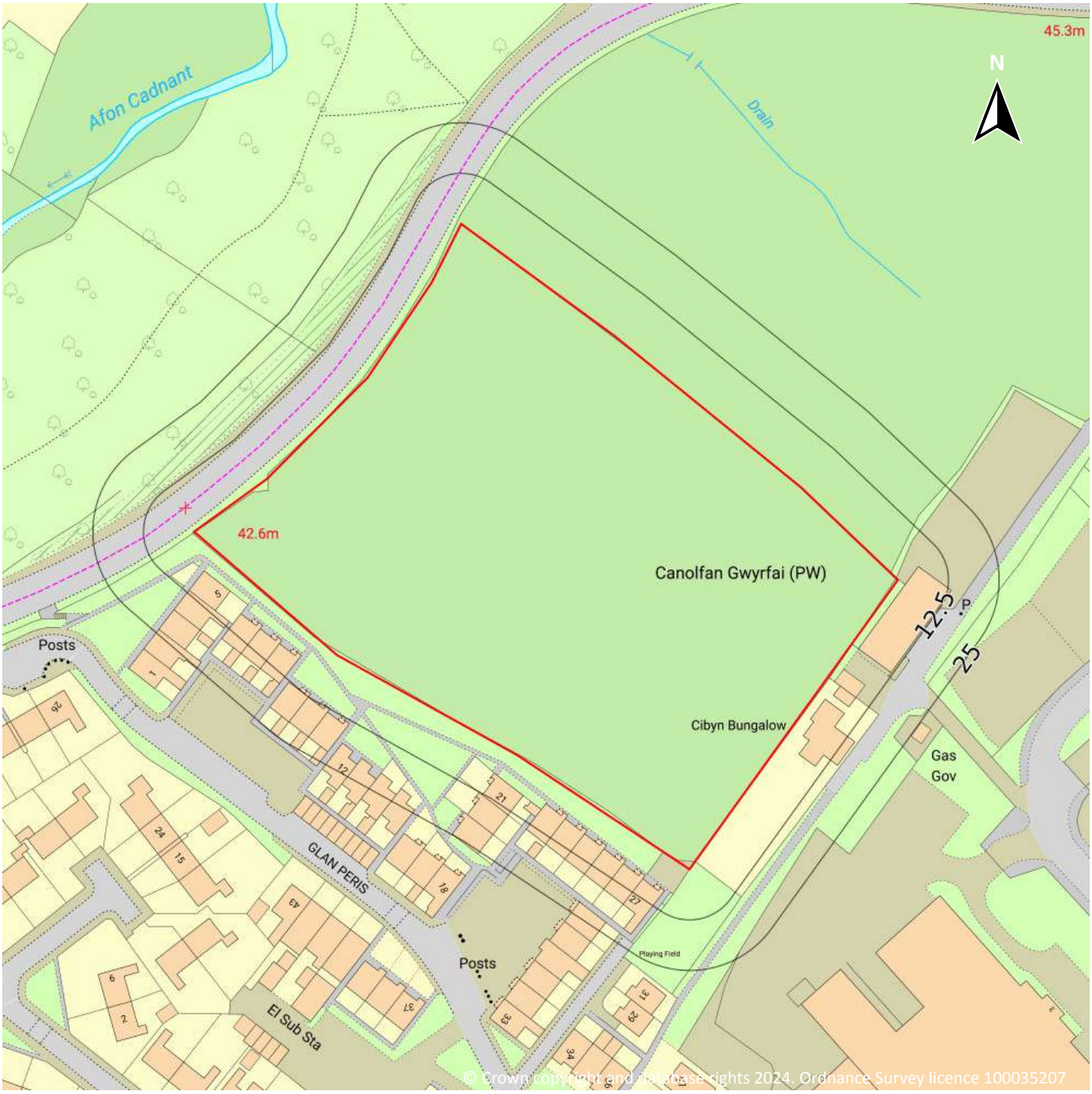
Site Area: 1.36ha

Recent site history - 2000 aerial photograph

Capture Date: 23/07/2000

Site Area: 1.36ha

OS MasterMap site plan



Site Area: 1.36ha

1 Geology 1:10,000 scale - Availability

Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

1.1 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 11 >**

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

1.2 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

1.3 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.

1.4 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

1.5 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.

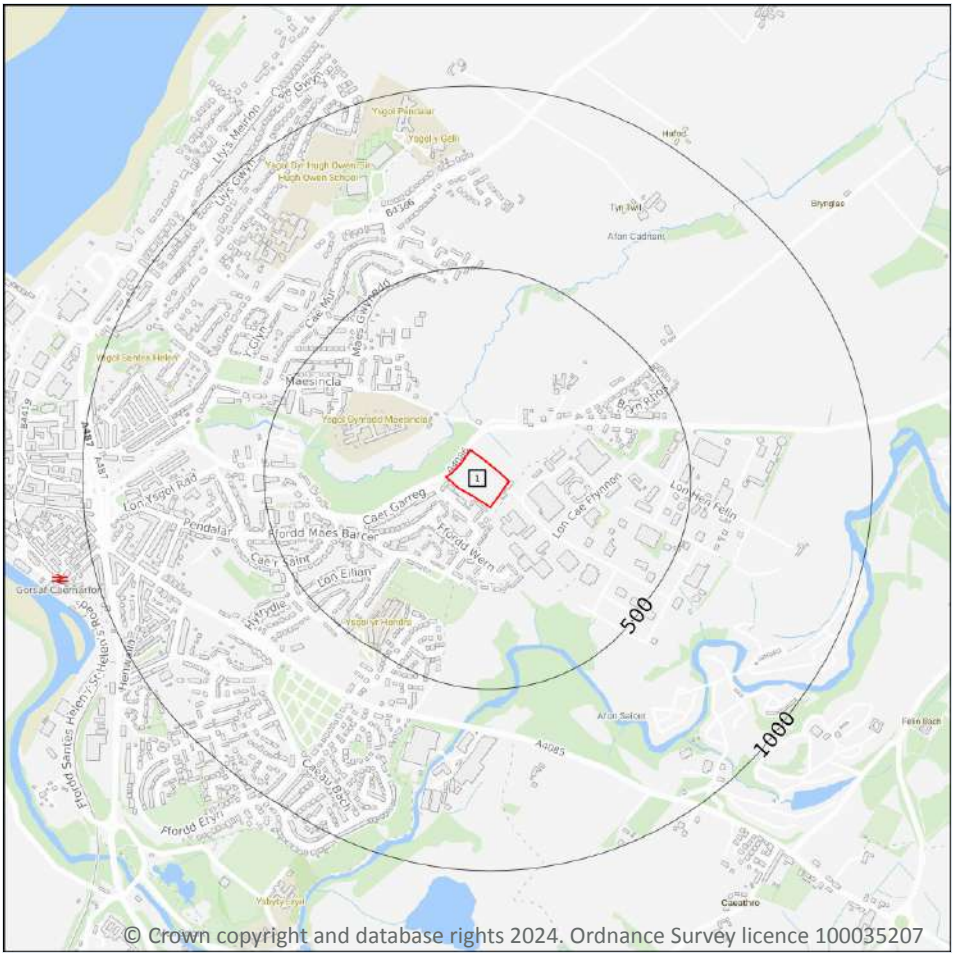
1.6 Bedrock faults and other linear features (10k)

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.

2 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

2.1 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 15 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**EW105_anglesey_v4**

This data is sourced from the British Geological Survey.

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

2.2 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.

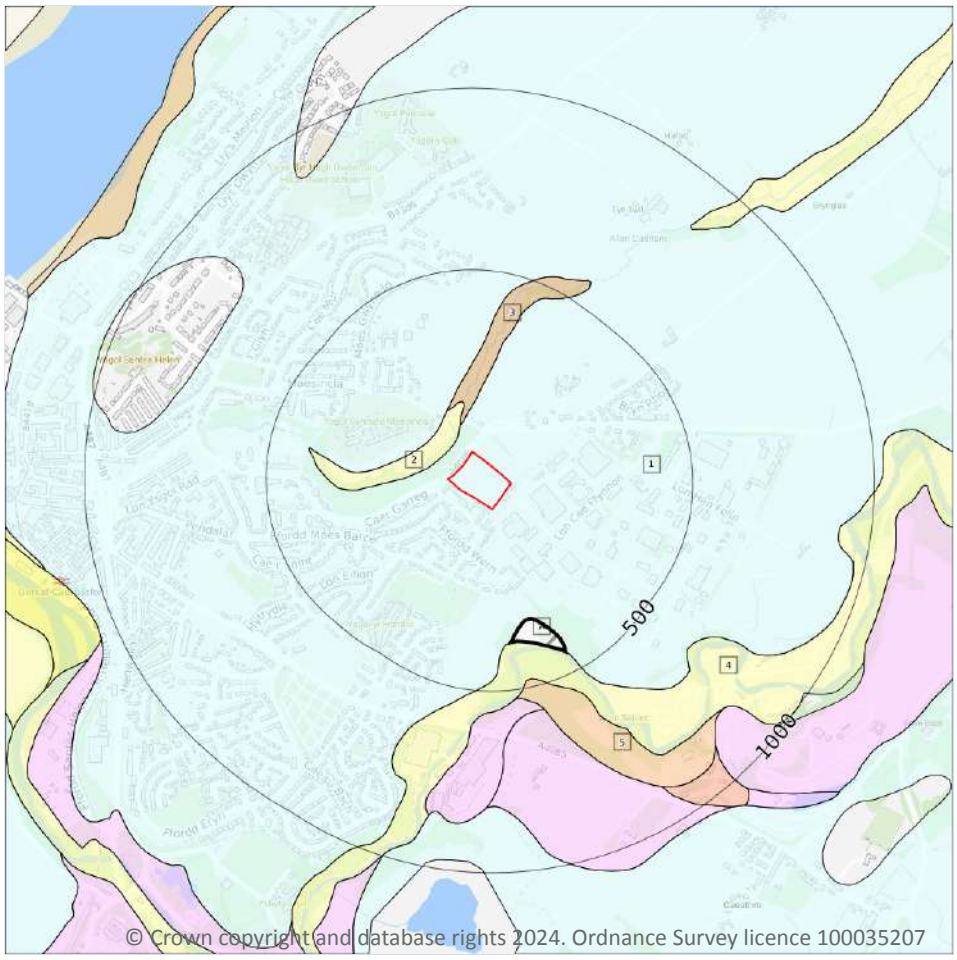
2.3 Artificial ground permeability (50k)

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.

2.4 Superficial geology (50k)

Records within 500m **6**

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 17 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	53m NW	ALV-XVSZC	ALLUVIUM	GRAVEL, SAND, SILT AND CLAY
3	78m N	PEAT-P	PEAT	PEAT

ID	Location	LEX Code	Description	Rock description
A	318m S	SUPNM-UKNOWN	SUPERFICIAL THEME NOT MAPPED [FOR DIGITAL MAP USE ONLY]	UNKNOWN/UNCLASSIFIED ENTRY
4	368m S	ALV-XVSZC	ALLUVIUM	GRAVEL, SAND, SILT AND CLAY
5	478m S	RTDU-XVSZ	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	GRAVEL, SAND AND SILT

This data is sourced from the British Geological Survey.

2.5 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.

2.6 Landslip (50k)

Records within 500m **1**

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.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 17 >**

ID	Location	LEX Code	Description	Rock description
A	318m S	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

This data is sourced from the British Geological Survey.

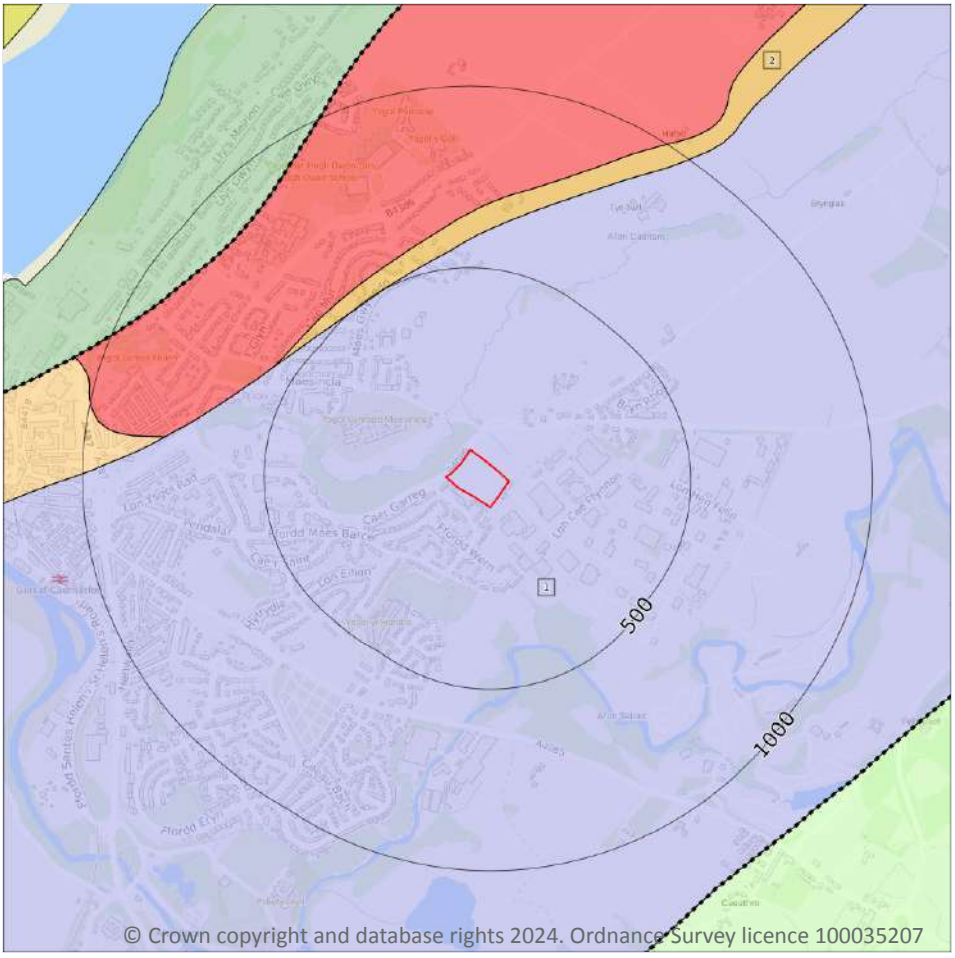
2.7 Landslip permeability (50k)

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



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

2.8 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 19 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**NFR-SLST**	**NANT FFRANCON SUBGROUP - SILTSTONE**	**-**
2	497m NW	ALL-SDST	ALLT LWYD FORMATION - SANDSTONE	-

This data is sourced from the British Geological Survey.

2.9 Bedrock 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 bedrock (the zone between the land surface and the water table).

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

This data is sourced from the British Geological Survey.

2.10 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.

3 Boreholes

Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

3.1 BGS Boreholes

Records within 250m	1

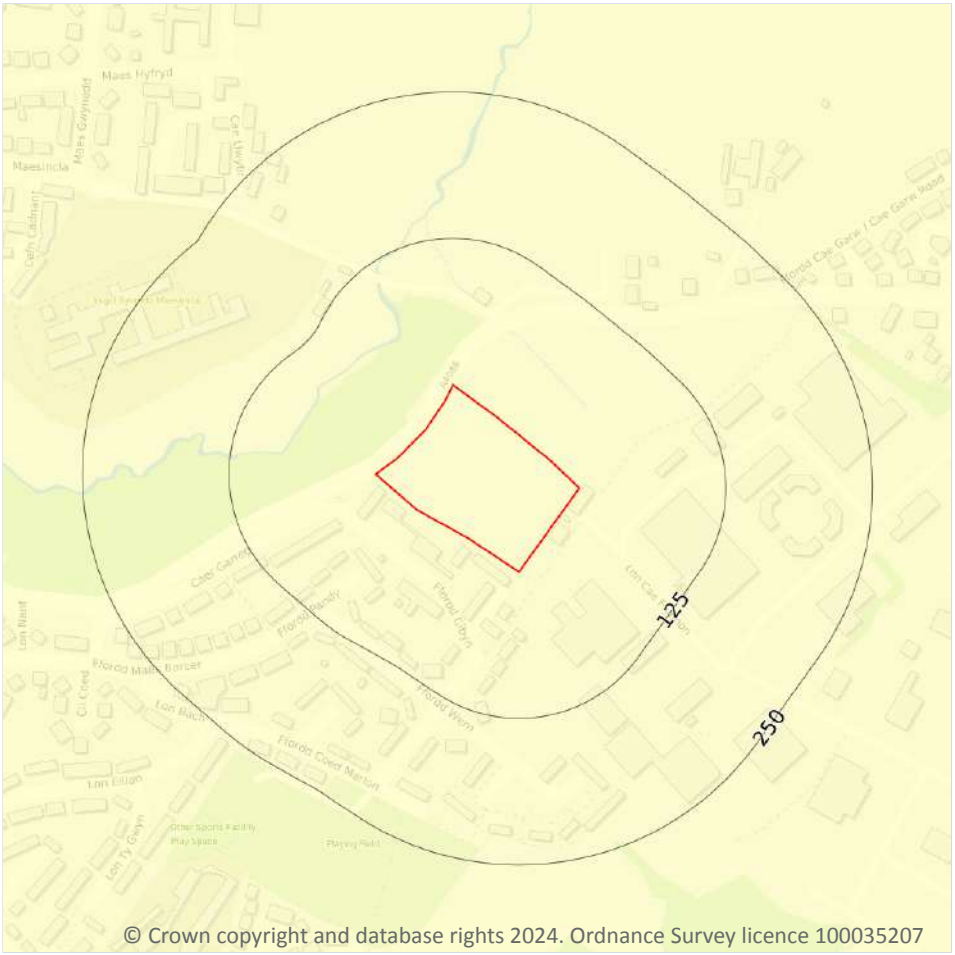
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several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

Features are displayed on the Boreholes map on **page 21 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	87m SE	249320 362600	READY FOODS LTD CIBYN INDUSTRIAL ESTATE CAENARVON	61.0	N	20187966 ↗

This data is sourced from the British Geological Survey.

4 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

4.1 Shrink swell clays

Records within 50m	1

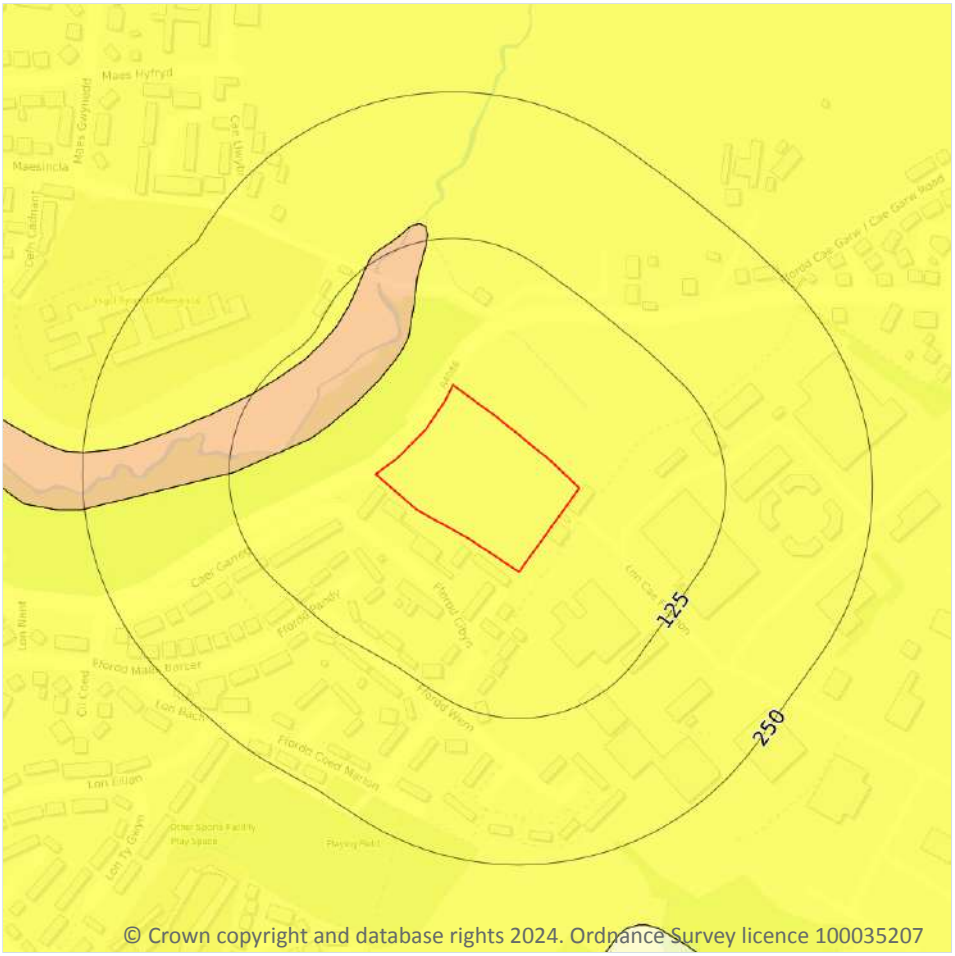
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 22 >**

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

4.2 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 23 >**

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

Site Outline

Search buffers in metres (m)

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

4.3 Compressible deposits

Records within 50m	1

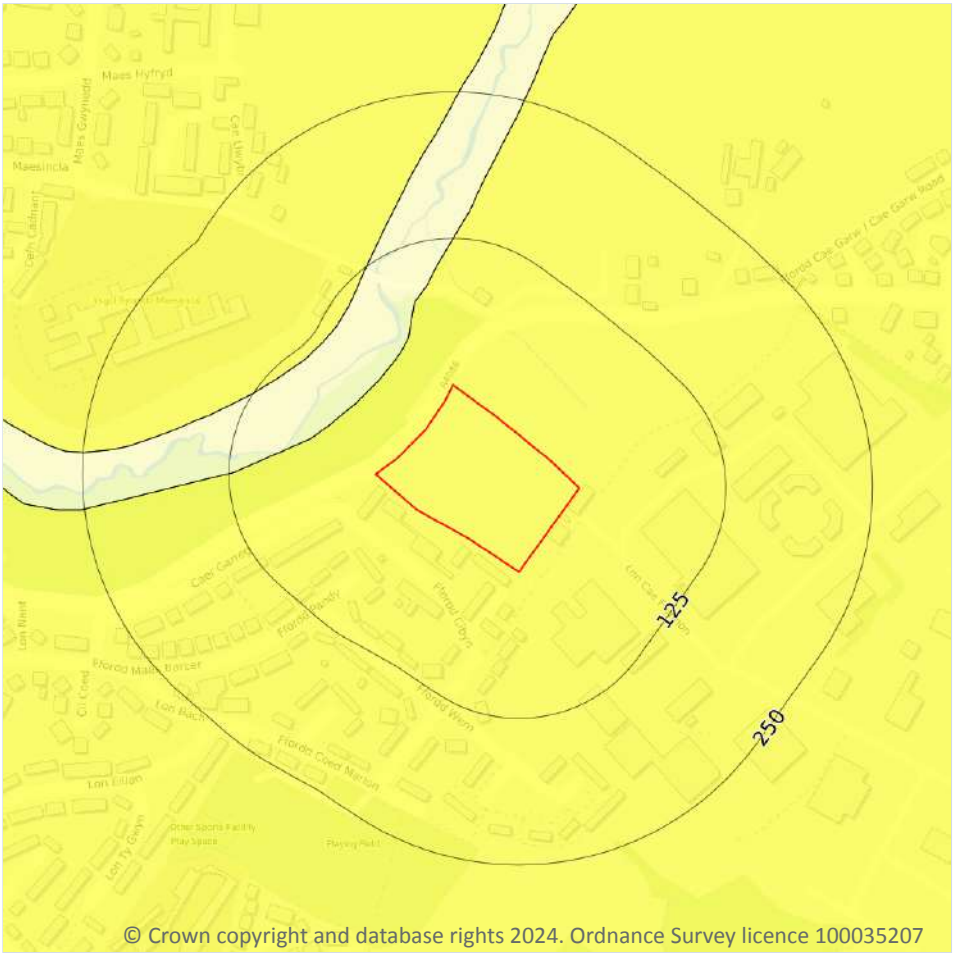
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 24 >**

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

4.4 Collapsible deposits

Records within 50m	1

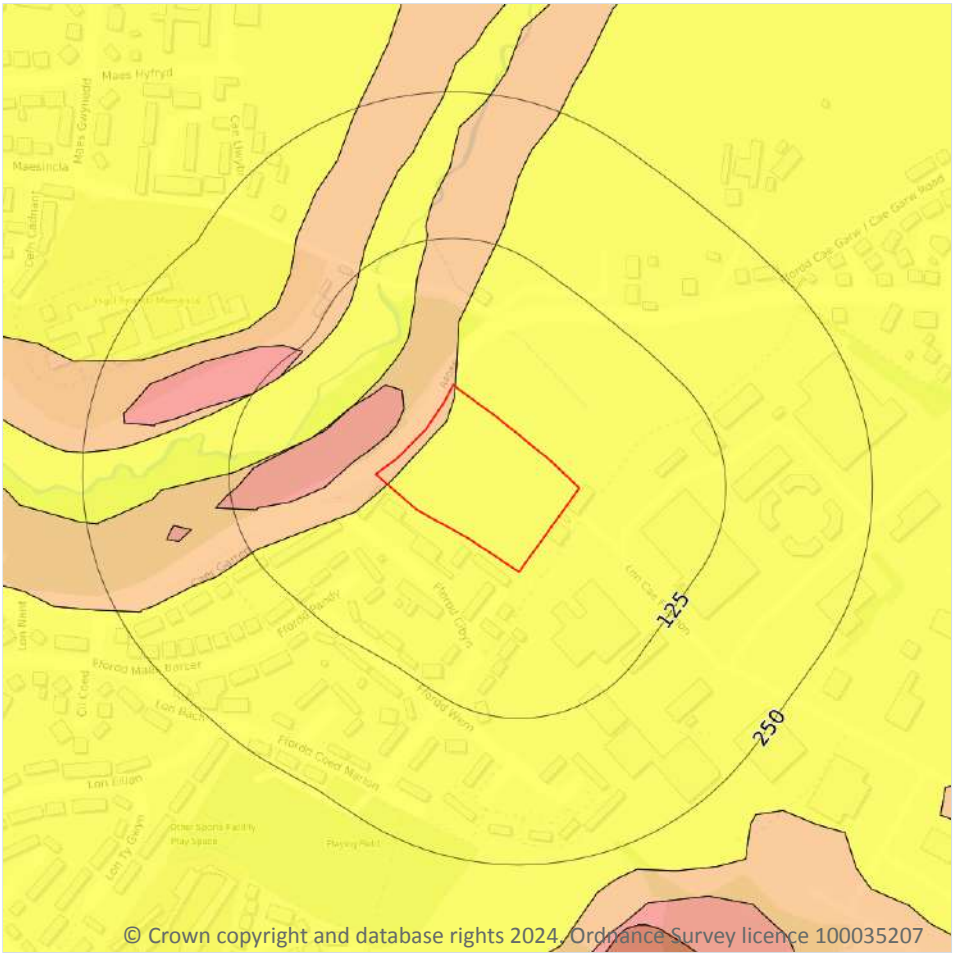
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 25 >**

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

4.5 Landslides

Records within 50m	3

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.

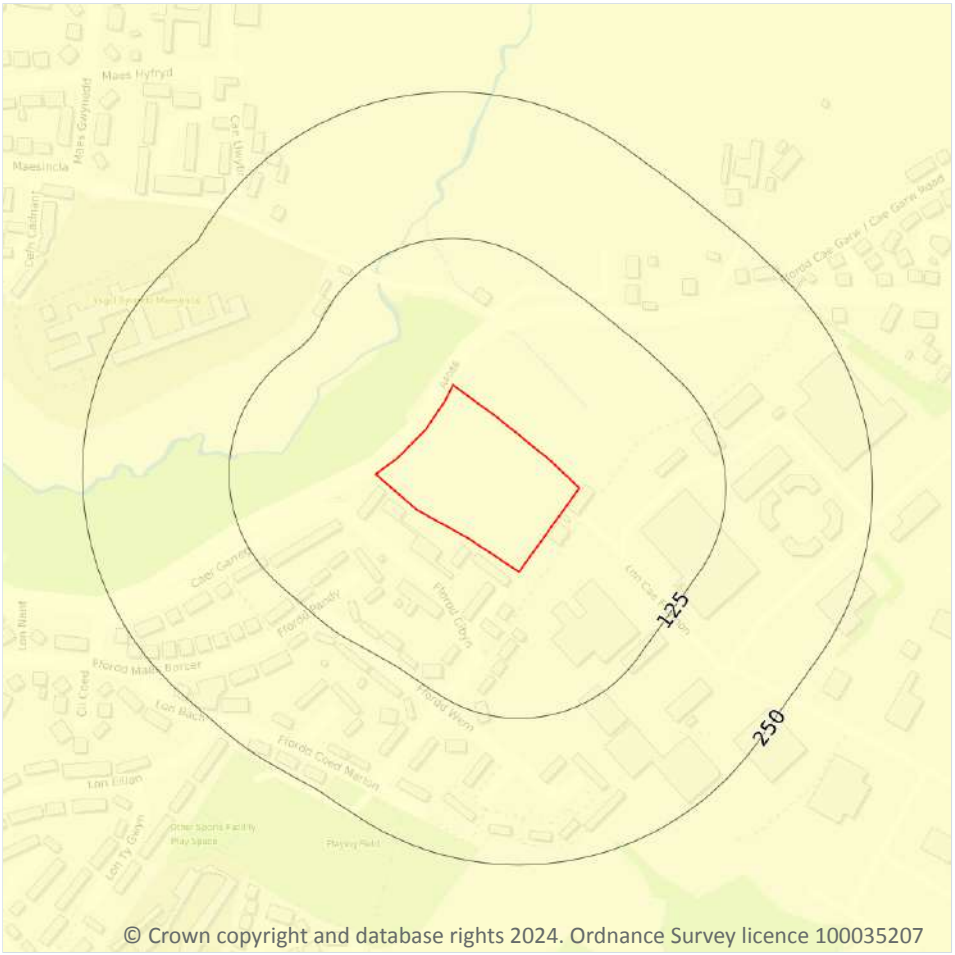
Features are displayed on the Natural ground subsidence - Landslides map on **page 26 >**

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.**

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
19m NW	Moderate	Slope instability problems are probably present or have occurred in the past. Land use should consider specifically the stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

4.6 Ground dissolution of soluble rocks

Records within 50m	1

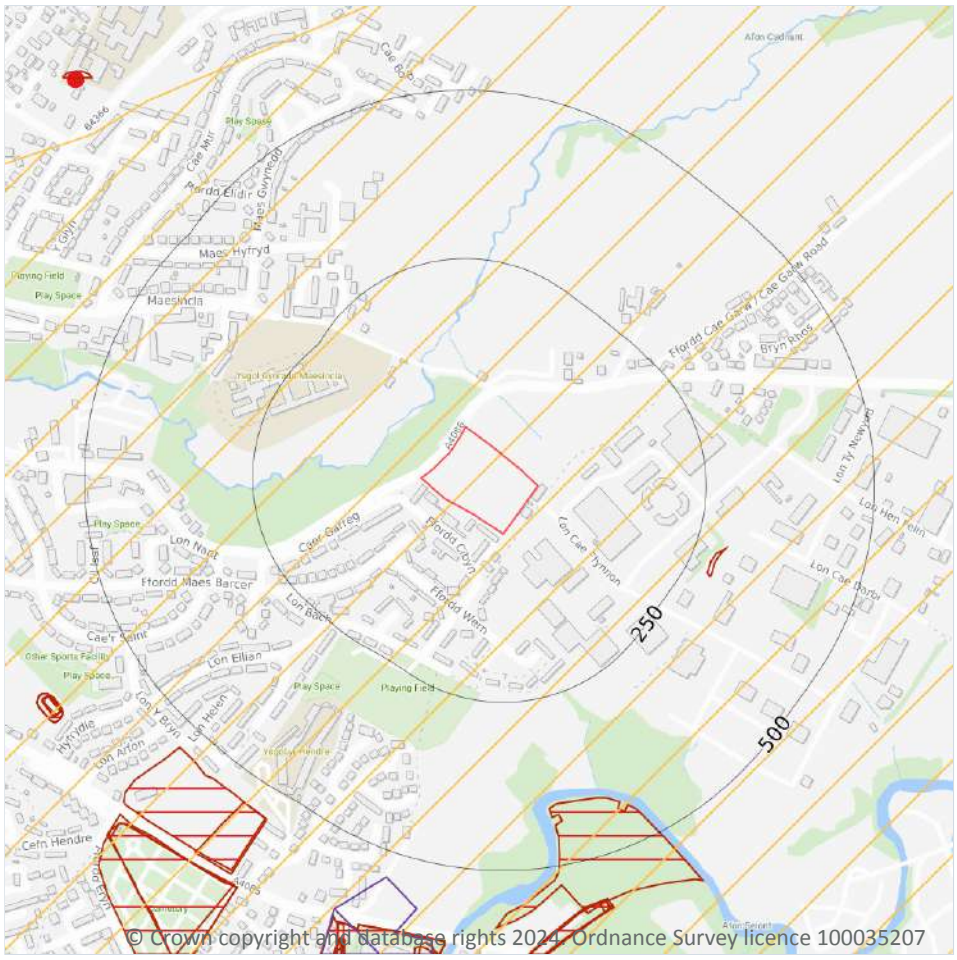
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 28 >**

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.

5 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

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

5.1 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.

5.2 Surface ground workings

Records within 250m	0

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.

This is data is sourced from Ordnance Survey/Groundsure.

5.3 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.

5.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

5.5 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.

5.6 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 and ground workings map on **page 30 >**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Vein Mineral**	**B**	**Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.**
-	675m E	Not available	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

5.7 JPB mining areas

Records on site	**0**

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

This data is sourced from Johnson Poole and Bloomer.

5.8 The Coal Authority non-coal mining

Records within 500m	**0**

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

5.9 Researched mining

Records within 500m	**0**

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

5.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.12 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.

5.13 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.

5.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

5.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

5.16 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).

6 Ground cavities and sinkholes

6.1 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 Stantec UK Ltd.

6.2 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 Stantec UK Ltd.

6.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

6.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

6.5 National karst database

Records within 500m	0

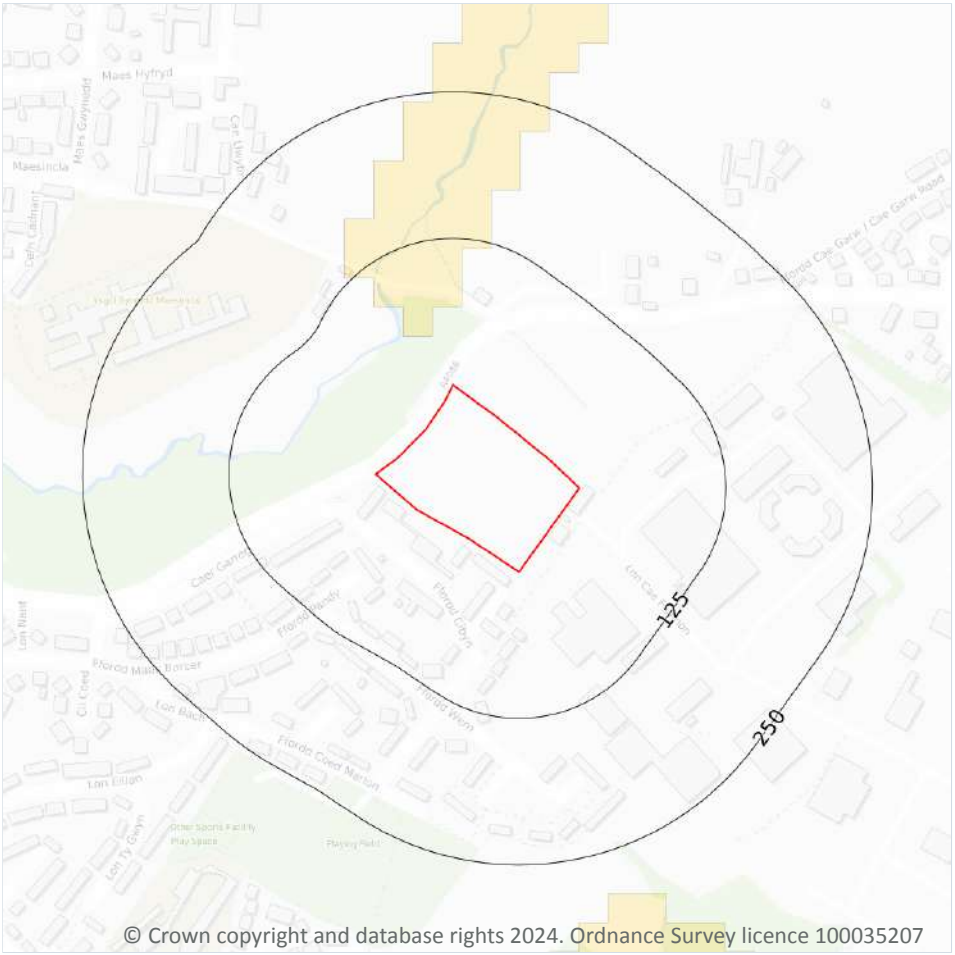
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

7 Radon



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%

7.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 37 >**

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

This data is sourced from the British Geological Survey and UK Health Security Agency.

8 Soil chemistry

8.1 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	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
38m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

8.2 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.

8.3 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.

9 Railway infrastructure and projects

9.1 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.

9.2 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.

9.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

9.4 Historical railway and tunnel features

Records within 250m	0

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.

This data is sourced from Ordnance Survey/Groundsure.

9.5 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.

9.6 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.

9.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

9.8 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.

9.9 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

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Groundsure
LOCATION INTELLIGENCE

Enviro
Insight

TYDDYN FLETCHER, CAERNARFON

Order Details

Date: 07/11/2024

Your ref: E1957

Our Ref: GS-LW3-VC5-C2X-Q9B

Site Details

Location: 249242 362751

Area: 1.36 ha

Authority: Gwynedd County Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
12 >	1.1 >	Historical industrial land uses >	0	2	0	3	-
13 >	1.2 >	Historical tanks >	0	0	0	8	-
13 >	1.3 >	Historical energy features >	0	0	4	2	-
14	1.4	Historical petrol stations	0	0	0	0	-
14 >	1.5 >	Historical garages >	0	0	2	5	-
15	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
16 >	2.1 >	Historical industrial land uses >	0	2	0	4	-
17 >	2.2 >	Historical tanks >	0	0	0	22	-
18 >	2.3 >	Historical energy features >	0	0	19	6	-
19	2.4	Historical petrol stations	0	0	0	0	-
19 >	2.5 >	Historical garages >	0	0	3	6	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	0	1	-
22 >	3.5 >	Historical waste sites >	0	0	0	2	-
23 >	3.6 >	Licensed waste sites >	0	0	0	6	-
25 >	3.7 >	Waste exemptions >	0	0	1	48	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
32 >	4.1 >	Recent industrial land uses >	0	1	20	-	-
34 >	4.2 >	Current or recent petrol stations >	0	0	1	0	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35 >	4.6 >	Control of Major Accident Hazards (COMAH) >	1	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35 >	4.8 >	Hazardous substance storage/usage >	0	0	0	2	-
36	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	1	1	-
36	4.12	Radioactive Substance Authorisations	0	0	0	0	-
37 >	4.13 >	Licensed Discharges to controlled waters >	0	0	0	3	-
37	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
37	4.15	Pollutant release to public sewer	0	0	0	0	-
38	4.16	List 1 Dangerous Substances	0	0	0	0	-
38	4.17	List 2 Dangerous Substances	0	0	0	0	-
38 >	4.18 >	Pollution Incidents (EA/NRW) >	0	1	3	5	-
39	4.19	Pollution inventory substances	0	0	0	0	-
39	4.20	Pollution inventory waste transfers	0	0	0	0	-
40	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Geology (basic) >					
41 >	5.1 >	Superficial geology (625k) >	Identified (within 500m)				
41 >	5.2 >	Bedrock geology (625k) >	Identified (within 500m)				

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
42 >	6.1 >	Superficial aquifer >	Identified (within 500m)				
43 >	6.2 >	Bedrock aquifer >	Identified (within 500m)				
44 >	6.3 >	Groundwater vulnerability >	Identified (within 50m)				
45	6.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
45	6.5	Groundwater vulnerability- local information	None (within 0m)				
46	6.6	Groundwater abstractions	0	0	0	0	0
47 >	6.7 >	Surface water abstractions >	0	0	0	0	8
49 >	6.8 >	Potable abstractions >	0	0	0	0	2
49	6.9	Source Protection Zones	0	0	0	0	-

50	6.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
51 >	**7.1 >**	**Water Network (OS MasterMap) >**	0	0	8	-	-
52 >	**7.2 >**	**Surface water features >**	0	0	5	-	-
52 >	**7.3 >**	**WFD Surface water body catchments >**	1	-	-	-	-
53	7.4	WFD Surface water bodies	0	0	0	-	-
53 >	**7.5 >**	**WFD Groundwater bodies >**	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
54	8.1	Risk of flooding from rivers and the sea	None (within 50m)				
54	8.2	Historical Flood Events	0	0	0	-	-
54	8.3	Flood Defences	0	0	0	-	-
55	8.4	Areas Benefiting from Flood Defences	0	0	0	-	-
55	8.5	Flood Storage Areas	0	0	0	-	-
56	8.6	Flood Zone 2	None (within 50m)				
56	8.7	Flood Zone 3	None (within 50m)				
Page	Section	**Surface water flooding >**					
57 >	**9.1 >**	**Surface water flooding >**	1 in 250 year, 0.1m - 0.3m (within 50m)				
Page	Section	**Groundwater flooding >**					
59 >	**10.1 >**	**Groundwater flooding >**	Low (within 50m)				
Page	Section	**Environmental designations >**	On site	0-50m	50-250m	250-500m	500-2000m
60 >	**11.1 >**	**Sites of Special Scientific Interest (SSSI) >**	0	0	0	0	2
61	11.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
61 >	**11.3 >**	**Special Areas of Conservation (SAC) >**	0	0	0	0	2
62	11.4	Special Protection Areas (SPA)	0	0	0	0	0
62	11.5	National Nature Reserves (NNR)	0	0	0	0	0
62	11.6	Local Nature Reserves (LNR)	0	0	0	0	0
62 >	**11.7 >**	**Designated Ancient Woodland >**	0	0	0	0	18
63	11.8	Biosphere Reserves	0	0	0	0	0
63	11.9	Forest Parks	0	0	0	0	0

64	11.10	Marine Conservation Zones	0	0	0	0	0
64	11.11	Green Belt	0	0	0	0	0
64	11.12	Proposed Ramsar sites	0	0	0	0	0
64	11.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
64	11.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
65	11.15	Nitrate Sensitive Areas	0	0	0	0	0
65	11.16	Nitrate Vulnerable Zones	0	0	0	0	0
66	11.17	SSSI Impact Risk Zones	0	-	-	-	-
66	11.18	SSSI Units	0	0	0	0	0
Page	Section	**Visual and cultural designations** >	On site	0-50m	50-250m	250-500m	500-2000m
67	12.1	World Heritage Sites	0	0	0	-	-
68	12.2	Area of Outstanding Natural Beauty	0	0	0	-	-
68	12.3	National Parks	0	0	0	-	-
68 >	**12.4** >	**Listed Buildings** >	0	0	1	-	-
69	12.5	Conservation Areas	0	0	0	-	-
69	12.6	Scheduled Ancient Monuments	0	0	0	-	-
69	12.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations** >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	**13.1** >	**Agricultural Land Classification** >	Grade 2 (within 250m)				
71	13.2	Open Access Land	0	0	0	-	-
71	13.3	Tree Felling Licences	0	0	0	-	-
72	13.4	Environmental Stewardship Schemes	0	0	0	-	-
72	13.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
73	14.1	Priority Habitat Inventory	0	0	0	-	-
73	14.2	Habitat Networks	0	0	0	-	-
73	14.3	Open Mosaic Habitat	0	0	0	-	-
73	14.4	Limestone Pavement Orders	0	0	0	-	-

Recent aerial photograph

Capture Date: 27/05/2021

Site Area: 1.36ha

Recent site history - 2018 aerial photograph

Capture Date: 06/06/2018

Site Area: 1.36ha

Recent site history - 2015 aerial photograph

Capture Date: 18/04/2015

Site Area: 1.36ha

Recent site history - 2009 aerial photograph

Capture Date: 11/05/2009

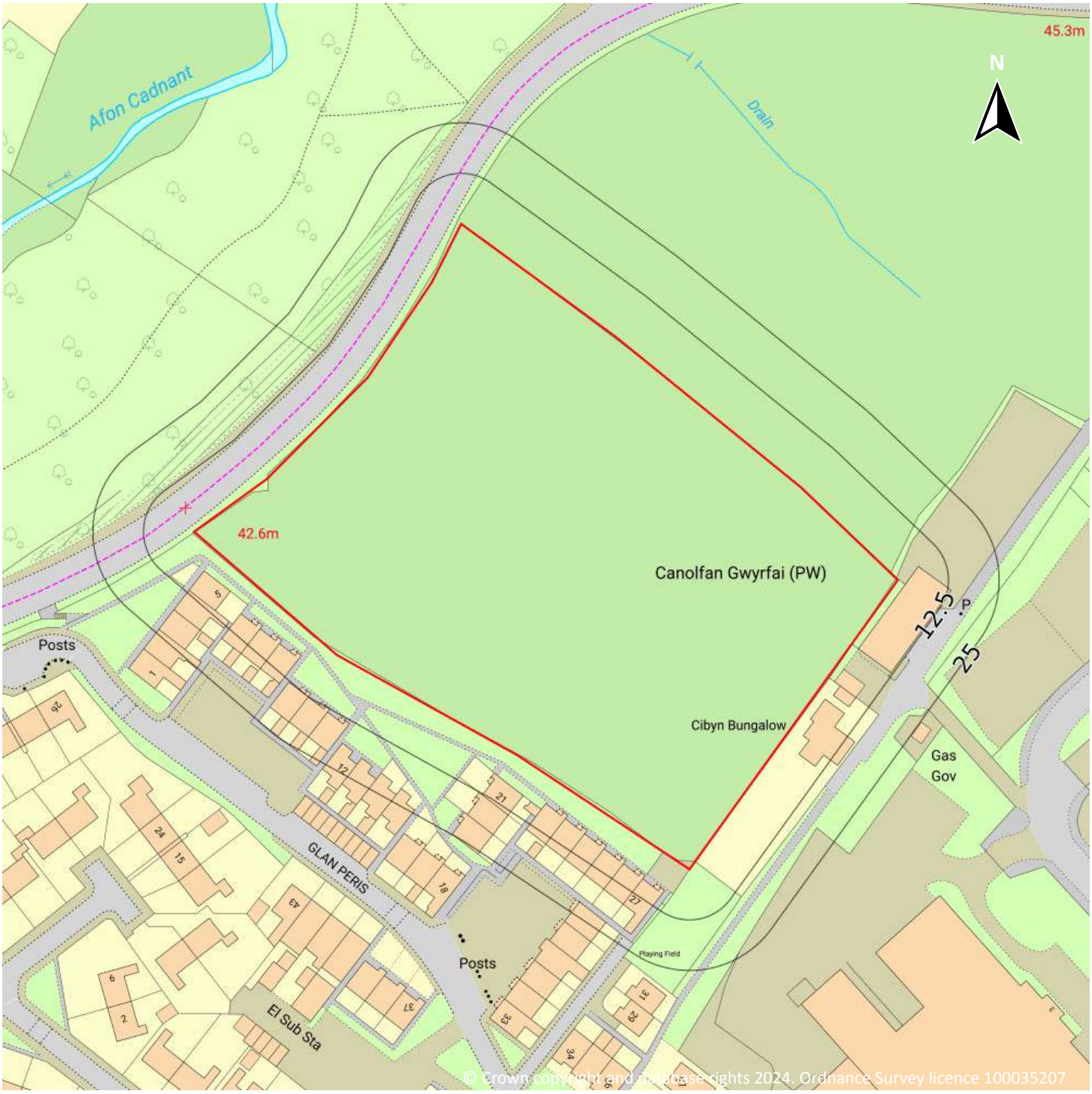
Site Area: 1.36ha

Recent site history - 2000 aerial photograph

Capture Date: 23/07/2000

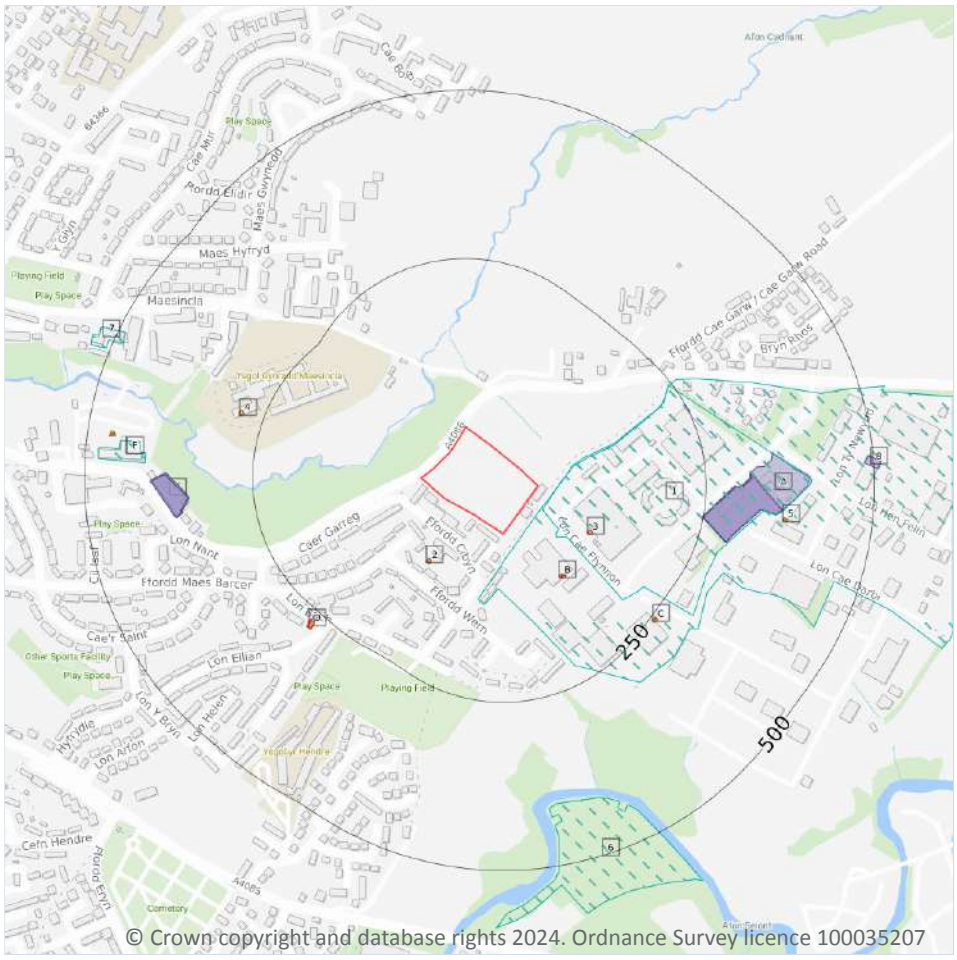
Site Area: 1.36ha

OS MasterMap site plan



Site Area: 1.36ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	5

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 12 >**

ID	Location	Land use	Dates present	Group ID
A	23m SE	Industrial Estate	1990	233105

ID	Location	Land use	Dates present	Group ID
1	25m E	Industrial Estate	1976	254751
6	408m S	Unspecified Disused Tip	1990	221941
F	411m W	Fire Station	1976 - 1990	243046
7	485m W	Police Station	1976	230506

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**8**

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 12 >**

ID	Location	Land use	Dates present	Group ID
C	254m SE	Unspecified Tank	1980	33602
C	254m SE	Unspecified Tank	1986 - 1995	33848
C	256m SE	Unspecified Tank	1983	34079
4	280m W	Unspecified Tank	1965 - 1998	32719
5	367m E	Unspecified Tank	1994 - 1995	34103
F	458m W	Tanks	1965 - 1983	33481
F	460m W	Tanks	1995 - 1998	33134
F	461m W	Tanks	1983	33585

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**6**

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 12 >**

ID	Location	Land use	Dates present	Group ID
2	89m SW	Electricity Substation	1972 - 1995	17834
3	99m SE	Electricity Substation	1972 - 1995	18499
B	104m SE	Electricity Substation	1995	17644
B	106m SE	Electricity Substation	1986 - 1994	18242
D	263m SW	Electricity Substation	1983 - 1998	17507
D	265m SW	Electricity Substation	1972	18024

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	7

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'.

Features are displayed on the Past land use map on **page 12 >**

ID	Location	Land use	Dates present	Group ID
A	249m E	Vehicle Testing Station	1986 - 1994	6110
A	249m E	Vehicle Testing Station	1995	5924

ID	Location	Land use	Dates present	Group ID
A	251m E	Vehicle Testing Station	1983	6397
E	346m W	Garage	1983	6072
E	347m W	Garage	1995 - 1998	6207
E	348m W	Garage	1983	6312
8	487m E	Garage	1983	5770

This data is sourced from Ordnance Survey / Groundsure.

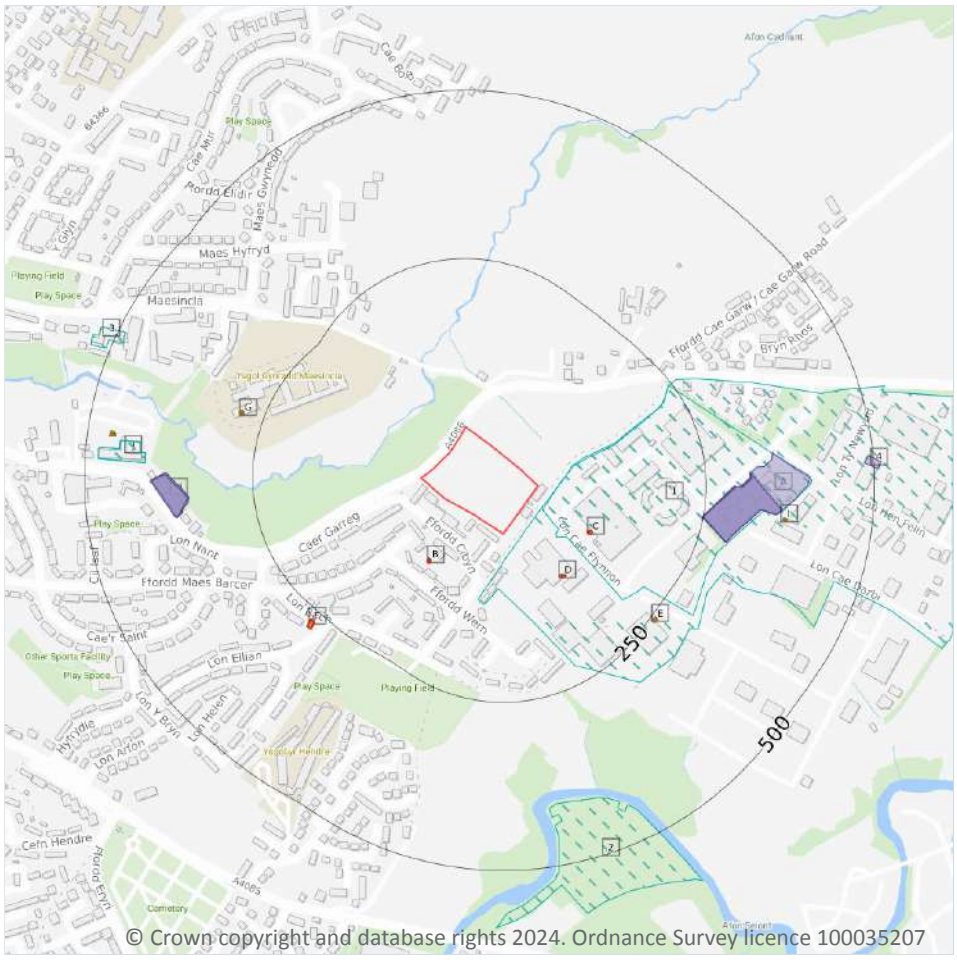
1.6 Historical military land

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



2.1 Historical industrial land uses

Records within 500m	6

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 16 >**

ID	Location	Land Use	Date	Group ID
A	23m SE	Industrial Estate	1990	233105
1	25m E	Industrial Estate	1976	254751
2	408m S	Unspecified Disused Tip	1990	221941

ID	Location	Land Use	Date	Group ID
J	411m W	Fire Station	1990	243046
J	411m W	Fire Station	1976	243046
3	485m W	Police Station	1976	230506

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**22**

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 16 >**

ID	Location	Land Use	Date	Group ID
E	254m SE	Unspecified Tank	1980	33602
E	254m SE	Unspecified Tank	1994	33848
E	254m SE	Unspecified Tank	1986	33848
E	254m SE	Unspecified Tank	1980	33602
E	255m SE	Unspecified Tank	1995	33848
E	256m SE	Unspecified Tank	1983	34079
G	280m W	Unspecified Tank	1972	32719
G	281m W	Unspecified Tank	1965	32719
G	281m W	Unspecified Tank	1983	32719
G	281m W	Unspecified Tank	1972	32719
G	282m W	Unspecified Tank	1998	32719
G	282m W	Unspecified Tank	1995	32719
G	282m W	Unspecified Tank	1983	32719
I	367m E	Unspecified Tank	1995	34103
I	369m E	Unspecified Tank	1994	34103
J	458m W	Tanks	1965	33481
J	458m W	Tanks	1983	33481

ID	Location	Land Use	Date	Group ID
J	458m W	Tanks	1972	33481
J	458m W	Tanks	1972	33481
J	460m W	Tanks	1998	33134
J	460m W	Tanks	1995	33134
J	461m W	Tanks	1983	33585

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**25**

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 16 >**

ID	Location	Land Use	Date	Group ID
B	89m SW	Electricity Substation	1980	17834
B	89m SW	Electricity Substation	1994	17834
B	89m SW	Electricity Substation	1986	17834
B	89m SW	Electricity Substation	1980	17834
B	90m SW	Electricity Substation	1972	17834
B	90m SW	Electricity Substation	1983	17834
B	90m SW	Electricity Substation	1972	17834
B	90m SW	Electricity Substation	1995	17834
C	99m SE	Electricity Substation	1980	18499
C	99m SE	Electricity Substation	1994	18499
C	99m SE	Electricity Substation	1986	18499
C	99m SE	Electricity Substation	1980	18499
C	101m SE	Electricity Substation	1995	18499
C	102m SE	Electricity Substation	1983	18499
C	102m SE	Electricity Substation	1972	18499

ID	Location	Land Use	Date	Group ID
C	102m SE	Electricity Substation	1972	18499
D	104m SE	Electricity Substation	1995	17644
D	106m SE	Electricity Substation	1994	18242
D	106m SE	Electricity Substation	1986	18242
F	263m SW	Electricity Substation	1998	17507
F	263m SW	Electricity Substation	1995	17507
F	265m SW	Electricity Substation	1983	17507
F	265m SW	Electricity Substation	1972	18024
F	265m SW	Electricity Substation	1972	18024
F	266m SW	Electricity Substation	1983	17507

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

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'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**9**

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'.

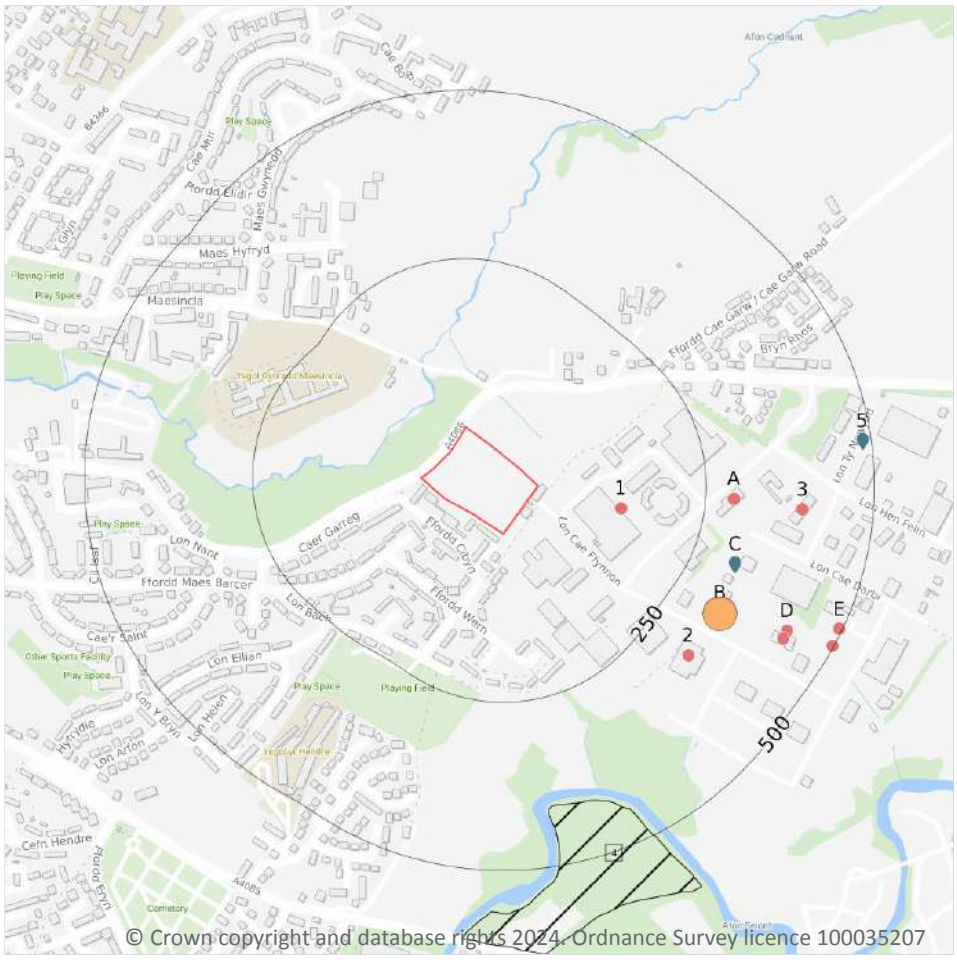
Features are displayed on the Past land use - un-grouped map on **page 16 >**

ID	Location	Land Use	Date	Group ID
A	249m E	Vehicle Testing Station	1994	6110
A	249m E	Vehicle Testing Station	1986	6110
A	249m E	Vehicle Testing Station	1995	5924

ID	Location	Land Use	Date	Group ID
A	251m E	Vehicle Testing Station	1983	6397
H	346m W	Garage	1983	6072
H	347m W	Garage	1995	6207
H	347m W	Garage	1998	6207
H	348m W	Garage	1983	6312
4	487m E	Garage	1983	5770

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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	1

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.

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Details		
4	410m S	Site Address: Peblig Mill Tip, Caernarfon, Gwynedd Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded 31/12/1981 Last Recorded: 31/12/1990

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

3.5 Historical waste sites

Records within 500m	2

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

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Address	Further Details	Date
B	305m SE	Site Address: Cibyn Industrial Estate, CAERNARFON, Gwynedd, LL55 2B	Type of Site: Waste Transfer Station Planning application reference: C96A/0272/14/CL Description: Change of use of land with the erection of a workshop and office totalling 189 sqm with 2 roller shutter doors. Construction - 2 roller shutter doors. An application (ref: C96A/0272/14/CL) for Detailed Planning permission was submitted to Caernarfon & Me rionydd C.C. on 22nd August 1996. Data source: Historic Planning Application Data Type: Point	-
B	306m SE	Site Address: Stad Ddiwydiannol Cibyn Indust, A15,Cibyn Industrial Estate, CAERNARFON, Gwynedd, LL55 2BD	Type of Site: Waste Transfer Station Planning application reference: C11/0980/14/R3 Description: Scheme comprises part retrospective application from a use previously granted for the storage of recycling materials to a mixed waste transfer station with external alterations to the building and site boundary. Construction - external refurbishment. Aap plication (ref: C11/0980/14/R3) for detailed planning permission was submitted to Gwynedd Dwyfor D.C. A detailed planning application has been submitted. Data source: Historic Planning Application Data Type: Point	31/05/201 2

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

3.6 Licensed waste sites

Records within 500m	**6**

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

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Details		
C	315m E	Site Name: - Site Address: Unit A6, Zone 3, Cibyn Ind Est, Caernarfon, LL55 2BD Correspondence Address: -	Type of Site: Asbestos Waste Transfer Station Size: - Environmental Permitting Regulations (Waste) Licence Number: AB3097ZB EPR reference: - Operator: C & A Asbestos Removal Ltd Waste Management licence No: - Annual Tonnage: -	Issue Date: 03/03/2016 Effective Date: 03/03/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
C	315m E	Site Name: - Site Address: Unit A6, Zone 3, Cibyn Ind Est, Caernarfon, LL55 2BD Correspondence Address: -	Type of Site: Asbestos Waste Transfer Station Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AB3097ZB EPR reference: - Operator: - Waste Management licence No: 0 Annual Tonnage: 0	Issue Date: 03/03/2016 Effective Date: 03/03/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
C	315m E	Site Name: - Site Address: Unit A6, Zone 3, Cibyn Ind Est, Caernarfon, LL55 2BD Correspondence Address: -	Type of Site: Asbestos Waste Transfer Station Size: - Environmental Permitting Regulations (Waste) Licence Number: AB3097ZB EPR reference: - Operator: C & A Asbestos Removal Ltd Waste Management licence No: - Annual Tonnage: -	Issue Date: 03/03/2016 Effective Date: 03/03/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
C	315m E	Site Name: - Site Address: Unit A6, Zone 3, Cibyn Ind Est, Caernarfon, Gwynedd, LL55 2BD Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AB3097ZB EPR reference: - Operator: C & A Asbestos Removal Ltd Waste Management licence No: 0 Annual Tonnage: 0	Issue Date: 03/03/2016 Effective Date: 03/03/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
C	315m E	Site Name: - Site Address: Unit A6, Zone 3, Cibyn Ind Est, Caernarfon, Gwynedd, LL55 2BD Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AB3097ZB EPR reference: - Operator: C & A Asbestos Removal Ltd Waste Management licence No: 0 Annual Tonnage: 0	Issue Date: 03/03/2016 Effective Date: 03/03/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
5	486m E	Site Name: Cibyn Waste Transfer Station Site Address: Cibyn Waste Transfer Station, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD Correspondence Address: -	Type of Site: Special Waste Transfer Station Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GWY016 EPR reference: EA/EPR/QP3994FZ/V002 Operator: Gwynedd Council Waste Management licence No: 37292 Annual Tonnage: 24999	Issue Date: 05/06/2006 Effective Date: - Modified: 22/08/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

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

3.7 Waste exemptions

Records within 500m	**49**

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 21 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	127m E	Beespeed Ltd, Unit 1g, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME067303	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	291m E	Antur Waunfawr, Warws Werdd, Parth 4 Stad Cibyn, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME044372	Treating waste exemption	Not on a farm	Recovery of textiles

ID	Location	Site	Reference	Category	Sub-Category	Description
A	291m E	W & M & T Parry, Fferm Bodrual, Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME017496	Disposing of waste exemption	Waste exemption - agricultural and non-agricultural	Deposit of waste from dredging of inland waters
A	291m E	W & M & T Parry, Fferm Bodrual, Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME017496	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction
A	291m E	W & M & T Parry, Fferm Bodrual, Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME017496	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste for a specified purpose
A	291m E	Cyngor Gwynedd, Caergylchu, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020326	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Recovery of textiles
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Mechanical treatment of end-of-life tyres
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising

ID	Location	Site	Reference	Category	Sub-Category	Description
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Using waste exemption	Not on a farm	Use of waste in construction
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Cleaning, washing, spraying or coating relevant waste
A	291m E	Antur Waunfawr, Caergylchu, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME024883	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	291m E	Antur Waunfawr, Warws Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME024904	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME030912	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME030912	Storing waste exemption	Not on a farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME030912	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	291m E	Welcome Furniture, Welcome Furniture Ltd, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME035226	Using waste exemption	Not on a farm	Use of waste in construction
A	291m E	Dwyfor Oils, Dwyfor Oils Ltd, Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME036811	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction
A	291m E	Antur Waunfawr, Caergylchu, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME037050	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip Hire, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME037231	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip Hire, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME037231	Storing waste exemption	Waste exemption - agricultural and non-agricultural	Storage of waste in a secure place
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip Hire, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME037231	Storing waste exemption	Waste exemption - agricultural and non-agricultural	Storage of waste in secure containers
A	291m E	W & M & T Parry, Fferm Bodrual, Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME017496	Disposing of waste exemption	Waste exemption - agricultural and non-agricultural	Burning waste in the open

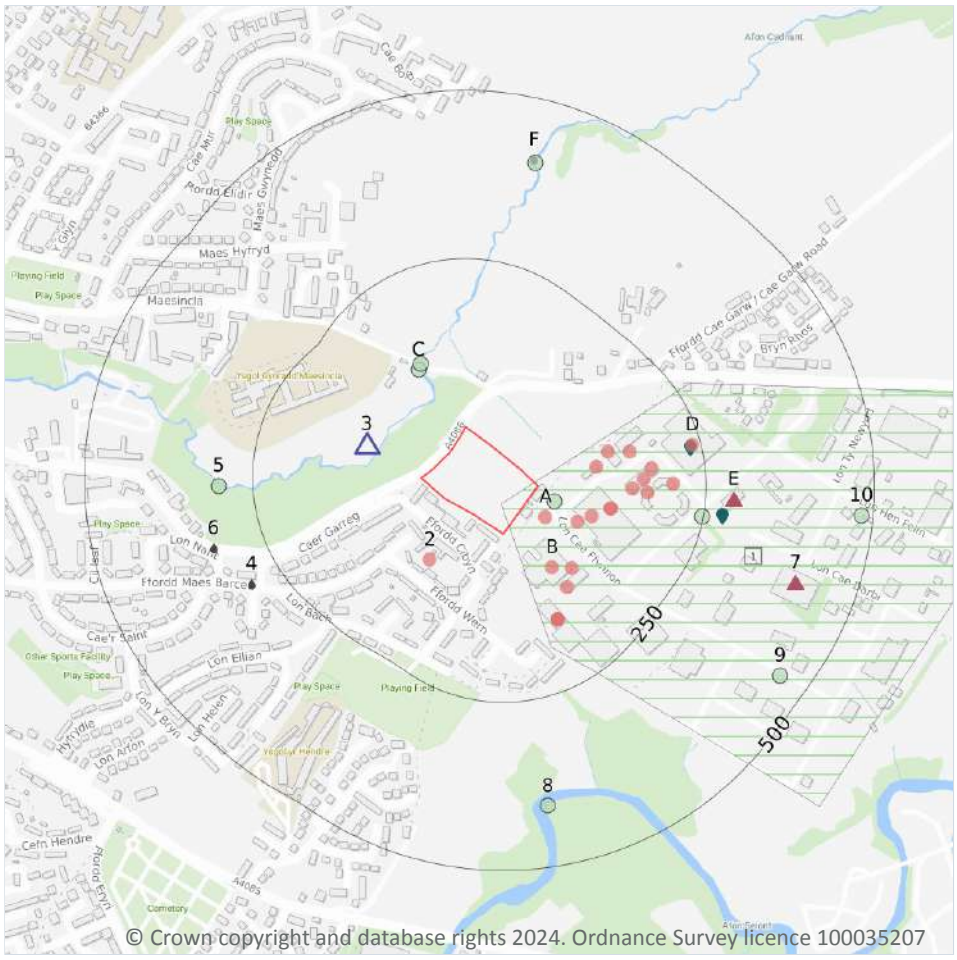
ID	Location	Site	Reference	Category	Sub-Category	Description
A	291m E	W & M & T Parry, Fferm Bodrual, Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME017496	Using waste exemption	Waste exemption - agricultural and non-agricultural	Spreading waste on agricultural land to confer benefit
A	291m E	Antur Waunfawr, Wawrs Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME068502	Treating waste exemption	Not on a farm	Manual treatment of waste
A	291m E	Antur Waunfawr, Wawrs Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME068502	Treating waste exemption	Not on a farm	Sorting mixed waste
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Recovery of scrap metal
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Screening and blending of waste
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Manual treatment of waste
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Sorting mixed waste
A	291m E	Gwynedd Skip & Plant Hire Ltd, Gwynedd Skip & Plant Hire Ltd, Lon Hen Felin, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME020982	Treating waste exemption	Not on a farm	Treatment of waste food

ID	Location	Site	Reference	Category	Sub-Category	Description
A	291m E	Antur Waunfawr, Wawrs Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME035127	Treating waste exemption	Not on a farm	Sorting mixed waste
A	291m E	Antur Waunfawr, Wawrs Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll552bd	NRW-WME035127	Treating waste exemption	Not on a farm	Manual treatment of waste
A	291m E	Warws Werdd Parth 4 Stad Ddiwydiannol Cibyn Caernarfon Gwynedd Ll552bd	NRW-WME006212	Treating waste exemption	Not on a farm	Sorting mixed waste
A	291m E	Warws Werdd Parth 4 Stad Ddiwydiannol Cibyn Caernarfon Gwynedd Ll552bd	NRW-WME006212	Treating waste exemption	Not on a farm	Manual treatment of waste
A	291m E	Gwynedd Skip & Plant Hire Ltd, Plot C1, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME004908	Storing waste exemption	Waste exemption - agricultural and non-agricultural	Storage of waste in secure containers
A	291m E	Gwynedd Skip & Plant Hire Ltd, Plot C1, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME004908	Storing waste exemption	Waste exemption - agricultural and non-agricultural	Storage of waste in a secure place
A	291m E	Gwynedd Skip & Plant Hire Ltd, Plot C1, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME004908	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction
A	291m E	Antur Waunfawr, Caergylchu, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll552bd	NRW-WME007651	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
2	328m SE	Welcome Furniture, Redline Indoor Karting, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME053983	Using waste exemption	Waste exemption - agricultural and non-agricultural	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
3	394m E	Welsh Ambulance Service Nhs Trust, Caernarfon Ambulance Station, Units 24-26, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bu	NRW-WME074722	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	428m SE	Antur Waunfawr, Caergylchu, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME071058	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	430m SE	Antur Waunfawr, Warws Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME053531	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	430m SE	Antur Waunfawr, Warws Werdd, Parth 4 Stad Ddiwydiannol Cibyn, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME088478	Storing waste exemption	Not on a farm	Storage of waste in a secure place
E	496m SE	G T Williams Limited, G T Williams Ltd (Top Yard), Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME092056	Using waste exemption	Not on a farm	Use of waste in construction
E	497m SE	G T Williams Limited, G T Williams Ltd (Top Yard), Lon Cae Darbi, Cibyn Industrial Estate, Caernarfon, Gwynedd, Ll55 2bd	NRW-WME092054	Using waste exemption	On a farm	Use of waste for a specified purpose

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
- Control of Major Accident Hazards
- Hazardous substance storage/usage
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	21

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	Activity	Category
A	36m SE	Gas Governor	Gwynedd, LL55	Gas Features	Infrastructure and Facilities
A	79m SE	Electricity Sub Station	Gwynedd, LL55	Electrical Features	Infrastructure and Facilities
B	88m SE	Ready Foods	Unit 3, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Catering and Non Specific Food Products	Foodstuffs

ID	Location	Company	Address	Activity	Category
2	90m SW	Electricity Sub Station	Gwynedd, LL55	Electrical Features	Infrastructure and Facilities
A	91m E	Moduron J C Motors Ltd	Unit 19, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Vehicle Repair, Testing and Servicing	Repair and Servicing
A	91m E	Arfon Rewinds	Unit 1c, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Electrical Equipment Repair and Servicing	Repair and Servicing
B	113m SE	Electricity Sub Station	Gwynedd, LL55	Electrical Features	Infrastructure and Facilities
A	113m E	C E S	Unit 1f, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Vehicle Parts and Accessories	Motoring
A	113m E	GSF Car Parts	Unit 1f, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Vehicle Parts and Accessories	Motoring
A	116m E	Unique Tint Ltd	Unit 23, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Industrial Coatings and Finishings	Industrial Products
B	123m SE	Phytovation	Unit 8, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
A	141m E	Proweld Fabrication Wales Ltd	Unit 27, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	General Construction Supplies	Industrial Products
A	145m E	Caernarfon Ambulance Station	Gwynedd, LL55	Ambulance and Medical Transportation Services	Health Support Services
B	149m SE	Penningtons Packaging Ltd	Unit 4, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Catering and Non Specific Food Products	Foodstuffs
B	149m SE	Menai Blinds Ltd	Unit 4, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Curtains and Blinds	Consumer Products
B	149m SE	Calor Gas Ltd	Unit 4, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden
A	158m E	Menai Powder Coatings	Unit 28, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Industrial Coatings and Finishings	Industrial Products
A	163m E	Bee Robotics	Unit 32, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Measurement and Inspection Equipment	Industrial Products
A	170m E	Cibyn M O T Centre	Unit 29, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Vehicle Repair, Testing and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
A	201m E	Avantigas	Unit 30-33, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden
D	238m E	Welcome Furniture	Unit 1, Lon Cae Ffynnon, Cibyn Industrial Estate, Caernarfon, Gwynedd, LL55 2BD	Carpets, Flooring, Rugs and Soft Furnishings	Consumer Products

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 32 >**

ID	Location	Company	Address	LPG	Status
3	95m W	OBSOLETE	Llanberis Road, Caernarfon, Gwynedd, LL55 2DE	Not Applicable	Obsolete

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	1

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.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	Operational status	Tier
1	**On site**	**Amazon Gas Ltd**	**Amazon Gas Ltd, Cibyn Industrial Estate, Caernarfon, LL55 2BD**	**Historical NIHHS Site**	**-**

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	2

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.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
E	291m E	Application reference number: No Details Application status: Approved Application date: No Details Address: Calor Gas Ltd, Site adjacent to Cibyn Industrial Estate, Caernarfon, Gwynedd, Wales, LL55 2HB	Details: No Details Enforcement: Data requested, not received. Date of enforcement: Data requested, not received. Comment: Data requested, not received.
7	409m E	Application reference number: No Details Application status: Approved Application date: No Details Address: Dwyfor Oils Ltd, Zone 4, Cibyn Industrial Estate, Caernarfon, Gwynedd, Wales, LL55 2BD	Details: No Details Enforcement: Data requested, not received. Date of enforcement: Data requested, not received. Comment: Data requested, not received.

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	2

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.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Address	Details	
D	233m E	Welcome Furniture Ltd, Lon Cae Ffynnon, Ystad Diwydiannol Cibyn, Caernarfon, LL55 2BD	Process: Timber Manufacture Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
E	277m E	A. & G. Carbody Repairs, Unit 4, Cibyn Industrial Estate, Caernarfon, LL55 2BD	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

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	3

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 32 >**

ID	Location	Address	Details	
4	297m SW	CAERNARFON MIN Y NANT - SSO	Effluent Type: UNSPECIFIED Permit Number: CG0163501 Permit Version: 1 Receiving Water: CADNANT	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 20/10/1989 Effective Date: 20/10/1989 Revocation Date: 30/03/2004
6	326m W	MIN-Y-NANT CSO, LLANBERIS ROAD, CAERNARFON, GWYNEDD, WALES, LL55 2DF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0163501 Permit Version: 0 Receiving Water: CADNANT	Status: Effective Issue date: 13/10/2017 Effective Date: 13/10/2017 Revocation Date: -
F	410m N	CAERNARFON CAE BOLD HOUSING DEVELOP, CAERNARFON CAE BOLD HOUSING DEVE, CAE BOLD HOUSING DEVELOPMENT	Effluent Type: UNSPECIFIED Permit Number: CG0095101 Permit Version: 1 Receiving Water: CADNANT	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 21/02/1983 Effective Date: 21/02/1983 Revocation Date: 21/12/1992

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	9

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 32 >**

ID	Location	Details	
A	33m E	Incident Date: 02/08/2013 Incident Identification: 1142791 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
C	110m NW	Incident Date: 15/07/2002 Incident Identification: 91508 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	114m NW	Incident Date: 20/05/2016 Incident Identification: 1602562 Pollutant: - Pollutant Description: -	Water Impact: - Land Impact: - Air Impact: -
E	249m E	Incident Date: 27/06/2002 Incident Identification: 87806 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
5	301m W	Incident Date: 27/08/2003 Incident Identification: 185499 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
F	406m N	Incident Date: 11/11/2004 Incident Identification: 277116 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
8	409m S	Incident Date: 01/10/2002 Incident Identification: 112642 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)
9	456m SE	Incident Date: 25/11/2001 Incident Identification: 44814 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
10	482m E	Incident Date: 18/07/2014 Incident Identification: 1257565 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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 Geology (basic)

5.1 Superficial geology (625k)

Records within 500m	1

Generalised geology data based on BGS's published poster maps of the UK (North and South). Superficial related themes digitised from 1977 first edition Quaternary map (North and South).

Location	Lex code	Description	Rock type
On site	**TILL-DMTN**	**TILL**	**DIAMICTON**

This data is sourced from the British Geological Survey.

5.2 Bedrock geology (625k)

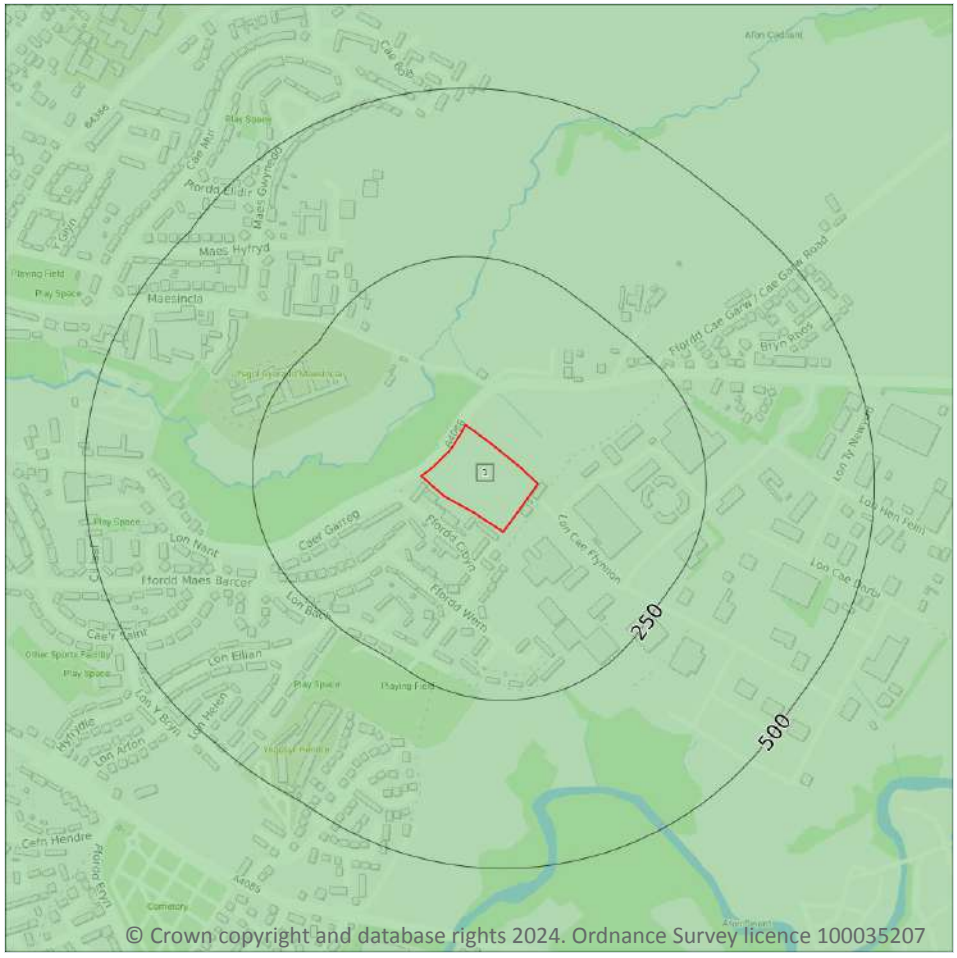
Records within 500m	1

Generalised geology data based on BGS's published poster maps of the UK (North and South). Bedrock related themes created through generalisation of 1:50,000 data.

Location	Lex code	Description	Rock type
On site	**LLVN-MDSS**	**LLANVIRN ROCKS (UNDIFFERENTIATED)**	**MUDSTONE, SILTSTONE AND SANDSTONE**

This data is sourced from the British Geological Survey.

6 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

6.1 Superficial aquifer

Records within 500m	1

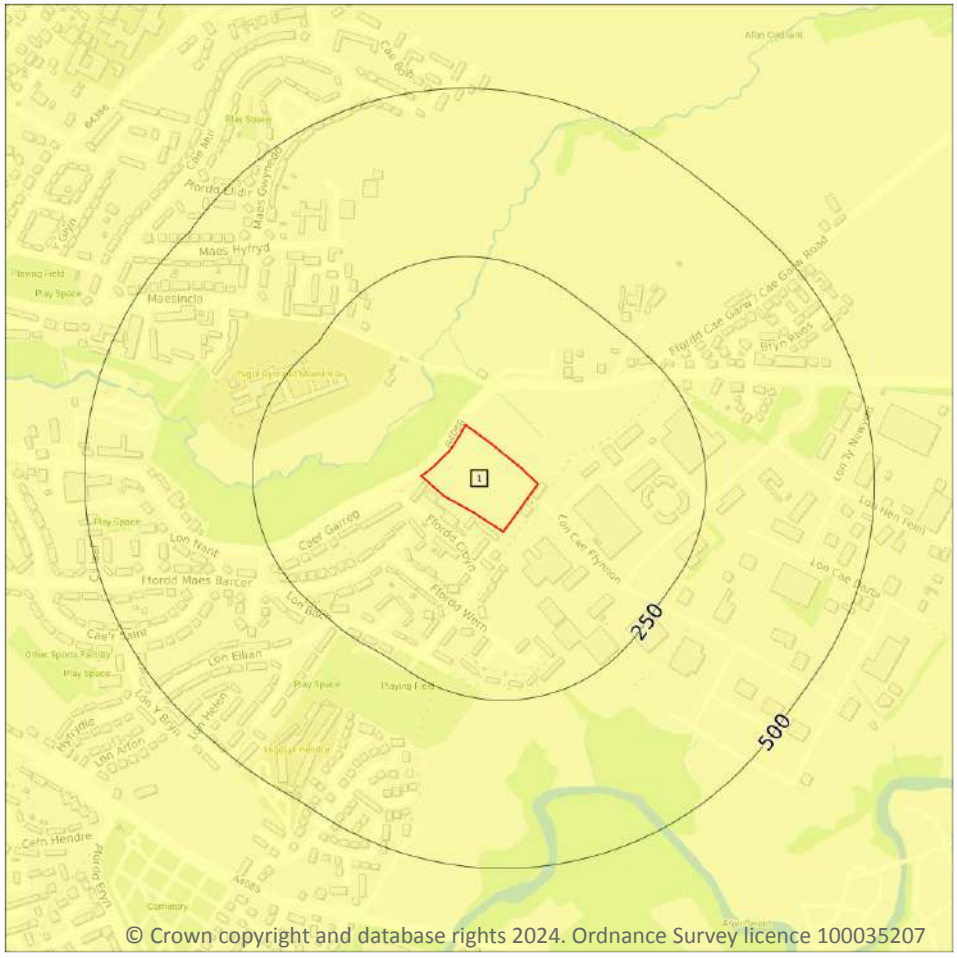
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 42 >**

ID	Location	Designation	Description
1	**On site**	**Unknown**	**Unknown**

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

6.2 Bedrock aquifer

Records within 500m	1

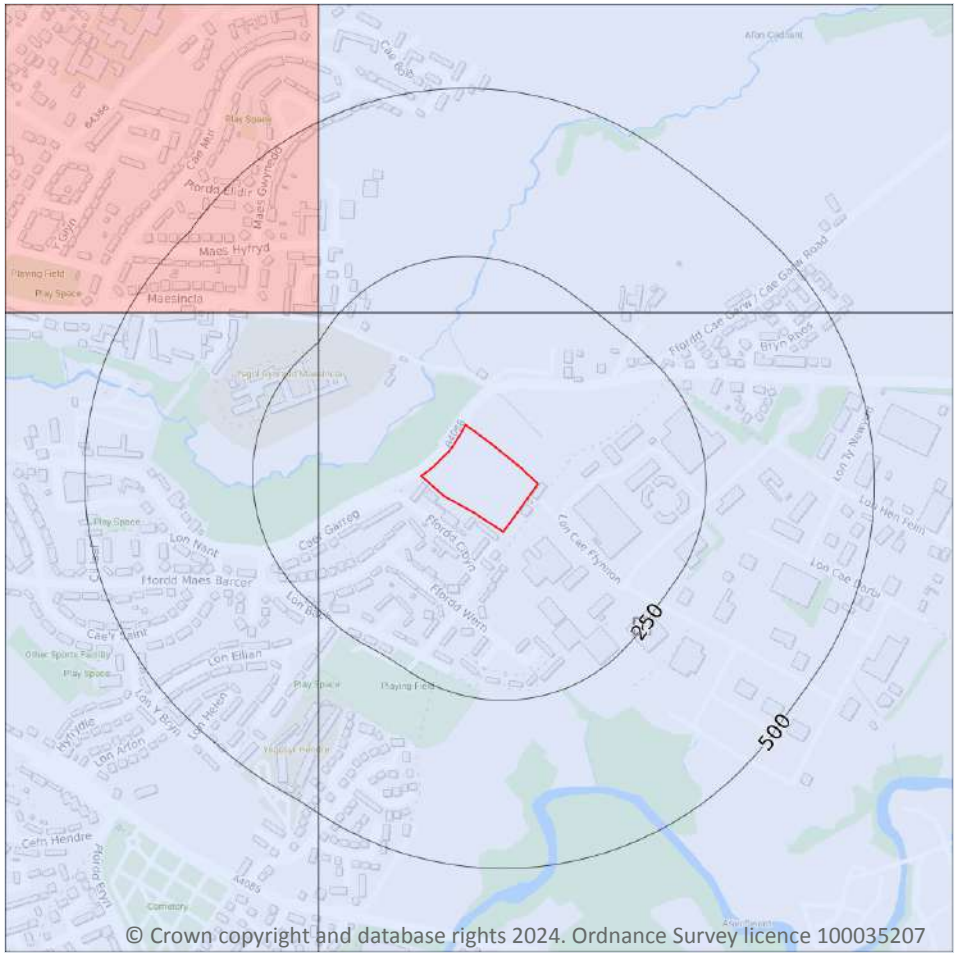
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 43 >**

ID	Location	Designation	Description
1	**On site**	**Secondary (undifferentiated)**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**

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

6.3 Groundwater vulnerability

Records within 50m	1

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 44 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: >550mm/year**	**Vulnerability: - Aquifer type: Unknown (lakes+landslip) 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.

6.4 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.

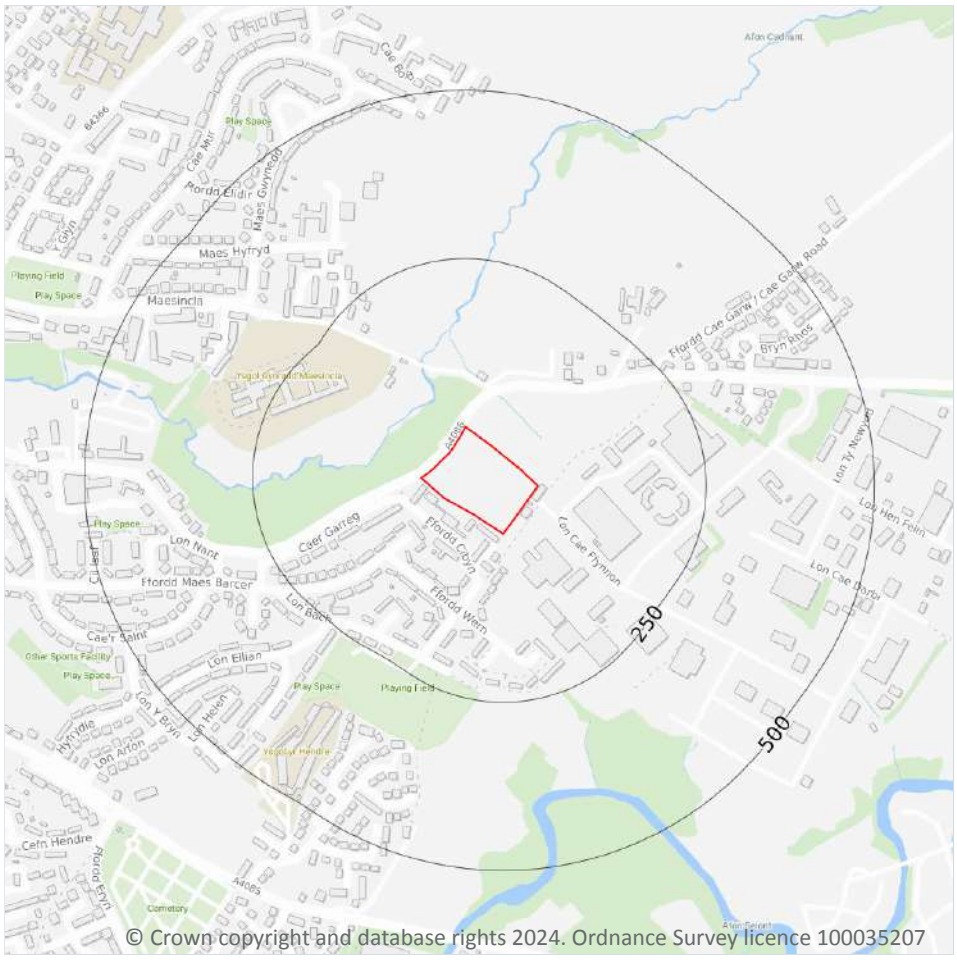
6.5 Groundwater vulnerability- local information

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



- Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

6.6 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.

6.7 Surface water abstractions

Records within 2000m	8

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.

Features are displayed on the Abstractions and Source Protection Zones map on **page 46 >**

ID	Location	Details	
-	1156m S	Status: Historical Licence No: 23/65/16/0070 Details: Process Water Direct Source: EAW Surface Water Point: ON SITE LAGOON AT SEIONT BRICKWORKS Data Type: Point Name: Hanson Brick Easting: 249110 Northing: 361530	Annual Volume (m^3): 12000 Max Daily Volume (m^3): 35 Original Application No: - Original Start Date: 20/06/2006 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -
-	1269m S	Status: Historical Licence No: 23/65/16/0019 Details: Lake & Pond Throughflow Direct Source: EAW Surface Water Point: ORNAMENTAL PARK LAKE Data Type: Point Name: Cyngor Gwynedd Easting: 248770 Northing: 361510	Annual Volume (m^3): 382300 Max Daily Volume (m^3): 1047.4 Original Application No: - Original Start Date: 29/11/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2005 Version End Date: -
-	1269m S	Status: Historical Licence No: 23/65/16/0019 Details: Lake & Pond Throughflow - Very Low Direct Source: - Point: - Data Type: Point Name: - Easting: 248770 Northing: 361510	Annual Volume (m^3): 382300.42 Max Daily Volume (m^3): 1047.36 Original Application No: - Original Start Date: 01/04/2005 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1269m S	Status: Active Licence No: 23/65/16/0019 Details: Lake & Pond Throughflow - Very Low Direct Source: - Point: - Data Type: Point Name: - Easting: 248770 Northing: 361510	Annual Volume (m^3): 382300.42 Max Daily Volume (m^3): 1047.4 Original Application No: - Original Start Date: 01/04/2005 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

ID	Location	Details	
-	1315m S	Status: Historical Licence No: 23/65/16/0008 Details: General Washing/Process Washing Direct Source: EAW Surface Water Point: RIVER SEIONT, CAERNARFON Data Type: Point Name: Hanson Brick Easting: 248770 Northing: 361460	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 25/10/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/01/2000 Version End Date: -
-	1315m S	Status: Historical Licence No: 23/65/16/0008 Details: Process Water Direct Source: EAW Surface Water Point: AFON SEIONT Data Type: Point Name: Hanson Brick Easting: 248770 Northing: 361460	Annual Volume (m^3): 6819 Max Daily Volume (m^3): 27.276 Original Application No: - Original Start Date: 25/10/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1505m SE	Status: Historical Licence No: 23/65/16/0039 Details: Drinking, Cooking, Sanitary Washing (small garden) - Household - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 250590 Northing: 361930	Annual Volume (m^3): 93502.10 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Sep 11 2006 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1505m SE	Status: Historical Licence No: 23/65/16/0039 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: EAW Surface Water Point: POND AT GLAN GWNA, CAEATHRAW Data Type: Point Name: Glan Gwna Holiday Park Ltd Easting: 250590 Northing: 361930	Annual Volume (m^3): 93502.1 Max Daily Volume (m^3): 256.17 Original Application No: - Original Start Date: 24/06/1968 Expiry Date: - Issue No: 100 Version Start Date: 11/09/2006 Version End Date: -

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

6.8 Potable abstractions

Records within 2000m	2

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.

Features are displayed on the Abstractions and Source Protection Zones map on **page 46 >**

ID	Location	Details	
-	1505m SE	Status: Historical Licence No: 23/65/16/0039 Details: Drinking, Cooking, Sanitary Washing (small garden) - Household - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 250590 Northing: 361930	Annual Volume (m^3): 93502.10 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Sep 11 2006 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1505m SE	Status: Historical Licence No: 23/65/16/0039 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: EAW Surface Water Point: POND AT GLAN GWNA, CAEATHRAW Data Type: Point Name: Glan Gwna Holiday Park Ltd Easting: 250590 Northing: 361930	Annual Volume (m^3): 93502.1 Max Daily Volume (m^3): 256.17 Original Application No: - Original Start Date: 24/06/1968 Expiry Date: - Issue No: 100 Version Start Date: 11/09/2006 Version End Date: -

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

6.9 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.

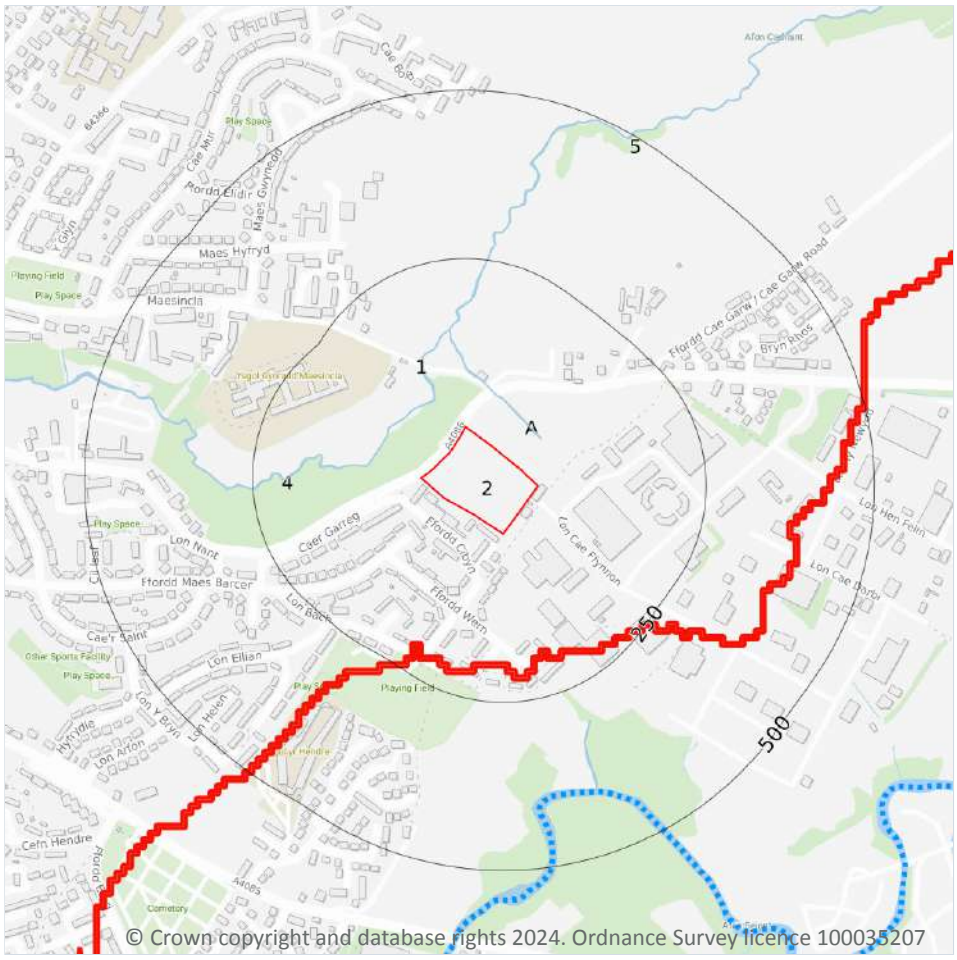
6.10 Source Protection Zones (confined aquifer)

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.

7 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

7.1 Water Network (OS MasterMap)

Records within 250m	8

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 51 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	55m NE	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
4	62m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Cadnant
A	65m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	65m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	66m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	98m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	102m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	147m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Cadnant

This data is sourced from the Ordnance Survey.

7.2 Surface water features

Records within 250m	5

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 51 >**

This data is sourced from the Ordnance Survey.

7.3 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 51 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**Coastal catchment**	**Not part of a river WB catchment**	**431**	**Gwyrfai Seiont**	**Llyn and Eryri**

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

7.4 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.

7.5 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 51 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Llyn and Eryri**	**GB41002G204600**	**Poor**	**Poor**	**Good**	**2017**

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

8 River and coastal flooding

8.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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

8.2 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.

8.3 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.

8.4 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.

8.5 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

8.6 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.

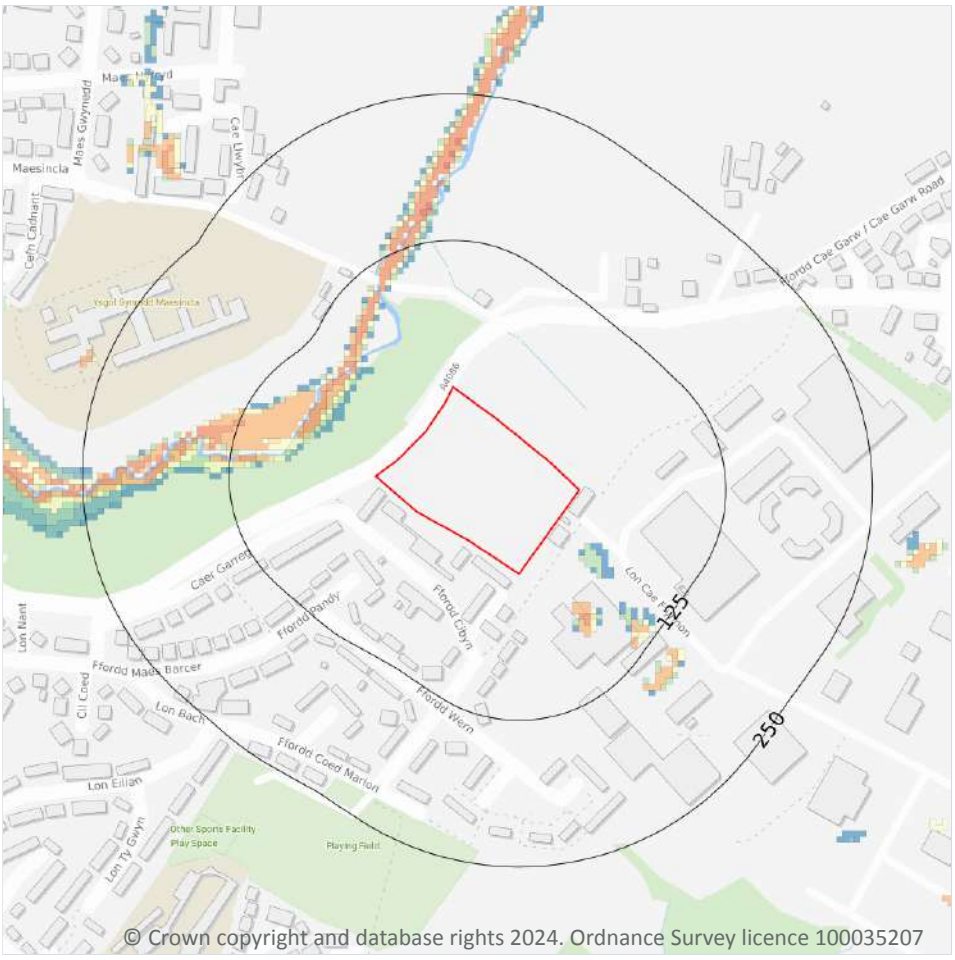
8.7 Flood Zone 3

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.

9 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

9.1 Surface water flooding

Highest risk on site	**Negligible**
Highest risk within 50m	**1 in 250 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 57 >**

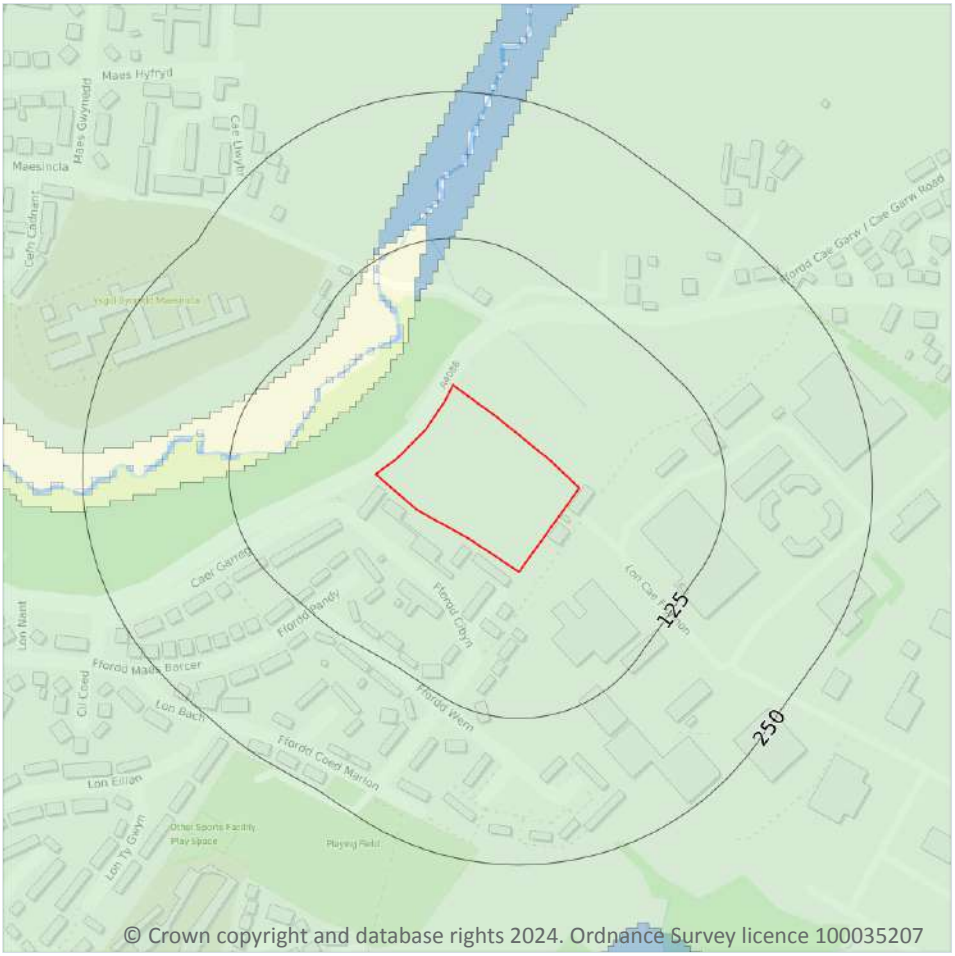
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

10 Groundwater flooding



Site Outline

Search buffers in metres (m)

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

10.1 Groundwater flooding

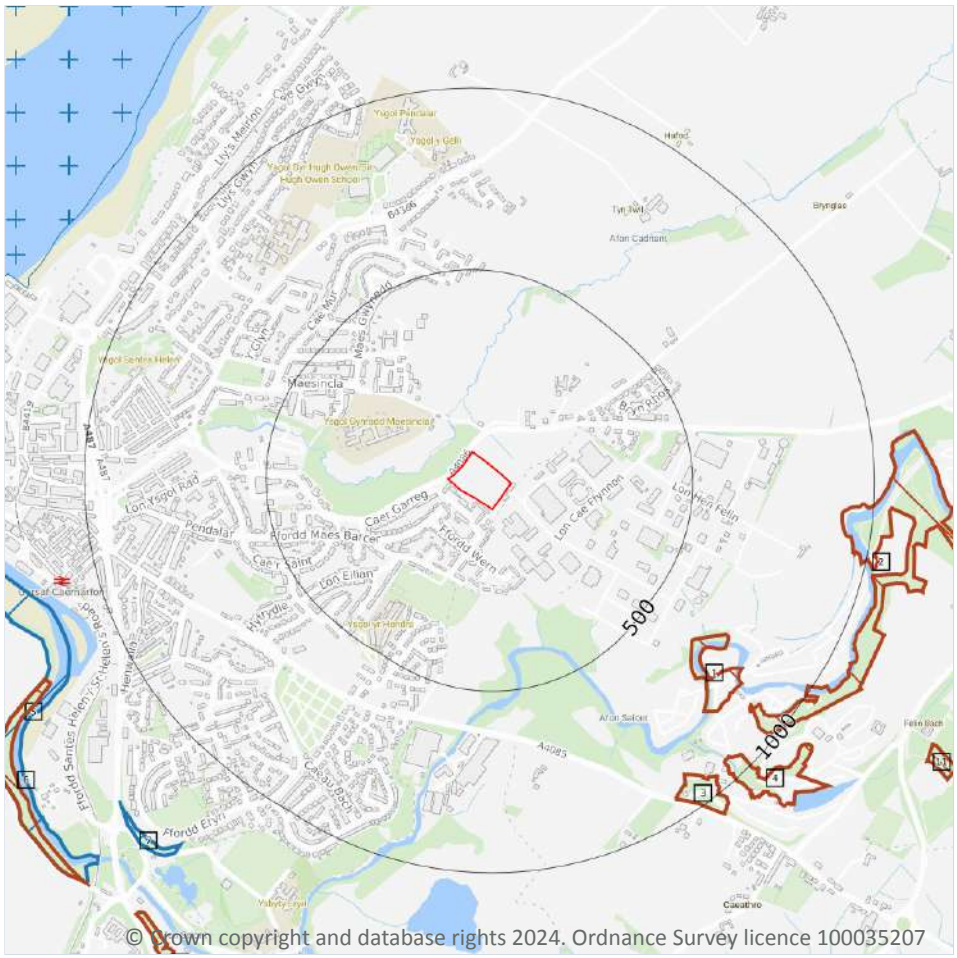
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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 59 >**

This data is sourced from Ambiental Risk Analytics.

11 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

Designated Ancient Woodland

11.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	2

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 60 >**

ID	Location	Name	Data source
5	1139m W	Afon Seiont	Natural Resources Wales

ID	Location	Name	Data source
7	1244m SW	Afon Seiont	Natural Resources Wales

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

11.2 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.

11.3 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 60 >**

ID	Location	Name	Features of interest	Habitat description	Data source
8	1247m NW	Y Fenai a Bae Conwy / Menai Strait and Conwy Bay	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Shallow inlets and bays; Reefs; Atlantic salt meadows; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Grey seal.	Shingle, Sea cliffs, Islets; Salt marshes, Salt pastures, Salt steppes; Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	Natural Resources Wales
-	1410m W	Y Fenai a Bae Conwy / Menai Strait and Conwy Bay	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Shallow inlets and bays; Reefs; Atlantic salt meadows; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Grey seal.	Shingle, Sea cliffs, Islets; Salt marshes, Salt pastures, Salt steppes; Marine areas, Sea inlets; 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.

11.4 Special Protection Areas (SPA)

Records within 2000m	0

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.

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

11.5 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.

11.6 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.

11.7 Designated Ancient Woodland

Records within 2000m	18

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 60 >**

ID	Location	Name	Woodland Type
1	657m SE	Unknown	Ancient Semi Natural Woodland
2	893m SE	Unknown	Restored Ancient Woodland Site
3	901m SE	Unknown	Ancient Semi Natural Woodland
4	941m SE	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
6	1229m SW	Unknown	Ancient Semi Natural Woodland
-	1327m E	Unknown	Ancient Semi Natural Woodland
-	1335m E	Unknown	Ancient Semi Natural Woodland
11	1365m SE	Unknown	Restored Ancient Woodland Site
-	1412m S	Unknown	Restored Ancient Woodland Site
-	1434m S	Unknown	Ancient Semi Natural Woodland
15	1452m SW	Unknown	Ancient Semi Natural Woodland
-	1464m W	Unknown	Ancient Semi Natural Woodland
-	1549m W	Unknown	Ancient Semi Natural Woodland
-	1570m E	Unknown	Ancient Semi Natural Woodland
-	1773m W	Unknown	Restored Ancient Woodland Site
-	1790m E	Unknown	Ancient Semi Natural Woodland
-	1898m SW	Unknown	Restored Ancient Woodland Site
-	1911m S	Unknown	Ancient Semi Natural Woodland

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

11.8 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.

11.9 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.

11.10 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.

11.11 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.

11.12 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.

11.13 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.

11.14 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.

11.15 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.

11.16 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

11.17 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.

11.18 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.

12 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

12.1 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.

12.2 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.

12.3 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.

12.4 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 67 >**

ID	Location	Name	Grade	Reference Number	Listed date
1	116m NW	Stone Bridge Over Afon Cadnant, About 1.5km East Of Castle. Carries Old Road Now Footpath, Over Afon Cadnant, Near A4086	II	87487	02/05/2006

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

12.5 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 Historic England, Cadw and Historic Environment Scotland.

12.6 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 Historic England, Cadw and Historic Environment Scotland.

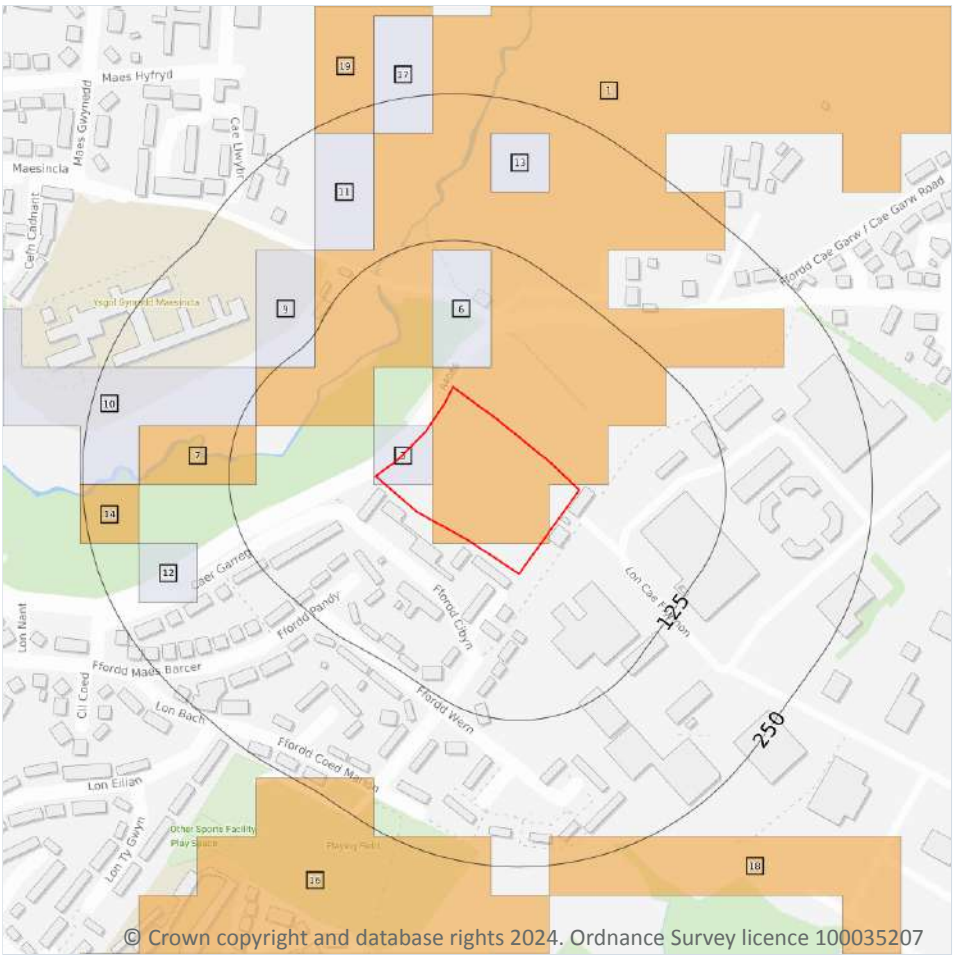
12.7 Registered Parks and Gardens

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 Historic England, Cadw and Historic Environment Scotland.

13 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

13.1 Agricultural Land Classification

Records within 250m	14

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 70 >**

ID	Location	Classification	Description
1	**On site**	**Grade 2**	**Good quality agricultural land**
3	**On site**	**Grade 3b**	**Moderate quality agricultural land**
6	17m N	Grade 3b	Moderate quality agricultural land

ID	Location	Classification	Description
7	102m W	Grade 2	Good quality agricultural land
9	105m NW	Grade 3b	Moderate quality agricultural land
10	110m W	Grade 3b	Moderate quality agricultural land
11	135m NW	Grade 3b	Moderate quality agricultural land
12	162m W	Grade 3b	Moderate quality agricultural land
13	170m N	Grade 3b	Moderate quality agricultural land
14	202m W	Grade 2	Good quality agricultural land
16	214m S	Grade 2	Good quality agricultural land
17	217m N	Grade 3b	Moderate quality agricultural land
18	226m S	Grade 2	Good quality agricultural land
19	227m N	Grade 2	Good quality agricultural land

This data is sourced from Natural Resources Wales.

13.2 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.

13.3 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.

13.4 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. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

13.5 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.

14 Habitat designations

14.1 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.

14.2 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.

14.3 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.

14.4 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.

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 ↗.

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