ARCHAEOLOGY WALES

Geophysical Survey:

Bryn Parciau, Criccieth

May 2023

Report No. 2192

By

Jennifer Muller

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Summary

This report results from work carried out by Archaeology Wales Ltd (AW) for Rhys Evans Cyf, following recommendations made by Gwynedd Archaeological Planning Services (GAPS). It draws on the results of an investigative geophysical survey undertaken for the proposed development of 23 dwellings, creation of a new access from Caernarfon Road, an internal estate road, surface water attenuation pond, landscaping, buffer zone and associated works on the land adjacent to North Terrace Criccieth, Gwynedd, North Wales (NGR SH 49793 38450).

The aim of the geophysical survey was to determine the nature and extent of any buried archaeological features within the future potential development areas. The work was undertaken using a Bartington Grad601 dual fluxgate gradiometer.

The survey identified anomalies possibly characteristic of archaeological features in Areas 1 - 5. In Areas 1-3 these comprise positive linears typical of former ditched field boundaries. These potential former field boundaries (F1, F6 and F7) are not visible on any historic maps and must pre-date the 19th century. However, their alignment does conform to that of the later historic boundaries, and they may be broadly contemporary or medieval in origin.

A second group of linear anomalies in Area 2 (F2, F3 and F4) are of a very different character, each comprising a positive magnetic response coupled with a negative, possibly indicative of a bank and ditch, or perhaps a ditch or cut with a stony fill. Their alignment is much straighter than those of the (F1, F6, F7) group and their interrelationship comprises clear square alignments and returns. This could be indicative or more modern features, although none are visible on modern or historic maps, or available satellite imagery at this location.

The work was carried out to the Standard and Guidance set out by the Chartered Institute for Archaeologists for archaeological geophysical survey (CIfA 2015) and completed in accordance with EAC Guidelines for the Use of Geophysics in Archaeology (Schmidt et al. 2016).

Crynodeb

Mae'r adroddiad hwn yn ganlyniad i waith a wnaed gan Archaeology Wales Cyf (AW) ar gyfer Rhys Evans Cyf, yn dilyn argymhellion a wnaed gan Wasanaethau Cynllunio Archeolegol Gwynedd (GAPS). Mae'n tynnu ar ganlyniadau arolwg geoffisegol archwiliol a gynhaliwyd ar gyfer datblygiad arfaethedig o 23 annedd, creu ffordd fynediad newydd o Heol Caernarfon, a ffordd ystâd fewnol, pwll arafu dŵr arwyneb, tirweddu, parth clustogi a'r gwaith cysylltiedig ar dir ger North Terrace, Cricieth, Gwynedd, Gogledd Cymru (NGR SH 49793 38450).

Amcan yr arolwg geoffisegol yw pennu natur a hyd a lled unrhyw nodweddion archeolegol sydd wedi'u cloddio o fewn yr ardaloedd datblygu posibl yn y dyfodol. Gwnaed y gwaith gan ddefnyddio gradiomedr 'fluxgate' deuol Bartington Grad601.

Nododd yr arolwg anomaleddau sy'n nodweddiadol o bosibl o nodweddion archeolegol yn Ardaloedd 1 - 5. Yn Ardaloedd 1-3, mae'r rhain yn cynnwys hirfeinion cadarnhaol sy'n nodweddiadol o ffiniau caeau â ffosydd blaenorol. Nid yw'r cyn ffiniau caeau posibl hyn (F1, F6 ac F7) i'w gweld ar unrhyw fapiau hanesyddol a rhaid eu bod yn dyddio o'r cyfnod cyn y 19eg ganrif. Fodd bynnag, mae eu haliniad yn cydymffurfio â'r ffiniau hanesyddol diweddarach, ac mae'n bosibl bod eu tarddiad yn gyfoes neu'n ganoloesol yn gyffredinol.

Mae cymeriad gwahanol iawn i'r ail grŵp o anomaleddau unionlin yn Ardal (F2, F3 ac F4), gyda phob un yn cynnwys ymateb magnetig cadarnhaol wedi'i gyplysu ag un negyddol, sydd o bosibl yn arwydd o lethr a ffos, neu ffos neu doriad wedi'i lenwi â cherrig. Mae eu haliniad yn llawer sythach na'r rheini yn y grŵp (F1, F6, F7) ac mae eu rhyngberthynas yn cynnwys aliniadau a chilfachau sgwâr clir. Gallai hyn fod yn nodweddiadol o nodweddion mwy modern, er nad yw'r un ohonynt i'w gweld ar fapiau modern neu hanesyddol, nac ar gael ar luniau lloeren yn y lleoliad hwn.

Gwnaed y gwaith yn unol â'r Safonau a'r Canllawiau a bennwyd gan Sefydliad Siartredig yr Archeolegwyr ar gyfer arolwg geoffisegol archeolegol (Sefydliad Siartredig yr Archeolegwyr 2020) a chafodd ei gwblhau yn unol â Chanllawiau

Cyngor Archeolegol Ewrop ar gyfer Defnyddio Geoffiseg mewn Archeoleg (Schmidt et al. 2016).

1. Introduction

1.1.1 From 24th to 26th April 2023, Archaeology Wales Ltd (henceforth - AW) carried out a geophysical survey on the land adjacent to North Terrace Criccieth, Gwynedd, North Wales (NGR SH 49793 38450) henceforth "the site" (Figures 1 and 2).

1.1.2 The survey was undertaken in association with the proposed development of 23 dwellings, creation of a new access from Caernarfon Road, an internal estate road, surface water attenuation pond, landscaping, buffer zone and associated works. This followed consultation with Gwynedd Archaeological Planning Services (GAPS) in their capacity as archaeological advisors to the Gwynedd Planning Authority.

1.1.3 A Written Scheme of Investigation (WSI) was prepared by Irene Garcia Rovira, Project Manager, Archaeology Wales Ltd, at the request of Rhys Evans Cyf. It provided information on the methodology to be employed during a geophysical survey of the site. The WSI was submitted to, and approved, by GAPS prior to the survey being undertaken (Appendix 1).

1.1.4 The work was managed by Irene Garcia Rovira, AW Project Manager, and the site work was undertaken by Jennifer Muller MA, Daniel Morgan MA and Einir Smith BA.

2. Site description and geology

2.1.1 The proposed development area (PDA) is located in the north-central area of Criccieth. The PDA measures c. 1.56 hectares in area. Caernarfon Road bounds the proposed site to the east, whilst all other boundaries are adjacent to open fields.

2.1.2 The PDA can be divided into three parts:

- the main field on which the proposed dwellings and their associated infrastructure will be constructed;

- a landscaping strip of 20m in width this extending into the three adjoining fields – no construction will take place on this land as it will be planted with native trees and meadow;
- an area of c. 300m^2 located about 50m to the south of the main field is to be banked up to form an attenuation pond.

2.1.3 The underlying geology is composed of siltstone belonging to the Nant Francon subgroup formed during the Ordovician Period. The superficial soils are defined by Till - Devensian Diamicton formed during the Quaternary Period (BGS 2023).

3. Archaeological Background

3.1.1 A HER search (GATHER1785) was undertaken in order to identify any known historical and archaeological assets within a 500m radius of the proposed site. A total of 50 known sites were identified, the closest being Ffynnon Saint Holy Well (PRN 1285), known for its supposed curing powers of eye infections. It lies about 80m to the southeast of the site boundary beneath a garage.

3.1.2 None of the HER records date to the prehistoric or Roman periods.

3.1.3 The origins of Criccieth can be dated back to the medieval period. The historic core of the town (PRN 7355) is protected as a conservation area.

3.1.4 The bulk of the HER results focus upon the post-medieval and modern periods. The records reflect the of growth in population during post-medieval/modern times with the establishment of services such as the Brynhir Arms (PRN 68768) and George IV hotel (PRN 68769).

3.1.5 A WW1 Memorial Hall (PRN 68767) is located 200m to the southeast of the assets mentioned above. Another notable 20th century asset is the site of a Civil Air Raid Shelter documented from 1941 (PRN 93643).

3.1.6 There is only one asset that shows evidence of industrial development in the 500m buffer zone, this being the former site of a Limekiln located 500m to the southeast (PRN 24511). The kiln is not shown on maps until the 1889 OS map and was likely in use until the early 20th century. The rest of the results show numerous agricultural sites located in the area. Five hedge-banks and one field boundary (PRN 62708) are included alongside an outbuilding and stable block at Bryn Hir (PRNs 56886 and 68764), a Hay Barn at Parciau Mawr (PRN 6345), and an 18th century Cruck building at Parciau-uchaf (PRN 2280).

4. Aims and Objectives

4.1.1 The primary objective of the work was to locate and describe archaeological features that may be present within the survey area. The work aimed to elucidate the presence or absence of archaeological material that might be affected by the scheme; its character, distribution, extent, and relative significance, providing sub-surface data to inform any future on-site works.

4.1.2 It is the aim of this report to provide information which is sufficiently detailed to allow the archaeological resource to be better understood. The information could then be used to help inform further archaeological work undertaken in association with the proposed development.

5. Methodology

5.1 Geophysical Survey

5.1.1 The survey was carried out using a Bartington Grad601-2 dual sensor fluxgate gradiometer. This instrument has been chosen due to its proven efficient and effective method of locating sub-surface archaeological anomalies on greenfield sites. The machine consists of two high stability fluxgate sensors suspended on a single frame, accurately aligned, that can detect localised magnetic anomalies compared with the general

magnetic background. When mapped in a systematic manner this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Strong magnetic anomalies will be generated by iron-based objects or areas modified by heat, such as hearths and kilns. More subtle anomalies may be generated by changes, typically in the iron-oxide content, of underlying soils, compared to the natural subsoil. This enables the detection of material infilling sub-surface archaeological features such as ditches, pits and structural remains. Data from this may be mapped at closely spaced regular intervals, to produce an image that may be interpreted to locate buried archaeological features (Clark 1997; Aspinall *et al*. 2011).

5.1.2 Moreover, Fluxgate gradiometry has the advantage of being able to identify the broadest range of sub-surface archaeological feature types and can detect such anomalies at a range of soil depths (typically 0.3-1m).

5.1.3 All survey points were located using GPS and plotted onto an O.S. base map. Detailed survey was carried out in grids of 30m x 30m along zig-zag and parallel traverses spaced at 1m intervals, recording data points spaced at 0.25m intervals to a maximum instrument sensitivity of 0.1nT in accordance with Historic England recommended guidelines (Schmidt *et al*. 2016). The survey mode was set to bi-directional (traverses walked alternately north/south, northeast/southwest, and northwest/southeast). Incomplete survey lines resulting from irregular area boundaries or obstacles were completed using the 'dummy log' key. At regular intervals, the data was downloaded in the field onto a laptop computer for storage and assessment.

5.2 Data Processing and Presentation

5.2.1 Following the completion of the detailed survey, processing and analysis took place using the TerraSurveyor Lite v.3 software package.

5.2.2 A composite of each detailed survey area has been created and processed using TerraSurveyor v.3.0.37.1. The report includes raw and unclipped data in greyscale. Every effort has been made to reduce the instrument directional sensitivity in the field rather than reliance on post data-collection processing.

5.2.3 The final results have been presented at an appropriate scale tied to the Ordnance Survey National Grid.

5.2.4 The most typical method of visualising the data is as a greyscale image. In a greyscale plot, each data point is represented as a shade of grey, from black to white at extreme of the data range. A limited number of standard operations can be carried out to process the data, including clipping, destriping and graduated shade. The data was analysed using a variety of parameters and styles and the most useful of these were saved as *TIF images and displayed using Adobe Illustrator software. The results of the survey were then overlaid onto a digital map of the study area. This was then used to produce interpretation figures.

5.2.5 All works were undertaken in accordance with the standard required by The Chartered Institute for Archaeologist's Standard and Guidance for Archaeological Geophysical Survey (update 2020) and current Health and Safety legislation.

6. Geophysics results

6.1 Limitations

6.1.1 The geophysical survey was undertaken during a period of dry and sunny weather.

6.1.2 Parts of Area 1 were not surveyable due to thick areas of rushes, which catch the sensors, and in some cases deep mud in between them. The eastern end of Area 1 was also avoided as it contained gorse bushes

which lined a steeply declining area down to the stream. In these areas, the 'dummy log' key was used, and no data collected.

6.2 Results (Figures 4-7)

6.2.1 The five areas comprising the survey are designated as Areas 1 - 5. The survey identified anomalies of possible archaeological origin in all of the surveyed areas. These mostly consisted of possible field boundaries that appear to pre-date the Tithe Map of 1839. Each anomaly will be described below in the order they were surveyed (starting with Area 1).

6.2.2 The anomalies are annotated on individual figures related to each field and are marked red where no previous boundary has been recorded, or green where they correspond with a historic boundary. Geological/natural features are marked in blue, and modern features marked in pink.

6.2.3 Single, dipolar anomalies recorded throughout the survey may represent either isolated ferrous detritus, or thermoremanent magnetic materials, such as fragments of burnt stone, brick, or tile.

Area 1 (Figure 3-7)

6.2.4 Area 1 appears to be dominated by a large spread of magnetic debris. This is comprised of many dipolar anomalies, which are positive points with a negative response, or vice versa. The more the data is processed, the larger the area appears. However, it is mostly focussed on the southern-central part of the field, as is visible in the raw data (Figure 6). This magnetic spread could possibly be natural. The superficial geological deposits are made up of glacial till, which could contain some igneous debris. However, the Advanced Soil Geochemical Atlas of England and Wales (UK Soil Observatory 2023) shows that the levels of iron, cobalt and nickel, all of which have magnetic properties, are relatively low over the area, so it is more likely that the magnetic debris might be made up of buried debris, possibly discarded farming material or rubbish.

6.2.5 One positive curvilinear anomaly (F1), characteristic of a ditch or gully, is located on the west side of Area 1. It runs for about 71m. Its response is strongest near the modern service pipe that runs at the northeast end of Area 1. It is possible this could be connected to that feature, but due to its curving nature and low positive magnetic response, it cannot be ruled out that this could be archaeological in nature.

Area 2 (Figure 3-7)

6.2.6 Area 2 contains two linear anomalies (F2 and F3) that converge towards each other. Feature F2 runs north-south for about 27m, and F3 from northwest-southeast for about 22m. At their converging end, there is another feature made up of two negative linears forming what looks like part of a square (F4). Interestingly, the two linears (F2 and F3) appear to be made up differently. F2, which may have a break about 1/3 of the way down from the north end (visible as a moderately positive area running perpendicular through the linear), appears to have a negative response with accompanying positive responses on either side, while F3 appears to have a positive response with accompanying negative response on either side. A negative response, indicative of an area of lower magnetism than the area around it, can signify a built-up bank, a stone filed land drain or even a wall foundation. Due to their regular straight and converging courses, it is perhaps most likely that F2, F3 and F4 represent stone filled land drains.

6.2.7 A single feature of possible archaeological origin was visible on the ground. This was a sub-circular small mound (F5), only slightly raised from the ground, and sitting near F3. The interior of this mound had varying degrees of positive responses within in. It is possible this could be the site of a former tree, and the positive response represents the infilled areas where roots once burrowed.

6.2.8 Lastly, there is a negative, curved linear (F6) at the southern end of Area 2 near the current field boundary.

6.2.9 Area 2 contains a number of alternating negative and positive responses, many of which have no distinctive shape.

Area 3 (Figure 3-7)

6.2.10 Area 3 continues to contain small areas of moderately negative responses similar to Area 2, though here they are more predominantly small points rather than indistinct shapes. There is one faint but distinct positive linear which forms two sides of a possible boundary or enclosure (F7). It runs for 37m north-northeast/south-southwest and then turns to the southeast for 15m. It does not appear to continue into Area 1.

Area 4 (Figure 3-7)

6.2.11 Area 4 contains one possible linear anomaly (F8) which is aligned approximately NW-SE with a return to the southwest at the northeast end. It is relatively faint and uncertain but appears to comprise a positive magnetic with a faint negative response on its northeast side. This type of response could be typical of a bank and associated ditch and potentially representing a former field boundary.

Area 5 (Figure 3-7)

6.2.12 Area 5 contains some magnetic debris comprised of dipolar anomalies., although not as concentrated as in Area 1. Nevertheless, they are likely to represent either natural magnetic material or magnetic detritus within the topsoil. There are also three possible groups of very uncertain linear anomalies (F9-11).

6.2.13 Possible linear anomaly group (F9) comprises a pair of intersecting negative linears forming an inverted 'Y' shape. Negative linear anomalies displaying a lower than average magnetic response are often indicative of buried walls, stony banks, or compacted soil. The form of the anomalies would tend to rule out the first two options and perhaps indicate that they represent former cattle, tractor or footpaths. No such paths are visible at

this precise location on available satellite imagery, although numerous paths are visible within the wider area.

6.2.14 Possible linear anomaly group (F10) comprises a pair of intersecting positive linears again forming an inverted 'Y' shape. Positive linear anomalies displaying a higher than average magnetic response are often indicative of silted up ditches. The similarlty of the form to those of (F9) above is striking and it is possible that in this instance, hollow paths became infilled with magnetically enhance topsoil.

6.2.15 Possible Linear anomaly group (F11) appears to comprise a pair of converging positive linear anomalies. In this instance not enough of them is visible within the survey area to draw any conclusions concerning their possible origins.

7. Discussion and conclusions

7.1.1 The works carried out by Archaeology Wales from 24th to the 26th April focussed on surveying 1.56 hectares of the land adjacent to North Terrace Criccieth, Gwynedd, North Wales (NGR SH 49793 38450). The aim of the survey was to establish whether any features of archaeological potential were present within the site. Overall, the density of potential archaeological features recorded on site is relatively low.

7.1.2 The survey identified anomalies possibly characteristic of archaeological features in Areas 1 - 5. In Areas 1-3 these comprise positive linears typical of former ditched field boundaries. These potential former field boundaries (F1, F6 and F7) are not visible on any historic maps and must pre-date the 19th century. However, their alignment does conform to that of the later historic boundaries, and they may be broadly contemporary or medieval in origin. These potential archaeological features are of low to medium archaeological significance. In the absence of sample excavation this interpretation must remain tentative.

7.1.3 A second group of linear anomalies in Area 2 (F2, F3 and F4) are of a very different character, each comprising a positive magnetic response coupled with a negative, possibly indicative of a bank and ditch, or perhaps a ditch or cut with a stony fill. Their alignment is much straighter than those of the (F1, F6, F7) group and their interrelationship comprises clear square alignments and returns. This could be indicative or more modern features, although none are visible on modern or historic maps, or available satellite imagery at this location. A more likely interpretation is that they represent stone filled field drains, with permanently boggy ground recorded running along the eastern edge of the adjacent Area 1. These potential features are of low archaeological significance.

7.1.4 Other potential geophysical anomalies visible in the southern part of the site are poorly defined and their interpretation must remain tentative.

7.1.5 Natural geological and/or geomorphological variations in the subsoil appear to dominate the southern part of Area 1 and parts of Area 5 and do not represent archaeological features.

7.1.6 The interpretation and suggested date of any of the potential sub-surface archaeological remains identified during this survey is unproven and dependent on further archaeological investigation. Nevertheless, it is anticipated that the archaeological potential of the site is relatively low based on the results of the geophysical survey.

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Maps consulted

Map of the parish of Crickieth in the County of Carnarvon 1839

Caernarvonshire XXXIV.SW Series: Ordnance Survey. Six-inch to the mile Surveyed: 1887, Published: 1888

Caernarvonshire XXXIV.SW Series: Ordnance Survey. Six-inch to the mile Revised: 1899, Published: 1901

Caernarvonshire XXXIV.SW Series: Ordnance Survey. Six-inch to the mile Revised: 1913, Published: 1920

Caernarvonshire XXXIV.SW Series: Ordnance Survey. Six-inch to the mile Revised: 1938, Published: ca. 1948

Caernarvonshire XXXIV.SW Series: Ordnance Survey. Six-inch to the mile Revised: 1949, Published: 1954

Figure 1 Site location

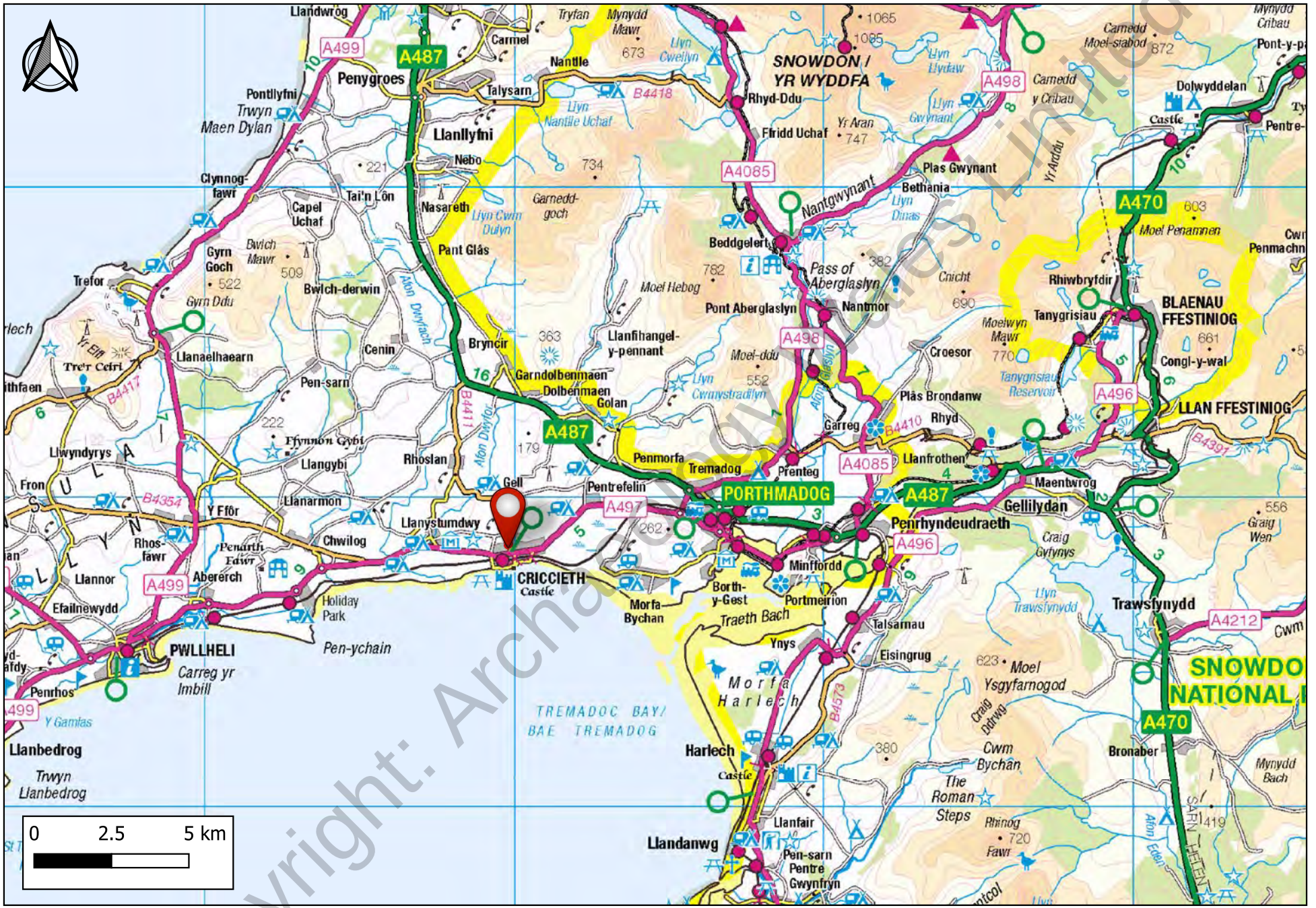

Figure 1. Site location

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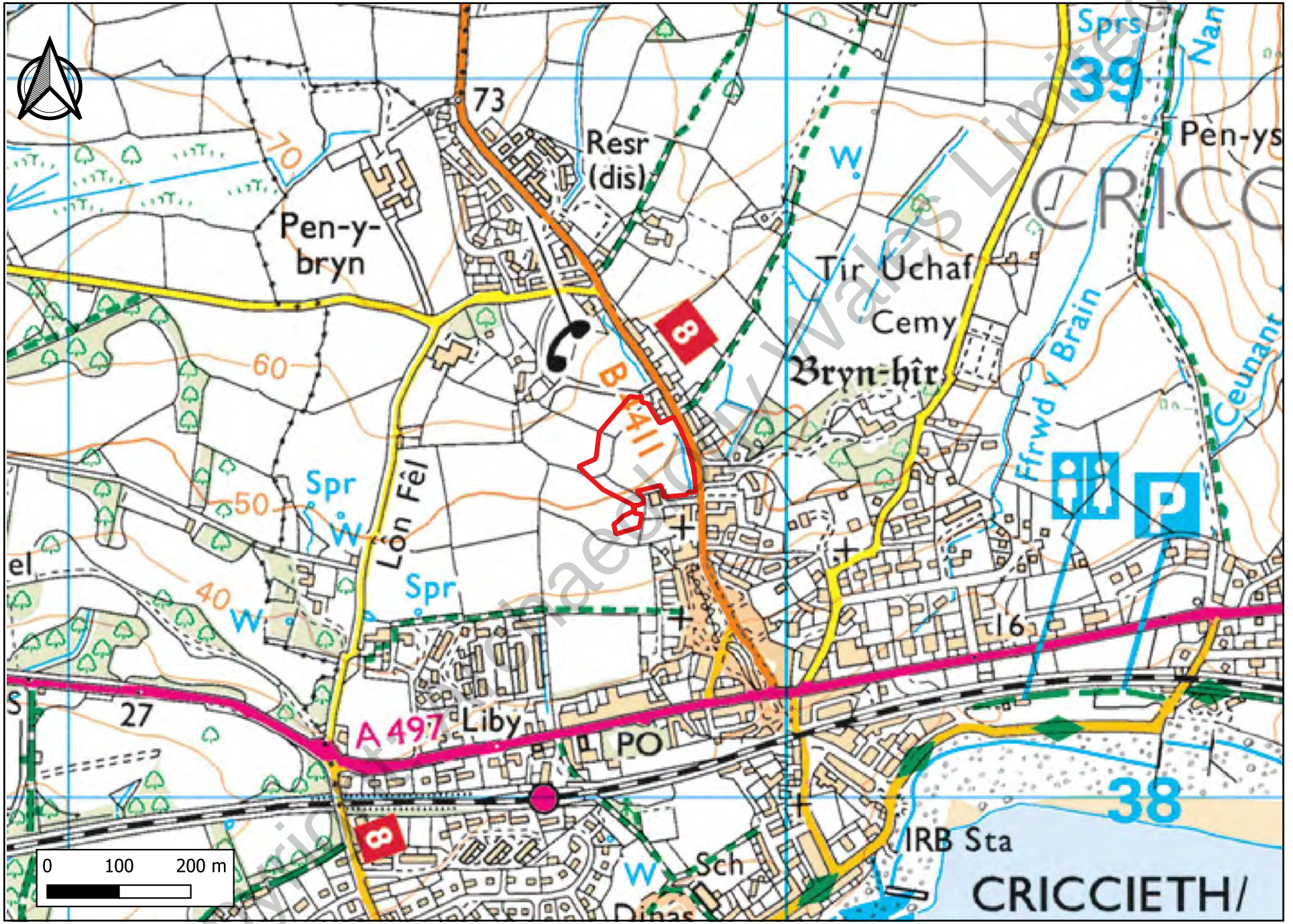

Figure 2. Proposed development area.

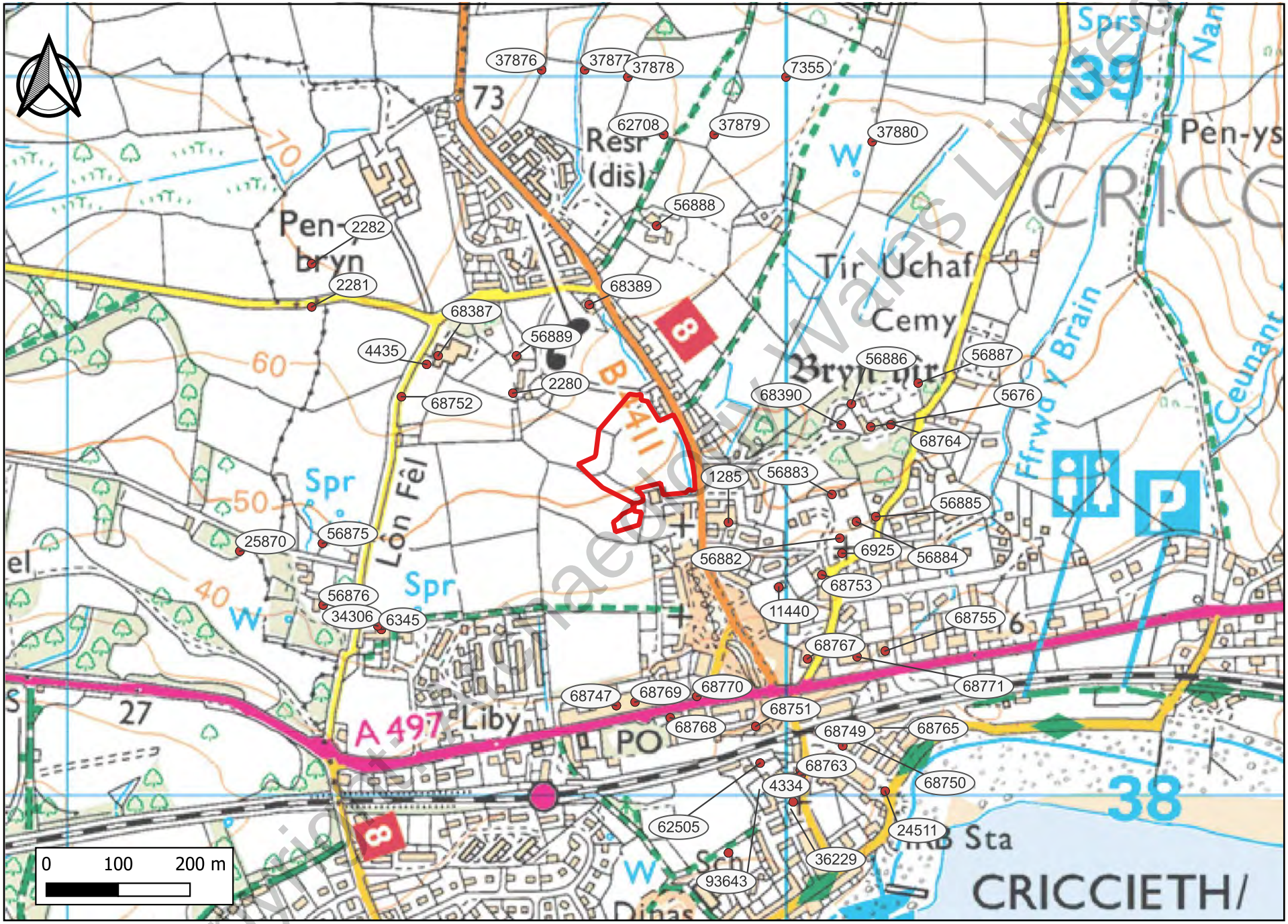

Figure 3. PRNs within 500m search area.

Figure 5. Greyscale plot +-15.

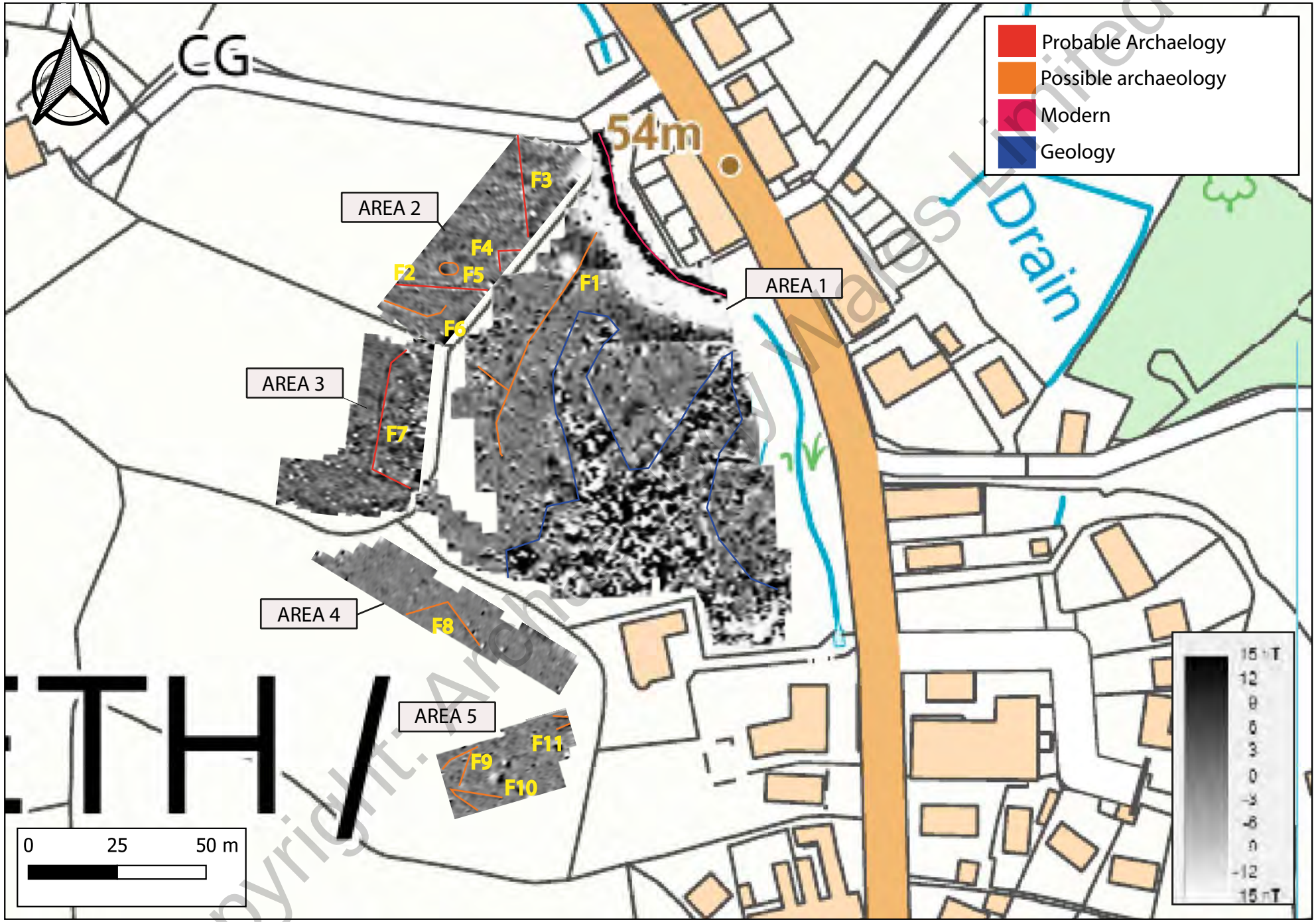

Figure 6. Greyscale plot +-15 - annotated.

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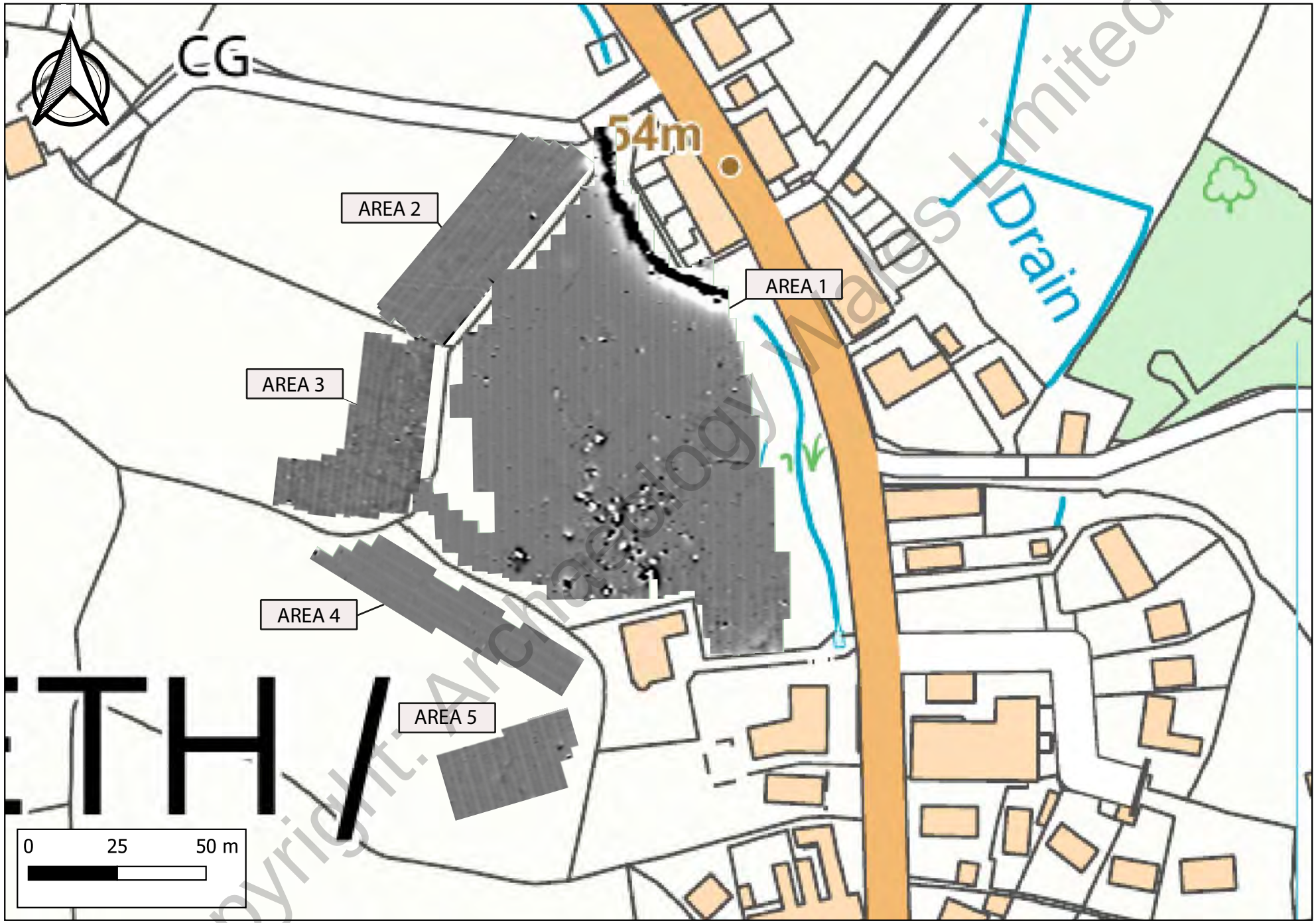

Figure 4. Greyscale plot RAW.

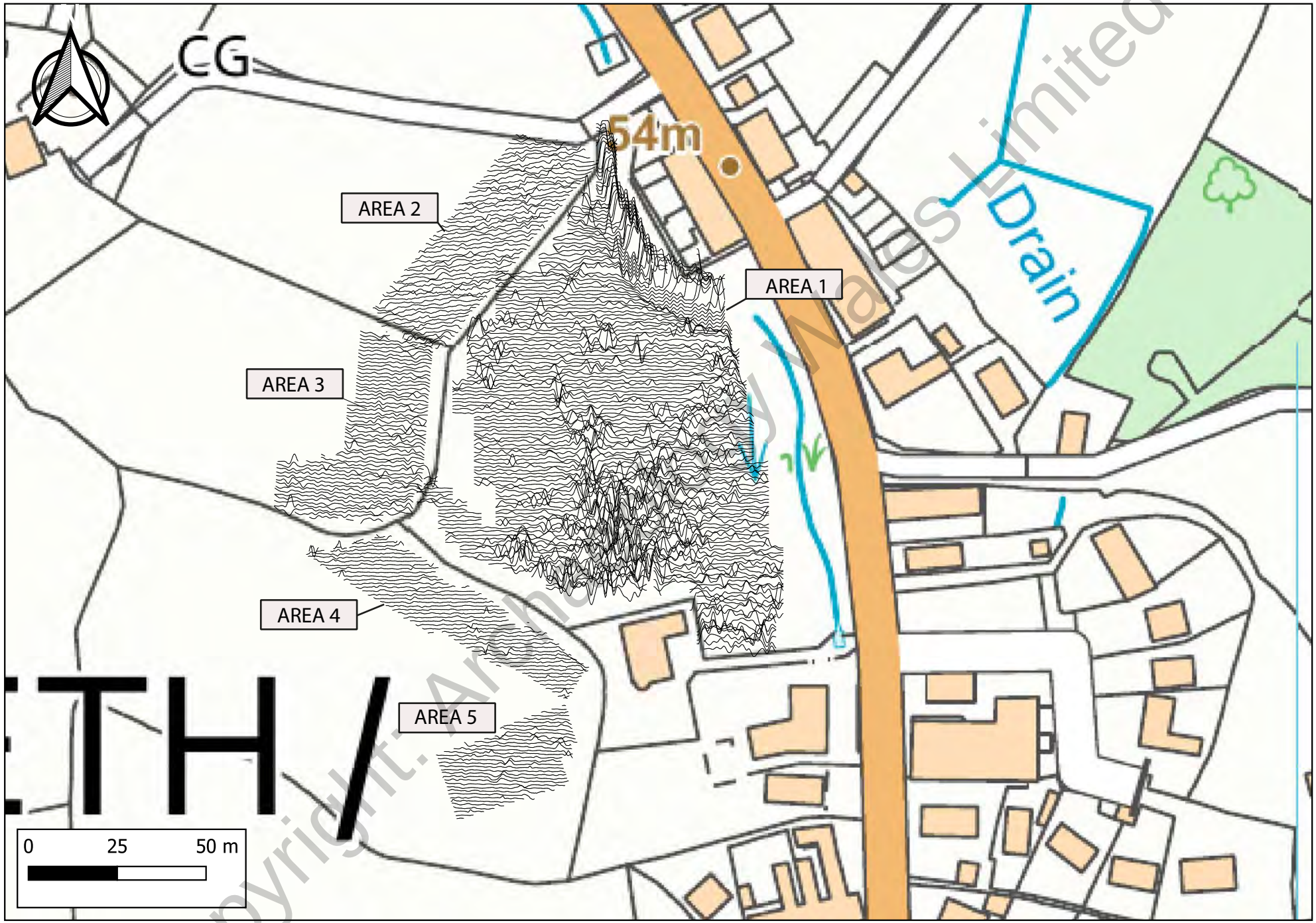

Figure 7. XY Trace plot clipped at +/- 3nT

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WRITTEN SCHEME OF INVESTIGATION FOR A GEOPHYSICAL SURVEY

Land adjacent to North Terrace Criccieth, Gwynedd, North Wales

Prepared for:
Rhys Evans (Criccieth) Cyf

Planning Application Number: C21/1136/35/LL

Project No: 3064

January 2023

Contents

Figures

Summary

This Written Scheme of Investigation details a programme of geophysical survey to be undertaken by Archaeology Wales Ltd at the request of Rhys Evans Cyf.

The survey will be undertaken prior the commencement of works associated with the development of 23 dwellings, creation of a new access from Caenarfon Road, an internal estate road, surface water attenuation pond, landscaping, buffer zone and associated works at land adjacent to North Terrace Criccieth, Gwynedd, North Wales, LL52 0AP.

All work will be undertaken in accordance with the standards and guidelines of the Chartered Institute for Archaeologists (2020).

1. Introduction and planning background

1.1.1. This Written Scheme of Investigation (WSI) details the methodology for a programme geophysical survey, to be undertaken in association with the proposed development of 23 dwellings, creation of a new access from Caenarfon Road, an internal estate road, surface water attenuation pond, landscaping, buffer zone and associated works at land adjacent to North Terrace Criccieth, Gwynedd, North Wales, LL52 0AP – NGR SH 49793 38450 – Planning Application C21/1136/35/LL.

1.1.2. The methodology set out in this WSI has been agreed with the Gwynedd Archaeological Planning Services (GAPS) in their capacity as archaeological advisors to the Gwynedd Planning Authority. Their request for a geophysical survey is outlined on a pre-application response dating back to the 7th of December 2021.

> *[…] As mentioned the potential for unknown archaeological features here is moderate, not only relating to post medieval settlement not properly recorded in early mapping, but also early phases of activity relating to the medieval occupation of Criccieth. There is also a wider potential for unknown prehistoric archaeology throughout the local landscape – much of which is generally impossible to indeed unknown ancillary settlement to the town, especially on main thoroughfare roads leading in and out of the town – the results of this work is forthcoming.*

There are two ways to proceed – one being return to evaluation before any determination is reached, and conduct both Geophysical Survey and Trial Trenching in order to better assess the field, and allow GAPS to provide better-informed advice regarding the potential on-site […]

1.1.3. The purpose of the archaeological mitigation is to provide the local planning authority with sufficient information regarding the nature of archaeological remains on the site of the development, the requirements for which are set out in Planning Policy Wales (edition 11 – February 2021), and Technical Advice Note (TAN) 24. The work is to ensure that all buried artefacts and deposits are fully investigated and recorded if they are disturbed or revealed as a result of activities associated with the development.

1.1.4. This WSI has been prepared by Irene Garcia Rovira, Project Manager - Archaeology Wales Ltd at the request of Rhys Evans Cyf.

1.1.5. All work will be undertaken to the standards and guidance set by the Chartered Institute for Archaeologists (2020). AW is a Registered Organisation with the CIfA.

2. Site Description

2.1.1. The proposed development area (PDA) is located to the northeast end of Criccieth. The PDA measures c 1.56 hectares. Caernarfon Road

bounds the proposed site to the east , whilst all other boundaries are adjacent to open fields.

2.1.2. The PDA can be divided into 3 parts being the following:

- the main field on which the proposed dwellings and their associated infrastructure will be constructed;
- a landscaping strip of 20 m in width this extending into the three adjoining fields – no construction will take place on this land as it will be planted as native trees and meadow; and
- an area of circa 300 m2 located about 50 m to the south of the main field is to be banked up to form an attenuation pond.

2.1.3. The underlying geology is composed of siltstone belonging to the Nant Francon subgroup formed during the Ordovician Period. Thew superficial soils are defined by Till- Devensian Diamicton formed during the Quaternary Period (BGS 2023).

3. Historical and Archaeological background

3.1.1. A HER search (GATHER1785) was undertaken in order to identify any known historical and archaeological assets within a 500m radius of the proposed site. A total of 50 known sites were identified, the closest being Ffynnon Saint, a holy well (PRN 1285) known for its supposed curing powers of eye infections. It lies about 80m to the southeast of the site boundary beneath a garage.

3.1.2. No HER records date to the prehistoric or Roman periods.

3.1.3. The origins of Criccieth can be dated back to medieval chronologies (PRN 7355). The historic core of the town is protected as a conservation area.

3.1.4. St Catherine's Church (PRN 6925, LB 4395), lies 230m to the southeast of the site. St Catherine's Church as remodelled on many occasions between the 12th and 19th centuries. In 1993, Gwynedd Archaeological Trust conducted a building survey on the church (PRN 40119).

3.1.5. The bulk of the HER results focus upon the post-medieval and modern periods. The records reflect the of growth in population during post-medieval/modern times with the establishment of services such as Brynhir Arms (PRN 68768), or George IV hotel (PRN 68769).

3.1.6. A WW1 Memorial Hall (PRN 68767) is located 200m to the southeast from the assets mentioned above. Another notable modern asset is the site of a Civil Air Raid Shelter documented from 1941 (PRN 93643).

3.1.7. There is only one asset that shows evidence of industrial development in the 500m buffer zone, this being the former site of a Limekiln located 500m to the southeast (PRN 24511). The kiln is not shown on maps until the 1889 OS map and was likely in use till the early 20th century. The rest of the results show numerous agricultural sites located in the area. Five hedge-banks and one field boundary (PRN 62708) are included alongside an outbuilding and stable block at Bryn Hir (PRN 56886 + 68764), a Hay Barn at Parciau Mawr (PRN 6345), and a 18th century Cruck building at Parciau-uchaf (PRN 2280).

4. Objectives

4.1.1. This WSI sets out the methodology to ensure that the geophysical survey will meet the standard required by The Chartered Institute for Archaeologist's *Standard and Guidance for archaeological geophysical survey* (2020).

4.1.2. The primary objective of the work will be to locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work will attempt to elucidate the presence of absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance.

4.1.3. A report will be produced that will provide information which is sufficiently detailed to allow informed planning decisions to be made that can safeguard the archaeological resource. The information will be

used to determine further archaeological investigation (e.g. targeted trial trenching) at a pre-determination stage.

5. Fieldwork

5.1.1. The area to be surveyed will include all of the accessible development area. On-site adjustments may be required to avoid areas of magnetic interference or inaccessibility, for example wire fencing, areas of dense undergrowth and steeper slopes which may prove unsuitable for survey.

5.1.2. The site and all survey points will be located by GPS and plotted onto an O.S. base map. The survey will be carried out using a Bartington Grad601 Magnetometer. This is chosen as an efficient and effective method of locating archaeological anomalies on this type of site. The machine consists of two high stability fluxgates gradiometers suspended on a single frame, accurately aligned, that can detect localised magnetic anomalies compared with the general magnetic background. When mapped in a systematic manner this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Strong magnetic anomalies will be generated by iron-based objects or areas of heat-activity, such as hearths and kilns. More subtle anomalies may be generated by changes, typically in the iron-oxide content, of underlying soils, compared to the natural subsoil. This helps to detect infilling material of features such as ditches and pits, as well as overlying material such as wall lines.

5.1.3. Relatively level fields of low pasture provide good locations for this type of survey. Areas of significant slopes would preclude safe surveying, as would areas of dense vegetation.

5.1.4. Each survey area will be divided into 20m or 30m square grids along a common alignment. Within each grid, parallel traverses 1m apart will be walked at rapid pace along the same orientation. Instrument readings will be logged at 0.25m intervals, with an average cycle of 4 using an ST1 internal sample trigger. Incomplete survey lines resulting from irregular

area boundaries or obstacles will be completed using the "dummy log" key.

5.1.5. Further survey information will be completed on the relevant pro-forma sheet. All data will be downloaded in the field into a laptop computer.

5.2. Data processing and presentation

5.2.1. Following completion of the detailed survey, a composite of the survey area will be created and processed using the software package Terrasurveyor v.3. After downloading, the results will be plotted in 2D.

5.2.2. The most typical method of visualizing the date is as a greyscale image. In a greyscale, each data point is represented as a shade of grey, from black to white at either extreme of the data range. A variety of processing tools (including destriping and possibly despiking) will be used to enhance any potential archaeology. The mean level of each traverse of data will be reduced to zero and all grids matched so that there will be no differences between background levels. The data will be analysed using a variety of parameters and styles and the most useful of these will be saved a JPEG/TIFF images and displayed using Adobe Illustrator software.

5.2.3. The final results will be presented at an appropriate scale tied to the Ordnance Survey National Grid. A level of interpretation of these results will also be displayed.

6. Monitoring

6.1.1. GAPS will be contacted with as much notice prior to the commencement of archaeological site works, and subsequently once the work is underway.

6.1.2. Any changes to the WSI that AW may wish to make after approval will be communicated to GAPS for approval on behalf of the Planning Authority.

6.1.3. Representatives of GAPS will be given access to the site so that they may monitor the progress of the survey. GAPS will be kept regularly informed about developments.

7. Post-fieldwork programme

7.1. Final reporting

7.1.1. The report will contain, as a minimum, the following elements:

- Concise non-technical bilingual summary of the results
- Description of, and reasoning behind, geophysical survey technique
- Detailed plans of the site and survey results
- Site illustrations, related to Ordnance Datum
- Written description
- Written interpretation of results along with illustrated interpreted site plan
- Statement of local and regional context
- Conclusions as appropriate
- Bibliography
- A copy of the AW Specification

7.1.2. Copies of the report will be sent to the Client, and a copy of the report will be sent to GAPS for approval. Following approval, a copy will also be sent to the LPA and the regional Historic Environment Record. Digital copies will be provided in pdf format if required.

7.1.3. The report and all relevant information will be submitted to the Historic Environment Record following the guidelines and procedures laid out in the *Guidance for the Submission of Data to the Welsh Historic Environment Records* (WAT 2018).

7.1.4. A summary report of the work will be submitted for publication to a national journal no later than one year after the completion of the work.

7.2. Site archive

7.2.1. An ordered and integrated project archive will be prepared in accordance with *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales* 2019 (National Panel for Archaeological Archives in Wales) and the guidelines of the Chartered Institute for Archaeologists upon completion of the project.

7.3. Archive deposition

7.3.1. The final archive will, whenever appropriate, be deposited with a suitable receiving institution. Although there may be a period during which client confidentiality will need to be maintained, copies of all reports and the final archive will be deposited no later than six months after completion of the work.

7.3.2. Copies of all reports, the digital archive and an archive index will be deposited with the National Monuments Record, RCAHMW, Aberystwyth.

7.3.3. Wherever the archive is deposited, this information will be relayed to the HER. A summary of the contents of the archive will be supplied to GAPS.

8. Resources and timetable

8.1. Standards

8.1.1. AW works to the standards and guidance provided by the Chartered Institute for Archaeologists. AW fully recognise and endorse the Chartered Institute for Archaeologists' Code of Conduct, Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology and the Standard and Guidance for archaeological geophysical survey currently in force. All employees of AW, whether

corporate members of the Chartered Institute for Archaeologists or not, are expected to adhere to these Codes and Standards during their employment.

8.2. Staff

8.2.1. The project will be undertaken by suitably qualified AW staff. Overall management of the project will be undertaken by Irene Garcia Rovira MCIfA, AW Project Manager.

8.3. Equipment

8.3.1. The project will use a Bartington Grad601 set to standard specifications.

8.4. Timetable of archaeological works

8.4.1. The work will be undertaken in April 2023. AW will contact GAPS prior the commencement of works.

8.5. Insurance

8.5.1. AW is fully insured for this type of work and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

8.6. Arbitration

8.6.1. Disputes or differences arising in relation to this work shall be referred for a decision in accordance with the Rules of the Chartered Institute of Arbitrators' Arbitration Scheme for the Institute for Archaeologists applying at the date of the agreement.

8.7. Health and safety

8.7.1. Prior to the commencement of work AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with The Management of Health and Safety Regulations 1999. A copy of the risk assessment is attached, and a copy will be kept on site and be available for inspection on request. A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

8.7.2. AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual Health and Safety in Field Archaeology (2002).

9. References

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, compilation, transfer and deposition of archaeological archives.

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, documentation, conservation and research of archaeological materials.

Chartered Institute for Archaeologists. 2020. Standards and Guidance for Geophysical Surveys.

National Panel for Archaeological Archives in Wales, 2019. The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales

Welsh Archaeological Trusts, 2018. Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs).

British Geological Survey: Geology of Britain viewer: www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html (accessed 24/1/23)

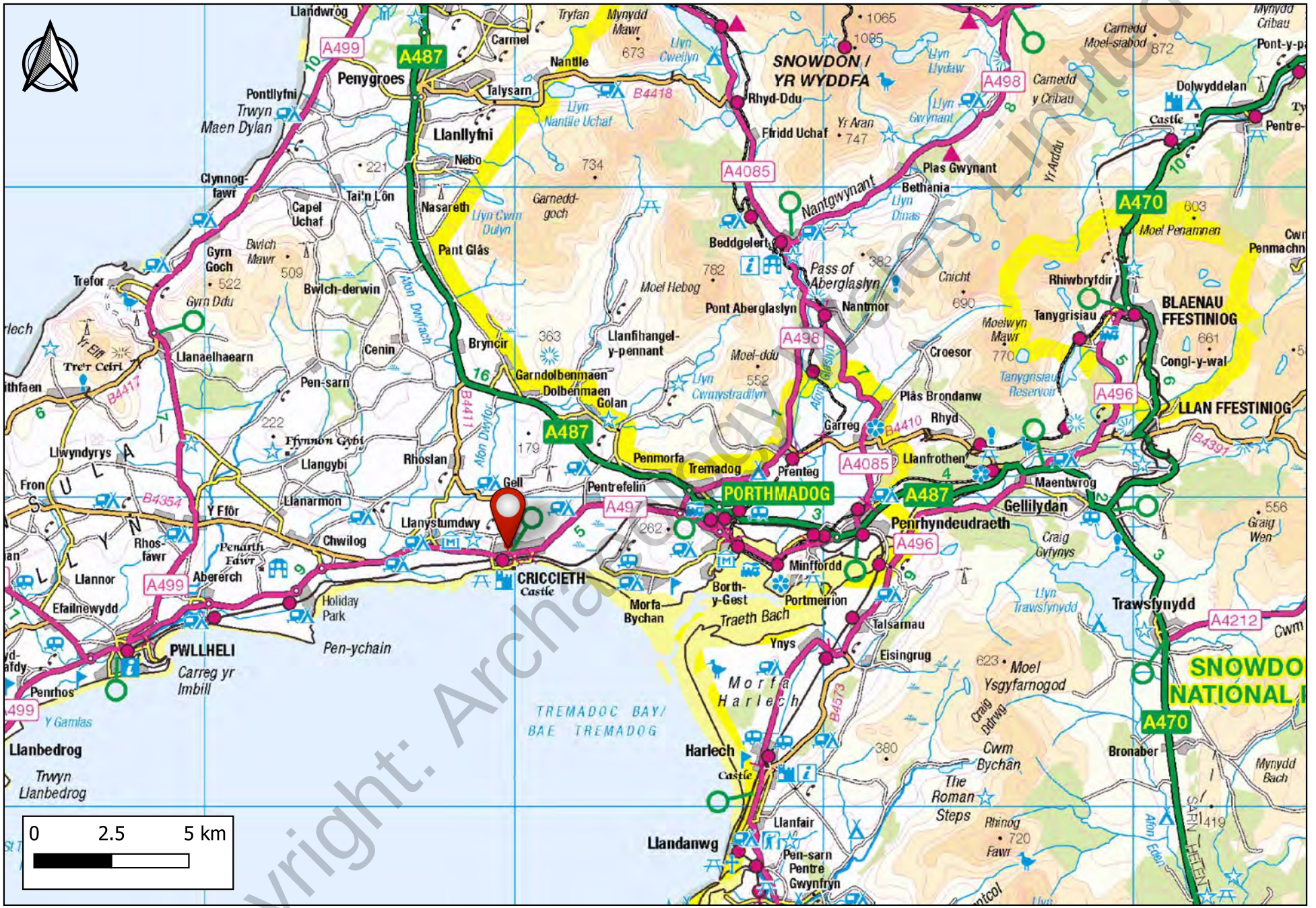

Figure 1. Site location

ARCHAEOLOGY WALES

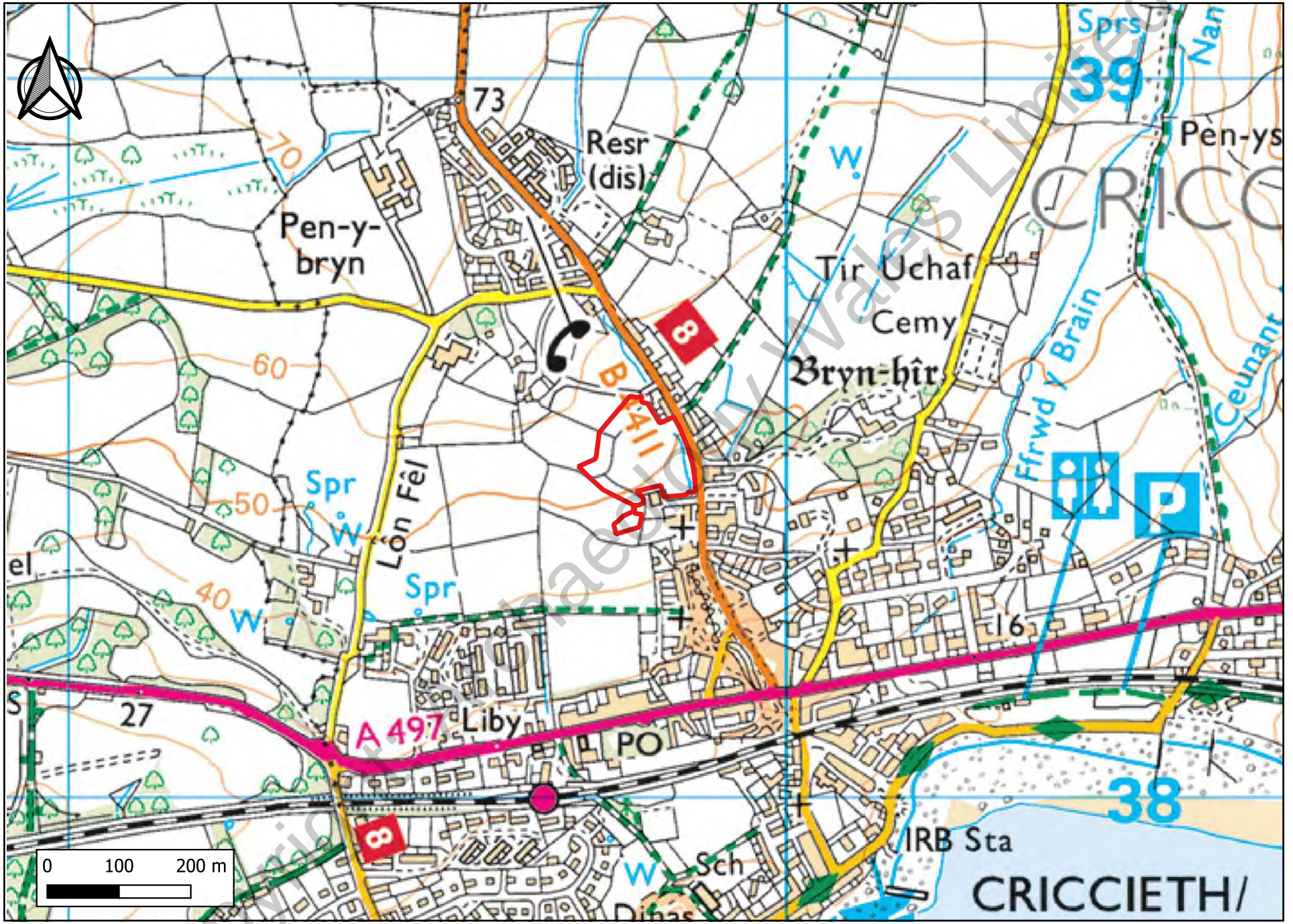

Figure 2. Proposed development area.

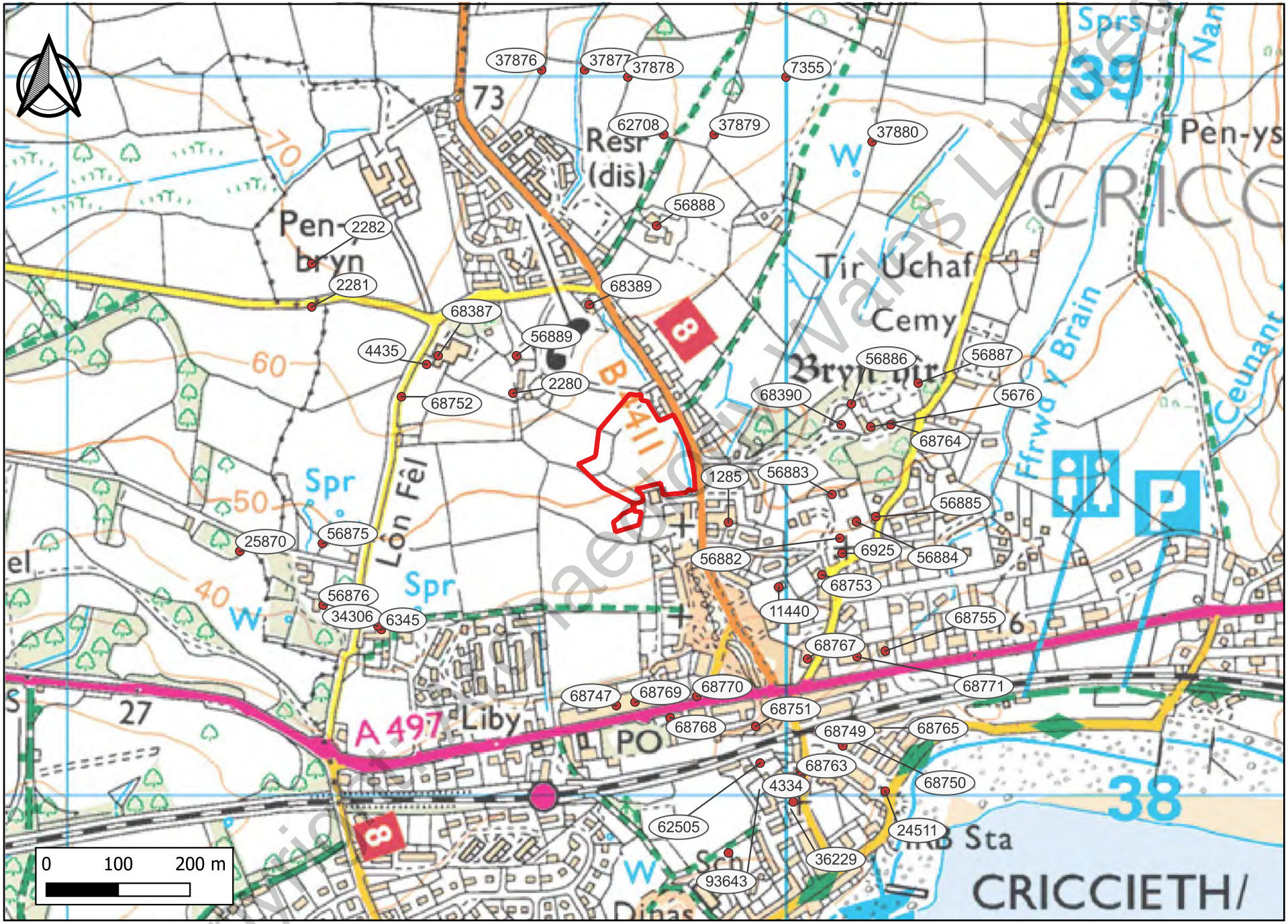

Figure 3. PRNs within 500m search area.

Data Management Plan

Section 1: Project Administration

Project ID / OASIS ID
Project number: 3064 Site code: BPC/23/GEO
Project Name
Bryn Parciau, Criccieth
Project Description
The primary objective of the work will be to locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work will attempt to elucidate the presence of absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance. A report will be produced that will provide information which is sufficiently detailed to allow informed planning decisions to be made that can safeguard the archaeological resource. The information will be used to determine further archaeological investigation (e.g. targeted trial trenching) at a pre-determination stage.
Project Funder / Grant reference
Rhys Evans Cyf
Project Manager
Irene Garcia Rovira – AW project manager Irene@arch-wales.co.uk
Principal Investigator / Researcher
Same as above
Data Contact Person
Rhiannon Philp, AW Post-excavation Manager rhiannon.philp@arch-wales.co.uk
Date DMP created
30.01.23
Date DMP last updated
22.10.24
Version
Version 2
Related data management policies
This DMP is guided by the Project Brief, CIfA Standards and guidance, trusted digital repository guidelines (RCAHMW) or other best practice guidance (see brief for details)

Section 2: Data Collection

What data will you collect or create?
The table below provides a summary of the data types, formats and estimated archive volume for data collected / created as part of this project. As the project progresses, more detail regarding files will be added to this DMP.

Type	Format	Estimated volume (Data Archived)
Spreadsheets	Excel (.csv)	5
Text/documents	Word (.docx) PDF (.pdf and .pdf/a)	1 1
Images	Raw data images(.tif) Processed data images (.tif) Photos (.jpeg)	5 5 33
GIS	Shapefiles (.shp plus associated files)	1 group

How will the data be collected or created?

Data Standards / Methods

- Standard methods of data collection will be applied throughout the project, working to best practice guidance where applicable / available. In general, data acquisition standards are defined against RCAHMW Guidelines. Specific or additional guidance relevant to this project are listed below and will be updated as the project progresses.
- Methods of collection are specified within the Project Design and will meet the requirement set out in the Project Brief, the organisation recording manual and relevant CIfA Standards and guidance.
- Where appropriate, project contributors external to the organisation will be required to include data standards, collection methodology and metadata with individual reports and data.
- Specific guidance:
    - Chartered Institute for Archaeologists, 2019. Toolkit for Selecting Archaeological Archives.
    - Chartered Institute for Archaeologists, 2020. Standards and guidance for the creation, compilation, transfer and deposition of archaeological archives.
    - Chartered Institute for Archaeologists, 2020. Standards and guidance for the collection, documentation, conservation and research of archaeological materials.
    - Chartered Institute for Archaeologists, 2023. Standard for Archaeological Monitoring and Recording
    - Chartered Institute for Archaeologists, 2023. Universal Guidance for Archaeological Monitoring and Recording

Data storage / file naming

- The data produced will be uploaded at regular intervals during the project as a way of backing up the information.
- The working project archive will be stored in a project specific folder on the internal organisational server. The internal organisation server is backed up to a cloud based storage system to maintain an up to date security copy of the organisation wide data.
- Project folders are named following established organisational procedures and the folder hierarchy and organisation devised will be understood by all members of staff involved in the project.
- Data collected will be downloaded and raw data will be stored in the appropriate folder.

- File naming conventions following established organisational procedures, based on RCAHMW file naming guidance, and include version control management.
- The data stored will be checked by the project manager regularly as a means of quality assurance.

Section 3: Documentation and metadata

What documentation and metadata will accompany the data?

- Data collected will include standard formats which maximise opportunities for use and reuse in the future (see Section 2, above).
- A RCAHMW metadata document will be included with the digital archive and include all data types included within the archive. A working copy will be kept on the organisational server in the Project Folder. A copy of the form containing HER required data will also be created.
- Data documentation will meet the requirement of the Project Brief, Museum Deposition Guidelines, Digital Repository Guidelines and the methodology described in the Project Design methodology.
- An archive catalogue documenting both physical and digital archive products will be maintained and submitted with both the Museum and Trusted Digital Repository.

Section 4: Ethics and legal compliance

How will you manage any ethical, copyright and Intellectual Property Rights (IPR) issues?

- The project archive will include the names and contact details of individuals who intend to volunteer or participate in the excavation and post excavation stages. We have a GDPR compliant Privacy Policy which underpins the management of personal data; any personal data is managed through a secure cloud-based database and not retained on the project specific folders.
- Personal data will be removed from the archaeological project archive and permission to include individual's names in any reporting is gained prior to use.
- Copyright for all data collected by the project team belongs to the organisation, and formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.
- Where formal permissions and/or license agreements are linked to data sharing, they will be included in the project documentation folders and will accompany the archaeological project archive.

Section 5: Data Security: Storage and Backup

How will the data be stored, accessed and backed up during the research?

- Organisational IT is managed by an external data management provider, who is also responsible for the management and verification of our daily back-ups and who supports access to security copies as needed.
- Sufficient data storage space is available via the organisational server, which includes permissions-based access. The server is accessible by staff on and offsite through a secure log-in.

- Off-site access to the project files on the organisation's server is provided to support back-up of raw data while fieldwork is ongoing. Where internet access for data back up is not possible, the raw data will be backed up to a separate media device (such as laptop and portable external hard drive).
- Project files will be shared with external specialists and contractors directly using the same system, with the wider project team gaining access to only the files needed using permissions-based access

Section 6: Selection and Preservation

Which data should be retained, shared, and/or preserved?
• The Selection Strategy and DMP will be reviewed throughout the project. Updated documentation will be included in all reporting stages. • Prior to deposition, the Selection Strategy and DMP will be updated and finalised in agreement with all project stakeholders (including the Local Planning Archaeologist, Client, Museum, RCAHMW). • Selection will be informed by the Project Design, defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results. • The project will be published as an online technical report (accessible via RCAHMW and as part of this the archive), with full access to research data. • The data archive will be ordered, with files named and structured in a logical manner, and accompanied by relevant documentation and metadata, as outlined in Sections 2 and 3 of this DMP. • Deselection will be undertaken automatically on any duplicate or unusable files, such as blurry or superfluous photographs.
What is the long-term preservation plan for the dataset?
• The digital archive will be deposited with the RCAHMW, which is working towards becoming a certified repository with Core Trust Seal. • The archive will be prepared for deposition by the project team and the costs for the time needed for preparation, and the cost of deposition have been included in the project budget.
Have you contacted the data repository?
• RCAHMW have are the intended repository for digital data. AW has an ongoing agreement with the repository.
Have the costs of archiving been fully considered?
• A costing estimate has been produced to allow for the preparation of the archive and has been included in the project budget.

Section 7: Data Sharing

How will you share the data and make it accessible?
• The museum and digital archive repository will be updated as the project progresses. • The investigations are likely to result in the following documents: Geophysics Report • The final report is expected to be completed within 3 months of the completion of fieldwork.

- A final version of the project report will be supplied to the Historic Environment Record, and any data which they request can also be provided directly.
- The location (s) of the final Archaeological Archive will be included in the final report

Are any restrictions on data sharing required?

- A temporary embargo may be required on the sharing of the project results. If this is the case, specific details once agreed will be included in the updated version of this DMP and will be documented in the overarching Project Collection Metadata.
- Data specific requirements, ethical issues or embargos which are linked to particular data formats will be documented within the relevant metadata tables accompanying the project archive.

Section 8: Responsibilities

Who will be responsible for implementing the data management plan?

- The Project Manager and Post Excavation Manager will be responsible for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.
- Data capture, metadata production and data quality is the responsibility of the Project Team, assured by the Project Manager and Post Excavation Manager.
- Storage and backup of data in the field is the responsibility of the field team.
- Once data is incorporated into the organisations project server, storage and backup is managed by an external company.
- Data archiving is undertaken by the project team under the guidance of the Post Excavation Manager, who is responsible for the transfer of the Archaeological Project Archive to the agreed repository.
- Details of the core project team can be found in the Project Design.