# Results of Archaeological Works (Desk Based Assessment, Walkover Survey & Geophysical Survey) at

# Tyddyn Fletcher, Ffordd Llanberis, Caernarfon

**NGR SH 49268 62780 (Central Point)**

**Report Number CR247-2024**


CR ARCHAEOLOGY

Compiled by C. Rees and M. Jones

On Behalf of Adra (Tai) Cyfyngedig

## *Summary*

*CR Archaeology were instructed by Adra (Tai) Cyfyngedig to conduct an Archaeological Desk Based Assessment, Walkover Survey, and Geophysical Survey at the proposed site of a new residential development. The site is located on land adjacent to Ffordd Llanberis (A4086), Caernarfon on the eastern outskirts of the town.*

*The proposed development site is an area of high archaeological potential. Although situated well outside of the main concentration of both Roman and Medieval activity in Caernarfon there is strong evidence from both the LiDAR data and the geophysical survey that the Roman Road from Canovium to Segontium passes through the site.*

*With the exception of the potential stretch of the Roman Road, the geophysical survey uncovered little evidence of archaeological activity.*

*An examination of the known archaeological background of the immediate and wider area shows that there is the potential for stray finds or isolated features/feature groups of prehistoric, early medieval or medieval date given the previously undeveloped nature of the site. Although not evident from the geophysical survey, it is possible that the relatively short lived Post Medieval field boundaries subdividing Field 1 may also be encountered within the proposed development area.*

## *Crynodeb*

*Cyfarwyddwyd CR Archaeology gan Adra (Tai) Cyfyngedig i gynnal Asesiad Desg Archaeolegol, Arolwg Cerdded, ac Arolwg Geoffisegol ar safle arfaethedig datblygiad preswyl newydd. Lleolir y safle ar dir gerllaw Ffordd Llanberis (A4086), Caernarfon ar gyrion dwyreiniol y dref.*

*Mae'r safle datblygu arfaethedig yn ardal o botensial archaeolegol uchel. Er ei bod ymhell y tu allan i brif grynodiad gweithgarwch Rhufeinig a Chanoloesol yng Nghaernarfon, mae tystiolaeth gref o ddata LiDAR a'r arolwg geoffisegol bod y Ffordd Rufeinig o Canovium i Segontium yn mynd trwy'r safle.*

*Ac eithrio darn posibl o'r Ffordd Rufeinig, ni ddatgelodd yr arolwg geoffisegol fawr o dystiolaeth o weithgarwch archaeolegol.*

*Mae archwiliad o gefndir archaeolegol hysbys yr ardal gyfagos ac ehangach yn dangos bod potensial darganfyddiadau crwydr neu nodweddion/grwpiau nodwedd ynysig o ddyddiad cynhanesyddol, canoloesol cynnar neu ganoloesol o ystyried natur nas datblygwyd gynt y safle. Er nad yw'n amlwg o'r arolwg geoffisegol, mae'n bosibl y gellir dod ar draws ffiniau'r caeau ôl-ganoloesol cymharol fyrhoedlog sy'n rhannu Maes 1 yn yr ardal ddatblygu arfaethedig.*


# Results of Archaeological Works at Tyddyn Fletcher, Ffordd Llanberis, Caernarfon

| | |
|---|---|
| **Planning Application Number:** | Pre-Application (Enquiry Number Y23/0562) |
| **National Grid Reference:** | SH 49268 62780 (Central Point) |
| **Client:** | Adra (Tai) Cyfyngedig |
| **Report Author:** | Catherine Rees and Matthew Jones |
| **Report Number:** | CR247-2024 |
| **Date:** | 14/10/2024 |

**Contents**

## 1.0 Introduction

CR Archaeology were instructed by Adra (Tai) Cyfyngedig to conduct an Archaeological Desk Based Assessment, Walkover Survey, and Geophysical Survey at the proposed site of a new residential development (Appendix A).

The site is located on land adjacent to Ffordd Llanberis (A4086), Caernarfon on the eastern outskirts of the town (Figure 1). The proposed development area is currently in agricultural use.

The site is approximately 650m from Segontium Roman Fort (PRN 3089, Scheduled Monument CN006), and a stretch of the Roman road between Segontium and Canovium (PRN 17856/ PRN 36425) may cross the site. It is also located approximately 400m from the extensive area of Roman and Early Medieval activity excavated at Ysgol yr Hendre (Kenney and Parry 2012 & 2013, Event PRN 44569, 44349). It was also noted that a Bronze Age burial urn was discovered in 1946 during the construction of the adjacent housing estate (PRN 3101).

This Desk Based Assessment, Walkover Survey and Geophysical Survey examined the historic context and archaeological potential of the proposed development area. The Desk Based Assessment showed that as an undeveloped site within an area of known archaeological activity there is a high potential that archaeological remains may be encountered. The site does however lie outside of the immediate environs of the Segontium Roman Fort and the Early Medieval cemetery at Ysgol yr Hendre. Geophysical survey identified a linear anomaly in the approximate proposed location of Roman Road PRN 17856, and it is likely that the road survives within the proposed development area. No other features of likely archaeological origin were identified through the survey, although magnetic susceptibility samples showed a concentration of high value samples in the western side of the larger field, away from the line of the Roman road which may indicate undetected archaeological activity.

This document has been prepared to supply the client and statutory bodies including the Local Planning Authority Archaeologist with information as to the archaeological potential, impact and constraints on the aforementioned scheme. It is intended that the results of this work will inform decisions as to the nature of any additional heritage considerations/consultations which the scheme must be afforded and archaeological mitigation strategies or evaluation methodologies which may be required.

## 2.0 Project Aims & Objectives

This phase of works for the development site aimed to undertake a Desk Based Assessment, a Walkover Survey, and a Geophysical Survey (gradiometer). It aimed to examine the potential archaeological resource surviving on the site, and to provide information which will be utilised to determine an appropriate methodology for any further archaeological mitigation or evaluation methodologies which may be required.

The first aim of this scheme of works was to undertake desk based historical research exploring the history/archaeology of the site. This information includes a map progression and archival research in order to compile a coherent narrative history of the site and its environs.

The Gwynedd Historic Environment Record (HER), Gwynedd and Bangor University Archives, and relevant publications were consulted to compile a record of known archaeological sites in the vicinity. The data gathered during this phase of works was utilised in the interpretation of the gradiometer results.

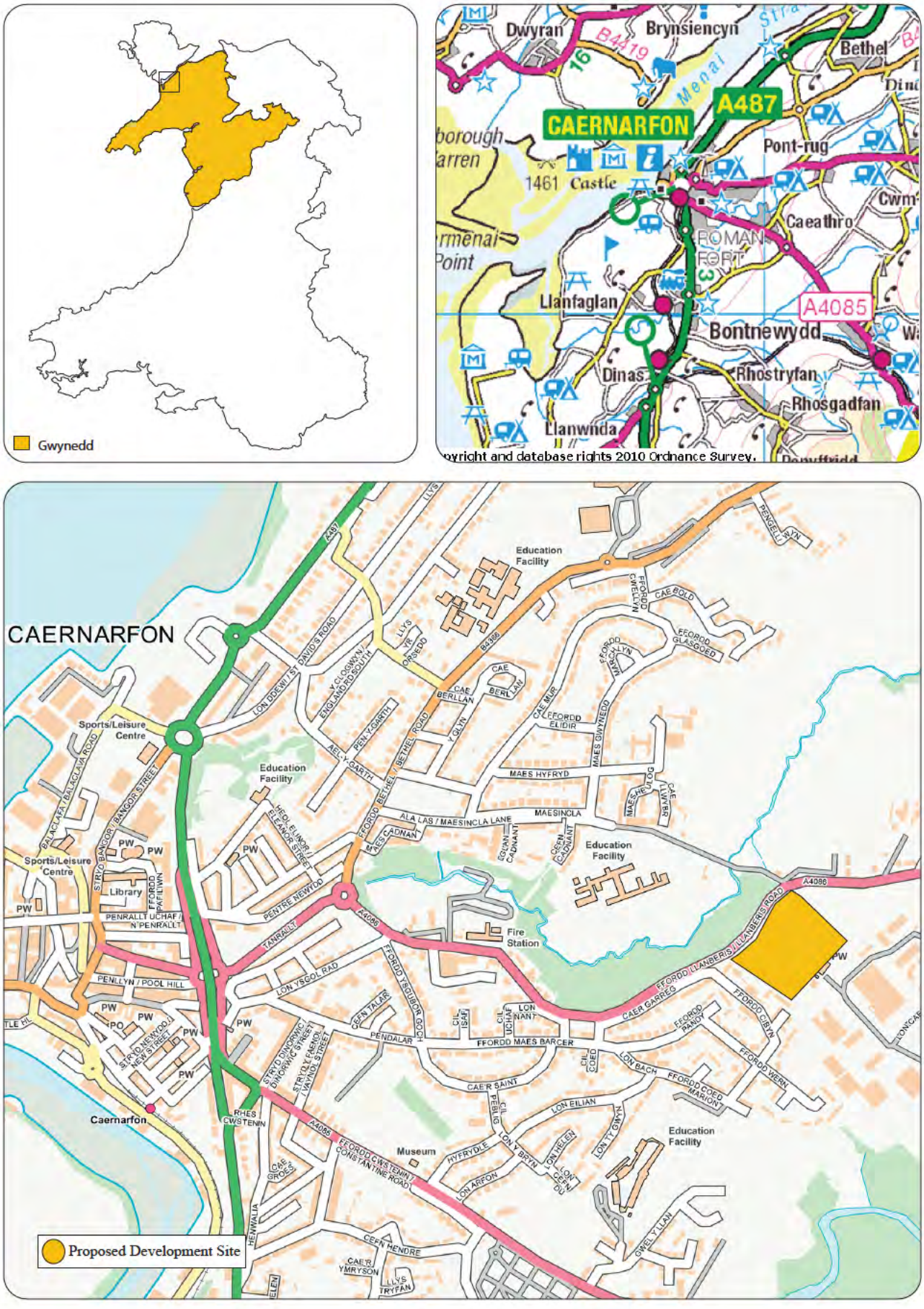



*Figure 1. Site Location Map*

*(Source: OS Open Data Mapping Contains Ordnance Survey data © Crown copyright and database right 2018)*

The second aim of this archaeological investigation was to undertake a walkover and geophysical survey of the site in order to identify and locate buried features.

It is intended that this document be utilised to inform further archaeological planning decisions and conditions at the site.

The objectives of this programme of works were:

- To locate and describe, by means of desktop analysis, a walkover survey, geophysical prospecting and subsequent evaluation trenching, archaeological features which may be present within the development area
- To make full and effective use of existing information to establish the archaeological significance of the site
- To help inform future decision making, design solutions, further evaluation & mitigation strategies

## 3.0 Scheme of Works - Methodology

The archaeological works were conducted in two sections. Each is detailed separately below.

### 3.1 Desk Based Research

A complete and coherent history of the site was compiled utilising material sourced from the Gwynedd Historic Environment Record (HER), the Royal Commission on the Ancient and Historical Monuments Wales (RCAHMW) database, Gwynedd and Bangor University Archives, and relevant publications. This allowed as comprehensive a history of the site as possible to be compiled. A map progression of the area was undertaken. The archive information was supplemented with information from local libraries and specialist interest websites & journals.

In order to identify the character of archaeological remains in the vicinity of the site a search of the Gwynedd HER was conducted examining an area within a 500m radius of the proposed works (the grid reference for the search is taken as the centre point of the development area). This was expanded to 1000m to examine general trends, but this data has not been discussed in detail. The RCAHMW database and aerial imagery of the site were also examined. The information collected is discussed within the main report text.

The works were carried out accordance with the CIfA Standards and Guidance for desk-based assessment (CIfA 1994 (2014, updated 2020).

This material forms the historical background for the full archaeological report and was utilised to aid the interpretation of the results of the geophysical survey.

### 3.2 Geophysical Survey

Prior to the commencement of works a brief written record of the site was compiled. This included a note on any features/elements which may have an impact on the survey results - for example weather, geological features, fencing & overhead cables.

The survey was carried out in accordance with English Heritage's guidance "*Geophysical Survey in Archaeological Field Evaluation*" (2008) and the CIfA "*Standard and Guidance for Archaeological Geophysical Survey*" (2014, updated 2020) and "*Universal Guidance for Archaeological Field Evaluation*" (2023).

A survey grid was established over the site, orientated to provide a best possible fit to the area to be surveyed and to minimise the effects of the slight slope of the ground level on the site. The survey areas was gridded with a 20 x 20 m or 30 x 30 m grid. These squares were marked by plastic pegs and the grid was tied to local features. Readings were taken at 0.25 m intervals along transects 1.0 m apart with a zig-zag pattern being walked. The data was downloaded on to a laptop computer in the field.

A number of small soil samples were taken for magnetic susceptibility analysis as an aid to the interpretation of the results of the Fluxgate gradiometer survey.

**3.2.1 Equipment**
The survey was undertaken using a Geoscan FM 256 Fluxgate Gradiometer.

Sensitivity: 0.1nT
Sample Interval: 0.25m
Traverse Width: 1m
Traverse Method: Zig-Zag
Grid Square Size: 30m x 30m or 20x20m where possible, downsized to 20x10m where necessary.

Geoplot v. 3.00v was used to download and manipulate the geophysical data. Minimal processing was applied to all images to ensure no false results are created by excessive image manipulation. Data was downloaded to a portable computer during each rest period for the course of the day, to ensure data integrity and check ongoing results.

Grey scale plots were produced using Geoplot v. 3.00v. X - Y plots were produced using Golden software "Surfer" v. 10

A basic photographic record was compiled prior to the commencement of the survey which detailed any above ground features and show the general topography of the site. Further photographs will be taken to illustrate the setting of the site. It will be undertaken using a 20 mega-pixel Sony Alpha digital camera with a variety of standard and other lenses. Images will be captured in RAW format for later processing into high resolution JPG and TIF files.

**3.3 Timetable for Proposed Works**
The geophysical survey was undertaken on the 27th – 30th August 2024. Further time was allotted for archive research, report compilation and site archiving.

**3.4 Staffing**
The project was managed by Catherine Rees (MCIfA, BA (Archaeology), MA (Archaeology) Postgraduate Diploma (Historic Environment Conservation) & Matthew Jones (BA (Archaeology), MA (Archaeology). The geophysical survey was conducted by Dr Ian Brooks and Matthew Jones.

All staff have a skill set equivalent to the CIfA ACIfA/MIFA level. C.Vs for all staff employed on the project can be provided on request. All projects are carried out in accordance with CIfA *Standard and Guidance* documents.

**3.5 Monitoring**
The project will be subject to monitoring by Heneb (Planning). A projected time-scale and copy of the risk assessment can be provided on request to the monitoring body prior to the commencement of works.

### 3.6 Health and Safety

A risk assessment was conducted prior to the commencement of works and site staff were familiarised with its contents. A first aid kit will be located in the site vehicle.

All staff were issued with appropriate Personal Protective Equipment (PPE) for the site work. This consisted of:

- Hi-visibility vests (EN471)
- Mobile telephone (to be kept in site vehicle)
- Suitable footwear & waterproofs.

### 3.7 The Report

The report clearly and accurately incorporates information gained from the programme of archaeological works. It presents the documentary evidence gathered in such a way as to create a clear and coherent record. This includes illustrations of cartographic sources. The report contains a site plan showing the locations of any photographs taken.

The desk-based assessment considered the following:

- the nature, extent and degree of survival of archaeological sites, structures, deposits and landscapes within the study area
- the significance of any remains in their context both regionally and nationally
- the history of the site
- the potential impact of any proposed development on the setting of known sites of archaeological/historic importance
- the potential for further work with appropriate recommendations

In accordance with English Heritage guidelines the geophysical survey results element included:

- a survey location plan demonstrating relationships to other mapped features (minimum scale 1:2500);
- an image of minimally processed survey data (minimum scale 1:1000);
- where appropriate a trace (or X–Y) plot of raw magnetic data
- a greyscale plot, or dot density plot (minimum scale 1:1000);
- one or more interpretative plans/diagrams (minimum scale 1:1000).

It is intended that this report will inform decisions as to the necessity and/or nature of any further archaeological mitigation strategies which may be required.

A copy of the report in Adobe PDF format will be sent to the appropriate monitoring archaeologist for approval before formal submission. A PDF digital copy of the report will be submitted to Heneb as part of the formal submission. A digital Adobe PDF version and a bound paper copy of the final report and will be lodged with the Gwynedd Historic Environment Record within six months of completion of the project.

#### 3.7.1 Copyright

## 4.0 Topological and Geological Background

### 4.1 Topography

The site is located on land adjacent to Ffordd Llanberis (A4086), Caernarfon on the eastern outskirts of the town (Figure 1). The proposed development area is currently in agricultural use.

### 4.2 Geology

The bedrock geology at the site is recorded as "*Nant Ffrancon Subgroup - Siltstone. Sedimentary bedrock formed between 477.7 and 449 million years ago during the Ordovician period*" (https://geologyviewer.bgs.ac.uk/).

The site superficial geology is recorded as "*Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period*" (https://geologyviewer.bgs.ac.uk/).

## 5.0 Historical Background

In order to identify the character of archaeological remains in the vicinity of the site a search of the Gwynedd HER was conducted examining an area within a 500m radius of the proposed works (the grid reference for the search is taken as the centre point of the development area). This was expanded to 1000m to examine general trends, but this data has not been discussed in detail.

There were 39 HER entries for sites within a 500m search radius of the centre of the proposed development area (figure 2[1]) - 1 entry of Prehistoric date, 16 entries of Roman date, 5 entries of Early Medieval date, 3 entries of Medieval date, 5 entries of Post Medieval date, and 9 entries of Unknown date. The majority of the results (31 entries) were assigned to features identified during the archaeological works associated with the construction of Ysgol yr Hendre to the south-west of the proposed development site.

When the search area was extended to a 1000m radius the HER returned 157 entries – 10 entries of Prehistoric date, 63 entries of Roman date, 11 entries of Early Medieval date, 5 entries of Medieval date, 32 entries of Post Medieval date, 18 entries of Modern date, 16 entries of Unknown date and 2 entries of mixed date. This increase is due to the search now encompassing a larger portion of the historic town of Caernarfon, including the Roman Fort of Segontium and surrounding environs.

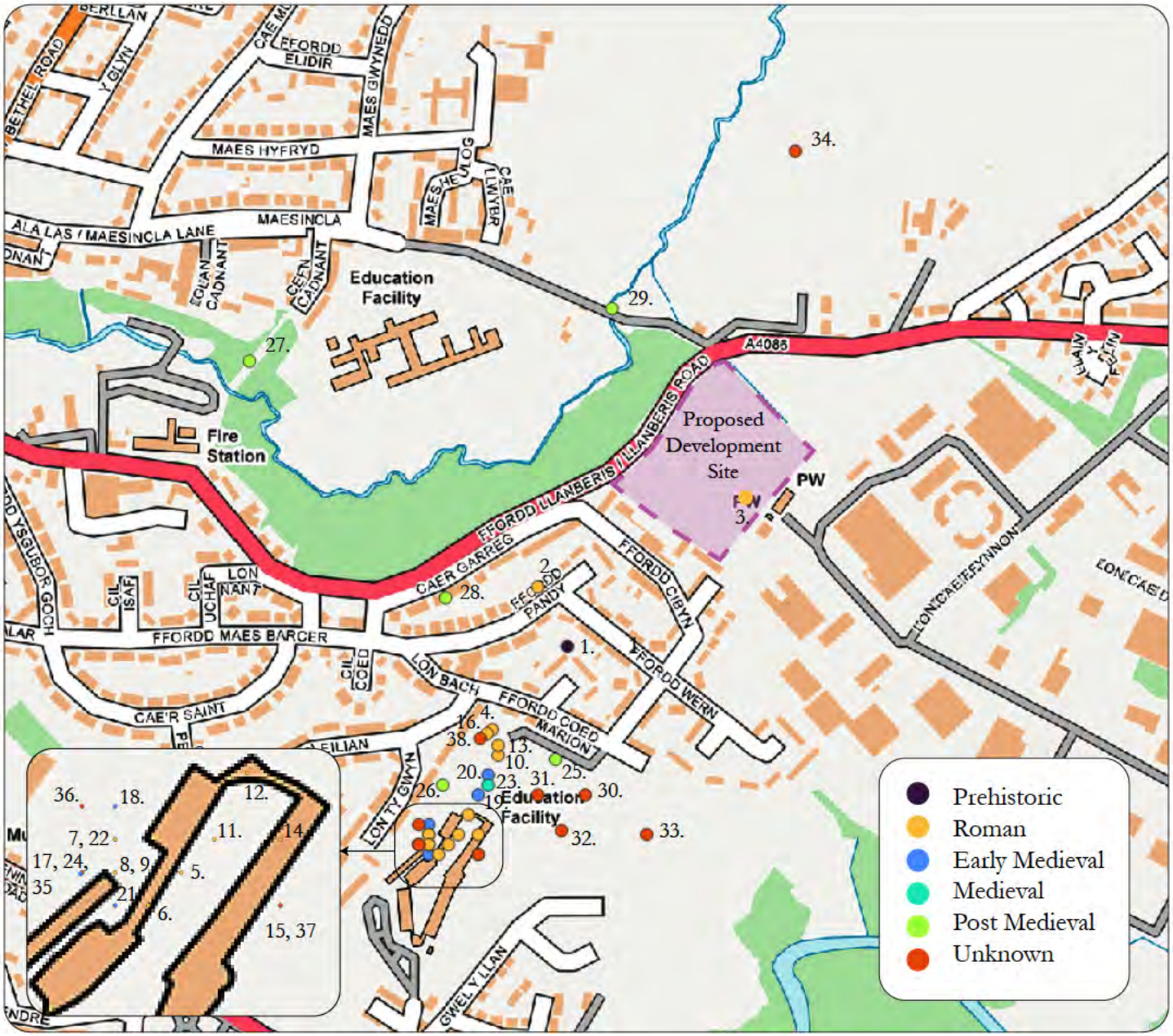
### 5.1 Prehistoric

A single record of prehistoric date was recorded within the 500m search radius. PRN 3101 was a large bronze inverted Food Vessel cinerary urn containing cremated human remains. The site was uncovered in September 1946 during drainage cuttings for the housing estate at Maes-y-barker. No traces of a barrow were recorded.

When the search area was expanded to 1000m the number of records increased to 10, including the findspots of a group of 3 stone axes (PRN 3110), a single perforated axe (PRN 3114) and 5 bronze axes and a spearhead found at Segontium (PRN 3117).

Archaeological features were comprised a possible roundhouse and associated features (PRNs 68745, 68746), a possible neolithic pit uncovered during the Ysgol yr Hendre excavations (PRN 34067), and an undated but possibly prehistoric unaccompanied cremation burial (PRN 24739). A

[1] Figure 2 shows 38 HER entries. The 39th entry (PRN 17829) is for a projected stretch of Roman Road which passes through the proposed development site. The coordinates for this road are not within the map view but the road is shown on Figure 3.




1. PRN 3101 Maes y Barcer Urn Burial
2. PRN 17561 Part of Roman Road, Segontium - Canovium
3. PRN 17856 Part of Roman Road, Segontium - Canovium
4. PRN 67636 Pit and Burning, Ysgol yr Hendre
5. PRN 34048 Pit oven [105], Ysgol yr Hendre
6. PRN 34050 Pit oven [184], Ysgol yr Hendre
7. PRN 34051 Pit oven [218], Ysgol yr Hendre
8. PRN 34057 Pit oven [294], Ysgol yr Hendre
9. PRN 34058 Pit oven [299], Ysgol yr Hendre
10. PRN 34065 Pit oven [3004], Ysgol yr Hendre
11. PRN 34060 Pit oven [473], Ysgol yr Hendre
12. PRN 34061 Pit oven [491], Ysgol yr Hendre
13. PRN 34066 Pit oven [5009], Ysgol yr Hendre
14. PRN 34062 Pit oven [500], Ysgol yr Hendre
15. PRN 34063 Pit oven [508], Ysgol yr Hendre
16. PRN 67635 Unfinished Roman Oven, Ysgol yr Hendre
17. PRN 34044 Mortuary enclosure, Ysgol yr Hendre,
18. PRN 34045 Mortuary enclosure, Ysgol yr Hendre
19. PRN 34046 Mortuary enclosure, Ysgol yr Hendre
20. PRN 34047 Mortuary enclosure, Ysgol yr Hendre
21. PRN 24774 Square Barrow, NW of Tyddyn Pandy
22. PRN 34071 Corn drier [137], Ysgol yr Hendre
23. PRN 34070 Gully [5007], Ysgol yr Hendre
24. PRN 34068 Pit [190], Ysgol yr Hendre
25. PRN 31077 Field Boundary, Former Site of
26. PRN 29307 Field Boundary, NW of Tyddyn Pandy
27. PRN 57275 Footbridge, Path and Embankment
28. PRN 12270 Llanberis Road Nos 2-12, Caernarfon
29. PRN 63388 Stone Bridge over Afon Cadnant
30. PRN 31078 Archaeological Feature, Llanbeblig
31. PRN 31080 Archaeological Features, Llanbeblig
32. PRN 31079 Circular Feature, Llanbeblig
33. PRN 31084 Ditch, Llanbeblig
34. PRN 4390 Enclosure (Possible), NW of Coed Mawr
35. PRN 34053 Fire Site or Hearth [247], Ysgol yr Hendre
36. PRN 34069 Pit [386], Ysgol yr Hendre
37. PRN 34064 Pit [511], Ysgol yr Hendre
38. PRN 67637 Sub-Rectangular Feature, Ysgol yr Hendre

*Figure 2. HER Entries for Sites Within a 500m Search Radius of the Centre of the Proposed Development Area (Data Source: HENEB Enquiry GAHER2081)*

possible Standing Stone is recorded near Tyddyn Pandy Cottage (PRN 3620) although on balance of evidence it would appear more likely that the stone is a post-medieval cattle rubbing stone rather than a prehistoric erection.

**5.2 Roman/Romano-British**

There are 16 records of Roman date recorded within the 500m search radius. The site is located approximately 780m to the north-east of Segontium Roman Fort (PRN 3089), and approximately 400m from the area of Roman and Early Medieval activity excavated at Ysgol yr Hendre (Kenney and Parry 2012 & 2013, Event PRN 44569, 44349). Within the 500m search radius 3 of the HER records were related to the proposed routes of Roman Roads, with the remaining 13 records recording pit oven features uncovered during the aforementioned Ysgol yr Hendre excavations.

The Gwynedd Archaeological Trust '*Roman Roads in North-West Wales*' project identified 4 entries for possible roads crossing the proposed development site (figure 3):

PRN 17561 – "*On leaving the NE gate of Segontium the road must have run almost for some 2 ¾ miles along the summit of the ridge of land which at first divides the Cadnant Valley from the course of the Seiont and further on forms the NW boundary of the Cegin Valley. Projected line only*".

PRN 17829 – "*Waddelove (1999, 237-45) proposes a slightly more N route along the north Wales coast than RR67c and suggests that the road leads to a fort at Penrhyn. The siting of a fort here has some topographical merit but no evidence has so far been uncovered. The route itself follows modern features and is based on topological arguments. If the recent cropmark evidence along RR67c proves to be significant this route can probably be largely discounted*".

PRN 17856 – "*Presumed alignment of road from portion on aerial photograph SNP 2/10/86 5186149 to Segontium, nothing visible on the ground, mostly built over*". A geophysical anomaly was identified in this location which appears to confirm the location of the road (see Section 6).

PRN 36425 – Possible stretch visible on Lidar (see figure 4) included in Roman Roads dataset but PRN location not recorded in HER. Segment of PRN 17856.

Although none of these stretches of road are confirmed, there remains the strong likelihood that the Segontium – Canovium road (overall PRN 3842, elements PRN 17856, PRN 36425) passes through the proposed development site. This hypothesis is supported by the results of LiDAR survey and the geophysical survey (see section 6).

The remaining Roman features were uncovered during Gwynedd Archaeological Trust's excavations at Ysgol yr Hendre. Kenney and Parry (2013) concluded that the available archaeological evidence strongly implied the double chambered features were Roman military field ovens, possibly associated with a construction camp for Segontium Roman Fort. Bayesian analysis of radiocarbon dates from these features, coupled with the relatively flimsy roof construction, indicated that the ovens were short lived features with each oven used a limited number of times. The radiocarbon dates also suggested that the ovens were all contemporary or near contemporary with a date range of cal AD 60–85 (95% probability). Kenney noted that the samples dated were wood charcoal used in the ovens which included growth rings, with the radiocarbon dates would therefore be expected to be slightly earlier than the use date of the ovens. The likely construction date for Segontium was determined to have been AD 77 (Casey and Davies 1993, 10) leading Kenney to conclude that "*there is a 71% probability that the precise date given above just precedes 77 AD and therefore it is likely that if the oven use was a single event that it occurred at about the same time that Segontium was built*" (Kenney and Parry 2013: 37).

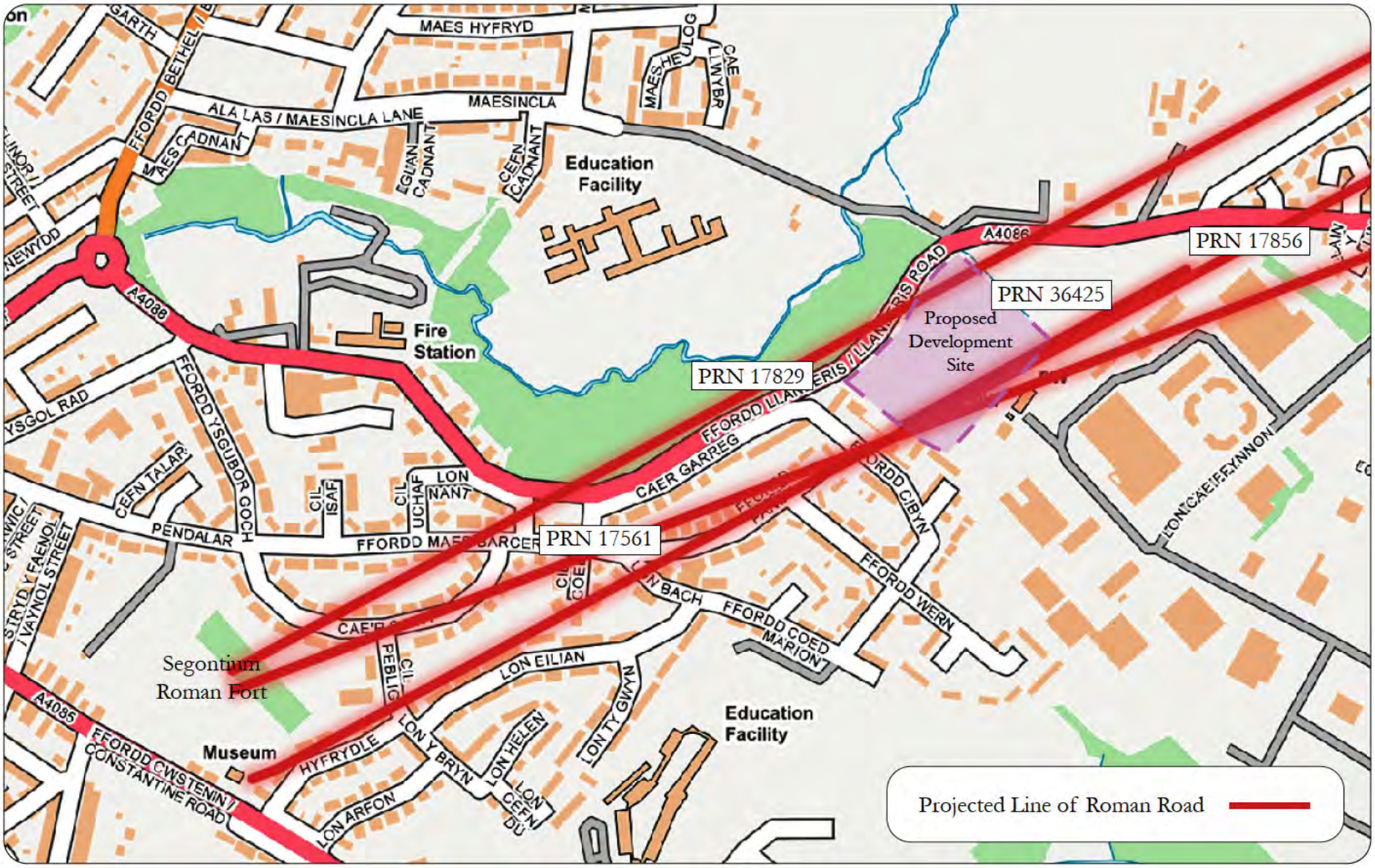



*Figure 3. Proposed/Projected Lines of Roman Roads Passing Through the Proposed Development Site (Data Source: HENEB Enquiry GAHER2081)*
*(Source: OS Open Data Mapping Contains Ordnance Survey data © Crown copyright and database right 2018)*

As mentioned above the site of the Roman Fort of Segontium (PRN 3089) is located approximately 780m to the north-west of the proposed development site. The site is a Scheduled Monument (Reference CN006). The HER summary states:

"*The Roman auxiliary fort of Segontium was founded by Agricola in AD77 or 78. It started life with defences of earth and wood and with timber buildings inside. These original defences were rebuilt in stone in the first half of the 2nd century and the internal buildings were gradually replaced by stone structures from the same period onwards.*

*Named after the nearby river Seiont, the fort was originally designed to house about 1000 men and is clearly identified in late Roman military route descriptions. The fort is laid out in typical fashion with 4 gateways, central headquarters buildings and ranks of barracks, each housing 80 infantrymen or 64 cavalrymen, and stores. The defences consist of a rampart fronted double ditch, now filled in.*

*The barracks in the south-eastern quarter of the site were demolished in the 2nd century and replaced by a large courtyard house and bath building, possibly as the accommodation for an imperial procurator - a high ranking official in charge of mining in the area. Segontium was garrisoned until the end of the 4th century - longer than any other fort in the area - which may also suggest that it had a role in the organisation of mining operations and in the collection of taxes.*

*The site has been extensively excavated over the years, notably be Sir Mortimer Wheeler in the 1920's and most recently by P.J. Casey and J.L. Davies in 1975-6*".

The rise in recorded Roman activity reflects the proximity to this structure with the number of HER records of this date increasing to 63 within a 1000m search radius. The proposed development site is beyond the immediate fort environs and aside from the Roman Road it is unlikely that there will be extensive evidence of Roman activity within this area. There may however be features associated with the road such as roadside shrines or cremation burials.

**5.3 Early Medieval**

There are 5 records of Early Medieval date recorded within the 500m search radius. The records all refer to a series of mortuary enclosures/square barrows of Early Medieval date. The features were found in two groups approximately 55m apart. The larger of the two groups was the cemetery area in plot A assigned PRN 34043[2]. The complex comprised of 3 square mortuary enclosures enclosing 5 graves, 41 unenclosed graves and 4 possible graves. Graves were broadly orientated on an east-west axis implying a Christian origin, although the precision of this varied with c.50% orientated east-north-east – west-south-west, 36% orientated north-east to south-west and 14% accurately orientated east to west. Mortuary enclosure PRN 34044 enclosed a group of three graves whilst enclosures PRN 24774 and PRN 34045 each contained a single grave. No grave goods were recovered. Two similar square ditched enclosures (PRN 34047 and 34046) were located in plot B, each containing a single grave (Kenney and Parry 2013: 11-12).

Radiocarbon dating was undertaken on 2 samples of hazel charcoal from a dump of charcoal in the ditch of mortuary enclosure[3]. The two results are not statistically consistent indicating that this deposit contains material of mixed ages. The excavator stated that the later date provided the best estimate for when this deposit was formed of cal AD 635–670 (95% confidence) (Kenney and Parry 2013: 30).

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[2] This PRN did not appear in the HER search within the 500m search area due to the central point being located outside the search area. It appeared within the 1000m search radius.

[3] Samples SUERC-41964, SUERC -41965.

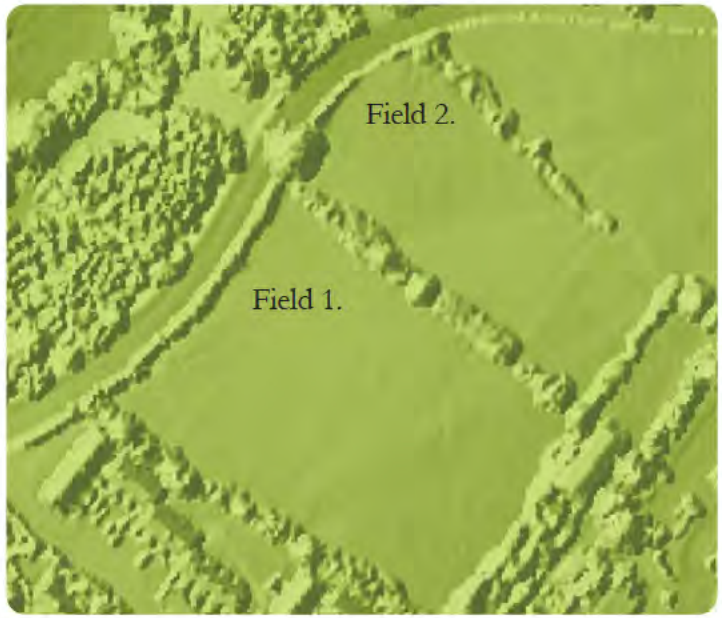



*Figure 4. Welsh Government 2020-22 LiDAR Showing Proposed Development Area (Source: https://datamap.gov.wales/maps/lidar-viewer/ Copyright: Open Government Licence for Public Sector Information (OGL)*


*Figure 5. 1838 Tithe Map Showing the Proposed Development Area (Source: Bangor University Archives)*

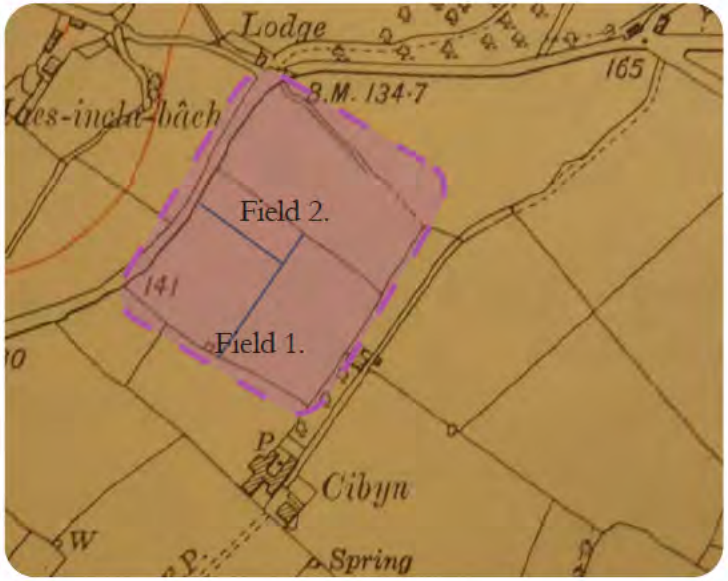



*Figure 6. 1888 First Edition Ordnance Survey Map of Proposed Development Area (Source: Bangor University Archives & National Library Scotland)*

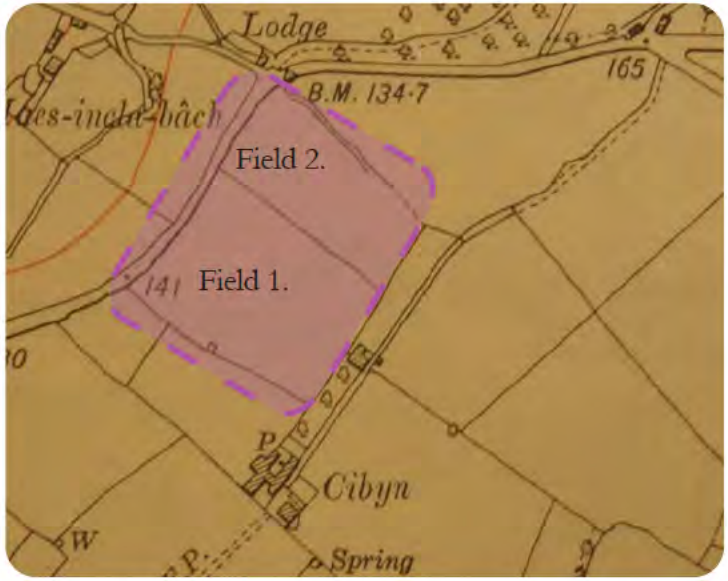



*Figure 7. 1899 (Published 1901) Edition Ordnance Survey Map of Proposed Development Area (Source: Bangor University Archives)*

When the search area was expanded to 1000m 6 additional HER results were returned, one of which was the group PRN for the cemetery discussed above. Three of the records (PRN 29300, 29301, 29302) refer to features identified during a geophysical survey of the Ysgol yr Hendre site. On excavation these features were shown to be post medieval (29302) or natural (PRN 29301) in origin or were individually recorded following the excavation of the area. PRN 5562 refers to the discovery of '*an oven and much Roman pottery*' noted by Wheeler in his 1923 report of the Segontium excavations. It is unclear why this has been attributed to the Early Medieval period.

The final record of Early Medieval date was a possible 'Viking' bronze horse cheek piece (PRN 3118). The details or location of this artefact are unknown.

**5.4 Medieval**

There are 3 records of Medieval date recorded within the 500m search radius. The records all relate to the discovery of archaeological features made during the Ysgol yr Hendre excavations – PRN 34071 records a damaged corn drier with flue and drying chamber, PRN 34070 records a slight gully yielding a Medieval radiocarbon date and PRN 34068 a pit yielding a Medieval radiocarbon date.

When the search area was expanded to 1000m 2 additional HER results were returned – PRN 6846, Llanbeblig Medieval Township, Caernarfon and PRN 6842, Penygelli Medieval Township, Caernarfon. The low number of records reflects the position of the proposed development site on the outskirts of the Medieval town of Caernarfon.

**5.5 Post Medieval**

There are 5 records of Post Medieval date recorded within the 500m search radius. PRNs 31077 and 29307 record removed field boundaries. PRN 12270 recorded numbers 2-12 Llanberis Road – a row of large early 19th century cottages of squared dressed rubble construction.

PRN 63388 is the sole Listed Building (ID 87487) within a 500m radius of the proposed development site. The structure is an 18th century stone bridge over the Afon Cadnant recorded as "*Stone single-arched bridge. Voussoirs with arch ring. Long stone abutments to approaches. Low parapet with stone coping (some missing on S side)*". The setting of the structure will not be impacted by this development.

When the search area was expanded to 1000m 27 additional HER results were returned reflecting the expansion of the Caernarfon suburbs and industrial areas around the outskirts of the town.

**5.6 Modern**

There are no records of Modern date recorded within the 500m search. When the search area was expanded to 1000m 18 HER results were returned reflecting the expansion of the Caernarfon suburbs and industrial areas around the outskirts of the town.

**5.7 Unknown Date**

There are 9 records of Unknown date recorded within the 500m search radius. When the search area was expanded to 1000m 7 additional HER results were returned.

**5.8 Cartographic Sources**

The earliest cartographic source which could be sourced showing the proposed development plot was the 1838 Tithe Map (figure 5). This document shows the plot largely as it currently appears with the single difference being the linking of the south-western field to the Cibyn y Mwr farmstead (later referred to as Cibyn). The fields are numbered 1560 and 1561 – Cae Mawr and

Cae Main[4] with Cae Mawr occupied by Robert Jones and Cae Main by Isaac Williams. Both were in use as pasture. The owner of the plots is listed as John Millington "*the Receiver appointed in the suit William Thomas and Others V Henry Rumsey Williams and Others*". Interestingly, although the fields appear to link to Cibyn y Mwr they are not in the same ownership as the farm was in the ownership of the Caernarvon Corporation.

The First Edition Ordnance Survey map of the area (published 1888, figure 6[5]) shows that although the field outlines remain unchanged, field 1 has been subdivided into 3 smaller plots, and a small structure has been built against the south-western field boundary. A feature corresponding with the position of the boundary crossing the approximated centre of the field on a south-west – north-east axis appears on the LiDAR of the site (compare with Figure 4). The subdivision of field 1 is a relatively short lived change and by the revision of the Ordnance Survey data in 1899 (published 1901, figure 7) it has been removed and the field outlines are shown as they appear now. There are no further changes shown on the later historic Ordnance Survey maps with the structure surviving until at least the publication of the 1949 edition.

**5.9 Potential Impact of the Proposed Development Scheme on Designated Historic Assets - Scheduled Ancient Monuments and Listed Buildings**

There is a single entry for a Grade II Listed Building within a 500m search radius of the centre of the proposed development site. PRN 63388 (Listed Building ID 87487) is an 18th century stone bridge crossing the Afon Cadnant. The Listing description records:

"*History - Probably late C18; the bridge is next to a ford, and is very narrow (1 metre), and will have been built as an improvement to aid crossing of river by packhorses and pedestrians.*

*Exterior - Stone single-arched bridge. Voussoirs with arch ring. Long stone abutments to approaches. Low parapet with stone coping (some missing on S side)*" (https://cadwpublic-api.azurewebsites.net/reports/listedbuilding/FullReport?lang=&id=87487).

This structure will not be affected by the proposed development works.

When the search radius was expanded to 1000m the number of Listed Buildings increased to 12. The structures are as follows:

PRN 6942 (Listed Building ID 3881) St. Peblig's, Llanbeblig Parish Church, Caernarfon (Grade I Listed),
PRN 6319 (Listed Building ID 3882) Church House, Llanbeblig (Grade II Listed),
PRN 63398 (Listed Building ID 3883) Gates, gate piers and railings at the NW entrance to the church of St Peblig (Grade II Listed),
PRN 12101 (Listed Building ID 3888) Cwellyn, Caernarfon (Grade II Listed),
PRN 65503 (Listed Building ID 22047) Post Medieval milestone (Grade II Listed),
PRN 12252 (Listed Building ID 3886) Number 2 Holywell Terrace, Caernarfon (Grade II Listed),
PRN 12253 (Listed Building ID 26599) Number 4 Holywell Terrace, Caernarfon (Grade II Listed),
PRN 12254 (Listed Building ID 26600) Number 6 Holywell Terrace, Caernarfon (Grade II Listed),
PRN 12255 (Listed Building ID 26601) Number 8 Holywell Terrace, Caernarfon (Grade II Listed),
PRN 11655 (Listed Building ID 3887) Royal Welsh Fusilier Barracks, Caernarfon (Grade II Listed),
PRN 12256 (Listed Building ID 26602) Number 10 Holywell Terrace, Caernarfon (Grade II Listed),

[4] The field names roughly translate as Big Field and Slim Field.
[5] This map was unavailable at Bangor University Archives and the additional field boundaries were traced from a copy held at the National Library Scotland.

PRN 12257 (Listed Building ID 26603) Number 12 Holywell Terrace, Caernarfon (Grade II Listed).

These structures will not be affected by the proposed development works.

There is a single Scheduled Monument CN006 Segontium Fort, Caernarfon (PRN 5557, 5563, 3089 & 3097) within the 1000m search radius of the site. This structure will not be affected by the proposed development works.

There are no Local Authority Conservation Areas with the 500m or 1000m search radii of the centre of the proposed development site.

## 6.0 Results of Archaeological Works

### 6.1 Results of Walkover Survey (Plates 1-16, Appendix C)

The site consists of two neighbouring undeveloped fields on the eastern outskirts of the town Caernarfon. The north-western site boundary runs along the A4086 Llanberis road, there is housing to the south-west of the proposed development area and the Cibyn Industrial estate bounds the site to the south-east. There is a further undeveloped field to the north-east of the site. There are overhead cables crossing the south-eastern area of both field.

**Field 1 (Plates 1-10, 16)**

The fields are numbered 1 and 2, with access off the A4086 via a slightly ramped bank in the western corner of Field 1. The field raises to the south-east. Leading into the field track marks from large farm machinery are evident and cross the site. Field 1 is heavily rutted and uneven, likely due the field being used for cattle grazing over a wet summer. There are areas of rush grass and blackthorn within the field. There are three upstanding iron pipes in concrete settings believed to have been used for measuring the water table.

The field boundaries along the housing and industrial estates are very overgrown with the brush extending up to two meters into the plot. Household and building waste including steel sheeting had been dumped within these thick brushes. Although obscured by the thick vegetation, the boundary between field 1 and field 2 appears to be a clawdd type (an earth bank with stone facing) although the bushes along this boundary are very overgrown and intrude into both fields. There are three access points in this boundary, with one at either end and one centrally.

**Field 2 (Plates 11-15)**

As in Field 1, Field 2 is an area of rough pasture, disturbed by animals and vehicles. A possible agricultural pond was identified in the central area of the field which was evidenced by a slightly damp concave feature with thick rush grasses defining a sub-circular shape. There is a second blocked access at the north-western boundary of the field leading on the A4086, within the field the there is evidence of a sunken track way leading from the access for approximately 4 meters. There are two upstanding iron pipes in concrete settings in Field 2.

After the first day of survey there was evidence of metal detecting at the site (see plate 16), which showed that the turf and topsoil were between 35-47cm deep. Spoil from the holes created included a chert core, some abraded orange coarse ware sherds (possibly Roman but too abraded to say conclusively, and a small quantity of 18$^{th}$ of 19$^{th}$ century pottery and clay tobacco pipe stems.

### 6.2 Results of Geophysical Survey

A geophysical survey was undertaken by Engineering Archaeological Services Ltd. The report has been included in full.

*Plate 1. Slate Gatepost at Entrance to Field 1.*

*Plate 2. Field 1 General View.*

*Plate 3. Field 1 Showing Overgrown Field Boundaries.*

*Plate 4. Field 1 General View.*

*Plate 5. Disturbed Area and Field Boundary in Field 1.*

*Plate 6. Field 1 Electricity Pylon.*

*Plate 7. Field 1 Showing Overgrown Field Boundaries - Appears to be Clawdd Wall.*

*Plate 8. Upright Metal Pipe Presumed to be for Measuring Water Table in Field 1.*

*Plate 9. Field 1 General View.*

*Plate 10. Field 1Showing Rubbish and Metal Around Field Boundaries.*

*Plate 11. Field 2 Marshy Area - Possible Pond.*

*Plate 12. Field 2 - Upright Metal Pipe Presumed to be for Measuring Water Table.*

*Plate 13. Field 2 General View Showing Pylon.*

*Plate 14. Field 2 Eroded Clawdd Bank*

*Plate 15. Field 2 Boundary Covering Clawdd Wall/Bank.*

*Plate 16. Disturbance Believed to Have Been Caused by Metal Detectorists in Field 2.*

*eas*

*Engineering Archaeological Services Ltd.*

# Tyddyn Fletcher, Caernarfon, Gwynedd:
# Fluxgate Gradiometer Survey

**Commissioned by**
**CR Archaeology**

**Analysis by**
**I.P. Brooks**
**Engineering Archaeological Services Ltd**

***EAS Client Report 2024/19***

*Engineering Archaeological Services Ltd is*

*Registered in England No 286978*

*CONTENTS*



*List of Illustrations*

## NGR

**Centred on:**

**Area 1: SH 49247 62751**
**Area 2: SH 49283 62814**

## *Location and Topography* (Figures 1 and 2)

The survey area was located, approximately 1.5 km to the east of the centre of Caernarfon, to the eastern side of the A 4086 Llanberis Road and to the west of the Cibyn Industrial Estate. Consisting of two linked fields partly defined by overgrown hedges the survey area was under rough grazing at the time of the survey. In some areas the fields included dense patches of thistles or *juncas* type reeds or grasses which made these areas of the fields unsuitable. This particularly effected the south western corner of the southern field and the central area of the northern field. It is possible that the *juncas* type vegetation in the northern field marked the position of a silted-up pond as the ground between the plants was very wet.

At occasional points within both fields were a series of upright metal pipes, set in concrete which are assumed to be for measuring the local water table.

The underlying geology is the Ordovician, Nant Ffrancon Subgroup of Siltstones with Devensian Till over (https://geologyviewer.bgs.ac.uk/).

Survey took place between 28/08/2024 and 29/08/2024.

## *Archaeological Background*

It is intended to develop the survey area for housing, by Adra; however, it is on the presumed line of the Roman Road from *Canovium* to *Segontium* (PRN 17856) and is only 780 m NW of *Segontium*, itself.

## *Aims of Survey*

1. To record any geophysical anomalies within the survey area which may be related to archaeological activity.

## SUMMARY OF RESULTS

*The fluxgate gradiometer survey, of approximately 1.4 Ha, off Llanberis Road, Caernarfon were commissioned by CR Archaeology in advance of a proposed housing development by Adra. Only a limited number of magnetic anomalies of probable archaeological origins were located, one of which probably marks the line of the Roman Road from Canovium to Segontium (PRN 17856). Other anomalies probably are the effect of either modern agricultural practices or the quantity of modern metallic rubbish in the fields.*

*The fieldwork took place between 28/08/2024 and 29/08/2024.*

*Comisiynwyd arolwg gradiometer fflwcs o tua 1.4 Ha, oddi ar Ffordd Llanberis, Caernarfon gan CR Archaeology cyn datblygiad tai arfaethedig gan Adra. Nifer cyfyngedig yn unig o anomaleddau magnetig, o darddiad archeolegol tebygol, a ddarganfuwyd, ac mae'n debyg bod un ohonynt yn nodi llinell y Ffordd Rufeinig o Canovium i Segontium (PRN 17856). Mae'n debyg fod anomaleddau eraill yn ganlyniad naill ai arferion amaethyddol modern neu sbwriel metelaidd modern yn y caeau.*

*Digwyddodd y gwaith maes rhwng 28/08/2024 a 29/08/2024.*

### *Methods*

The survey was based on a series of thirty-seven, 20 x 20 m squares laid out as in Figure 2. Readings were taken with a Geoscan FM256 Fluxgate Gradiometer at 0.25 m intervals along transects 1 m apart. The surveys were downloaded onto a laptop, on site, and processed using Geoscan Research “Geoplot” v.4.00. The X - Y plots were produced by exporting the data and processing it using Golden Software “Surfer” v. 10.7.972. The survey was undertaken in two area which were separated by a heavily overgrown hedge, several meters wide.

A limited number of soil samples were taken to access the Magnetic Susceptibility on the site (Figure 9). These were dried out in a warming oven, sieved, and processed using a Bartington MS2 Magnetic Susceptibility Meter.

### *Survey Results:*

## Area

Area 1: 0.88 Ha
Area 2: 0.53 Ha

## Display

The results are displayed as a grey and colour scale images (Figures 5 -7) and as a X-Y trace plot (Figure 8). The interpretation plot is shown as Figure 9. The Magnetic Susceptibility results are summarised on Figure 10 and the survey, as a whole, is summarised on Figure 11.

## *Results*:

### Fluxgate Gradiometer Survey

#### *Area 1*

The grey scale plot of Area 1 has numerous ferromagnetic anomalies which are shown in blue on Figure 5. These are largely the result of modern rubbish scattered across the field such as a pressurised gas bottle which is show as Anomaly B. Anomaly A marks the position of a vertical metal pipe, mounted in concrete, which is assumed to be a "dip well" for measuring the water table.

There are only two anomalies which are probably of archaeological origins. Anomaly C is a broad band of slight magnetic disturbance, 10 m wide, running NE – SW across the survey area. This is probably the line of the Roman Road. The other anomaly (Anomaly D) is a linear anomaly running NNW – SSE. This anomaly appears to continue into Area 2 where it is recorded as Anomaly H (Figure 8). This anomaly corresponds with a plastic water supply pipe which is known to cross the development area.

There are also two, parallel, linear anomalies in the western corner of Area 1. These can be directly related to the tracks from heavy machinery leading from the gate in the corner of the field.

#### *Area 2*

Area 2 similarly had a range of ferromagnetic anomalies which are the result of modern rubbish in the field. Two of these anomalies (Anomalies F and G, Figure 8) were the direct responses to vertical metal pipes within the field.

Only one anomaly of probable archaeological origins was located (Anomaly H, Figure 8). This continues the line of Anomaly D within Area 1 (Figure 5). There are also two feint linear anomalies within the grey scale plot. Both of these lead from gaps in the hedge between the two fields and are probably related to modern agricultural practice.

### Magnetic Susceptibility (Figure 10)

Nineteen, small, soil samples were taken for Magnetic Susceptibility analysis, two of which were from areas which had already been disturbed, by possible metal detecting activity. These two samples were of the underlying till, brought to the surface in Grids 19 and 33 (Figure 9).

Both volume susceptibility (direct reading of the samples) and mass susceptibility (reading compensated for the varying mass of the samples) is given below. The results are shown on Figure 10.

| Sample | Volume susceptibility $\chi_v$ | Mass susceptibility $\chi_m$ |
|---|---|---|
| **Area 1** | | |
| 1 | 24 | 37.3 |
| 3 | 76 | 78.6 |
| 5 | 128 | 135.2 |
| 7 | 19 | 20.8 |

| Sample | Volume susceptibility $\chi_v$ | Mass susceptibility $\chi_m$ |
|---|---|---|
| 9 | 96 | 103.8 |
| 11 | 159 | 177.5 |
| 13 | 26 | 28.2 |
| 15 | 30 | 31.0 |
| 17 | 128 | 138.5 |
| 19 sub-soil | 10 | 10.5 |
| 21 | 79 | 82.0 |
| **Area 2** | | |
| 23 | 37 | 42.9 |
| 25 | 14 | 17.8 |
| 27 | 11 | 13.1 |
| 29 | 15 | 21.4 |
| 31 | 38 | 42.1 |
| 33 sub-soil | 12 | 20.9 |
| 35 | 67 | 79.0 |
| 37 | 35 | 37.8 |

The readings are highly variable, however there appears to be a difference between the sub-soil and topsoil samples suggesting the area is suitable for magnetic survey. The high value readings tend to concentrate in the western side of Area 1, which is an unexpected pattern. Assuming a consistent geological regime across the survey area the magnetic susceptibility can be used as a proxy for the level of archaeological activity (Clark, 1996, 99), however, the distribution of high value samples is away from the known archaeology in the field. This pattern may be a reflection of the accumulation of soil against the wall along the western side of the field, or it may reflect archaeological activity not recorded in the fluxgate gradiometer survey.

## *Conclusions (Figure 8)*

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

The main feature expected to cross the survey area is the Roman Road, RR67c from *Segontium* to *Deva* (Chester) (Hopewell 2018, 27) which had intermediate stations at *Conovium* in the Conwy Valley and *Varis* (probably St Asaph). Where this road crosses the survey area it is recorded as PRN 17856 in the regional Historic Environment Record. Hopewell (2018, 28) suggests there is evidence for a very low *agger* on Environmental Agency lidar data running through the southern edge of the fields to the north-west of Cibyn industrial estate, however, no physical sign of the *agger* was observed within the survey area. The grey scale plot, however shows a broad area of magnetic disturbance (Anomaly C, Figure 5) which is on the projected line of the Roman Road and probably marks its alignment. The only other anomaly, of assumed archaeological origin, can be related to a UPVC watermain known to cross the survey area. Other anomalies within the surveys can be related to modern disturbance or agricultural practice within the fields.

The magnetic susceptibility samples, however, show a concentration of high value samples in the western side of Area 1, away from the probable line of the Roman Road, which may suggest undetected archaeological activity.

## *References*

Clark, A. 1996. *Seeing beneath the soil prospecting methods in archaeology.* Routledge, London

Hopewell, D. 2013. *Roman Roads in North-West Wales.* Gwynedd Archaeological Trust. Bangor

## *Acknowledgements*

This survey was commissioned by CR Archaeology. The project was monitored by J. Emmett for the Gwynedd Archaeological Planning Service.

## *Techniques of Geophysical Survey:*

### Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remanence which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

### Resistivity:

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

### Resistance Tomography

Builds up a vertical profile or pseudo-section through deposits by taking resistivity readings along a transect using a range of different probe spacings.

### Magnetic Susceptibility:

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

### Instrumentation:

1. Fluxgate Gradiometer - Geoscan FM256

2. Resistance Meter - Geoscan RM15

3. Magnetic Susceptibility Meter - Bartington MS2

4. Geopulse Imager 25 - Campus

### Methodology:

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged between 0.25m and 1m intervals along traverses 1m apart. Resistance meter readings are logged at 0.5m or 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey, a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

## *Copyright:*

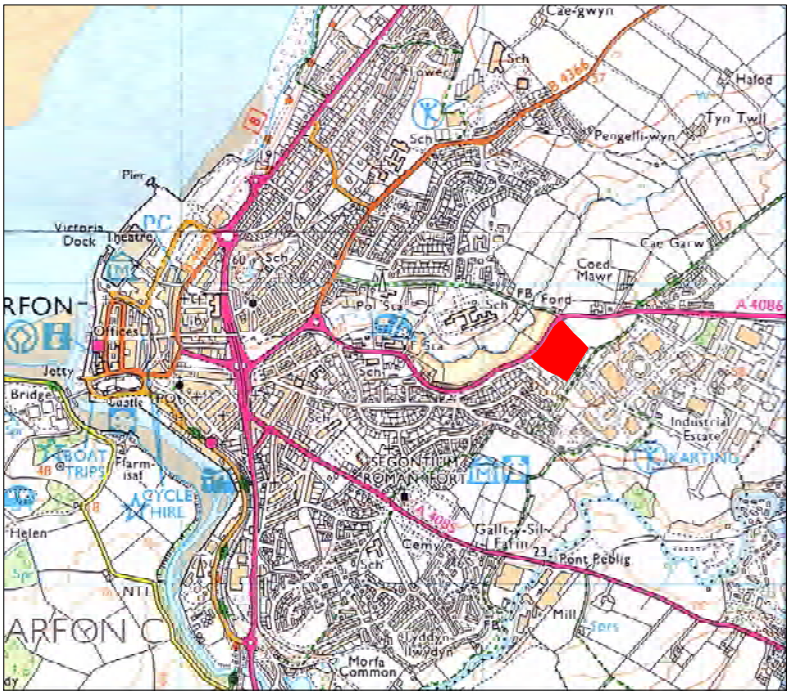





Figure 1: Location
Scale 1:25,000




0 50 m

Figure 2: Location of the Survey
Scale 1:1500

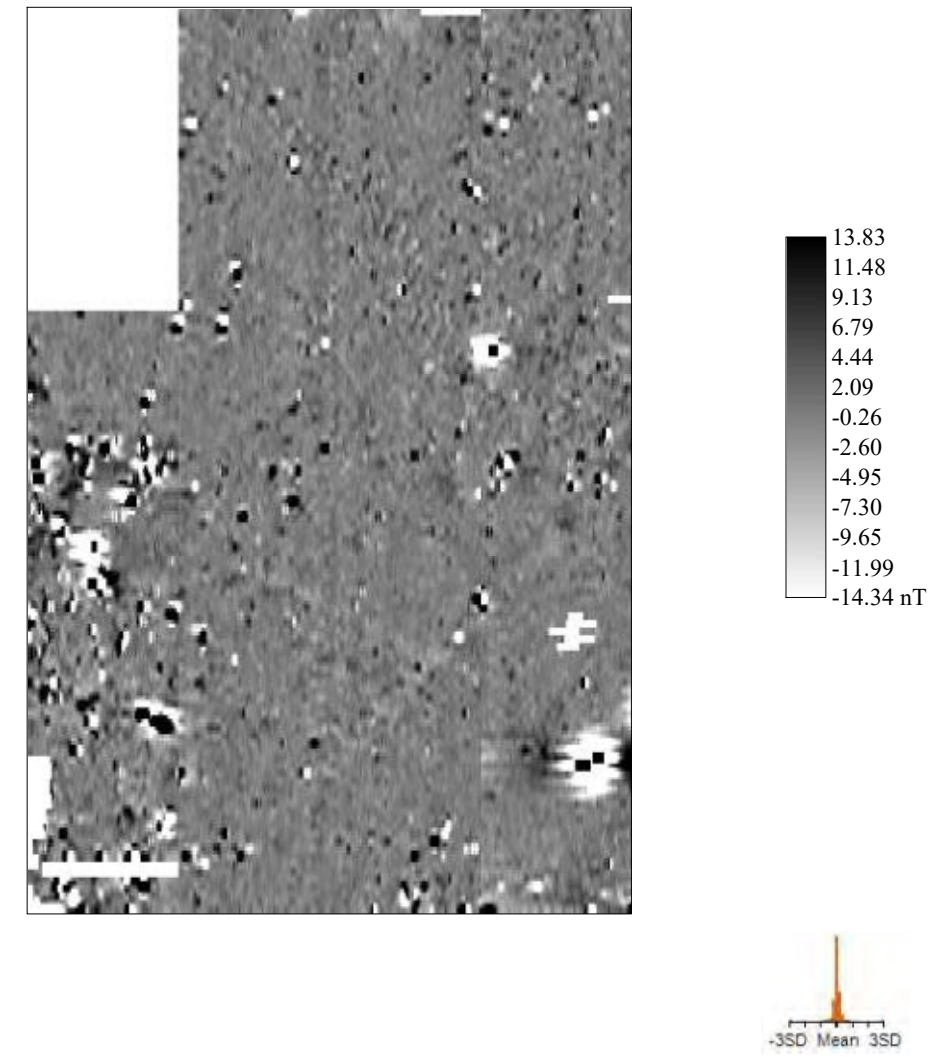



Figure 3: Area 1 Grey Scale Plot
Scale 1:1000

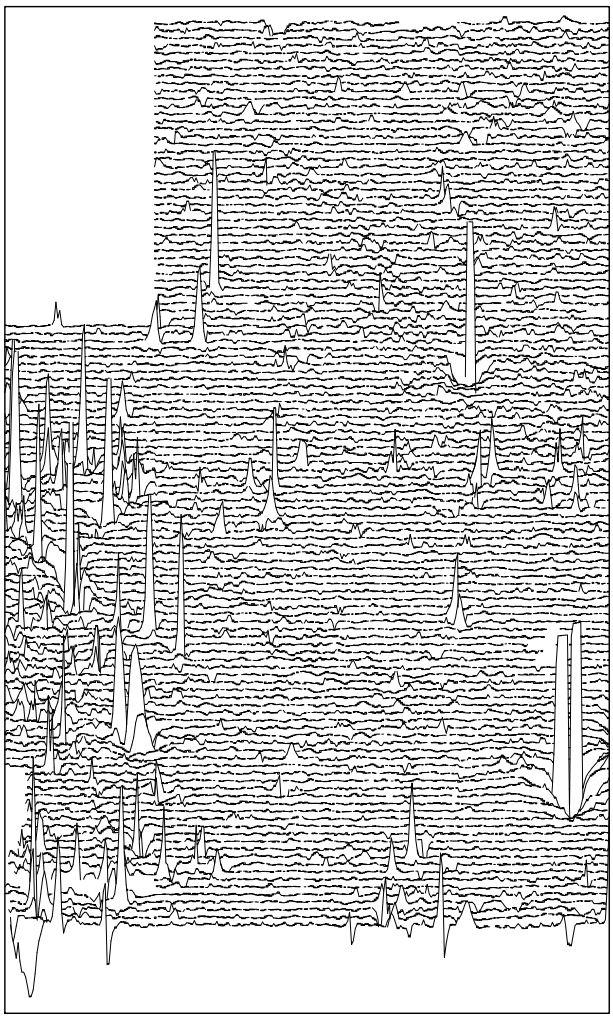



Figure 4: Area 1, X-Y Plot
Scale 1:1000

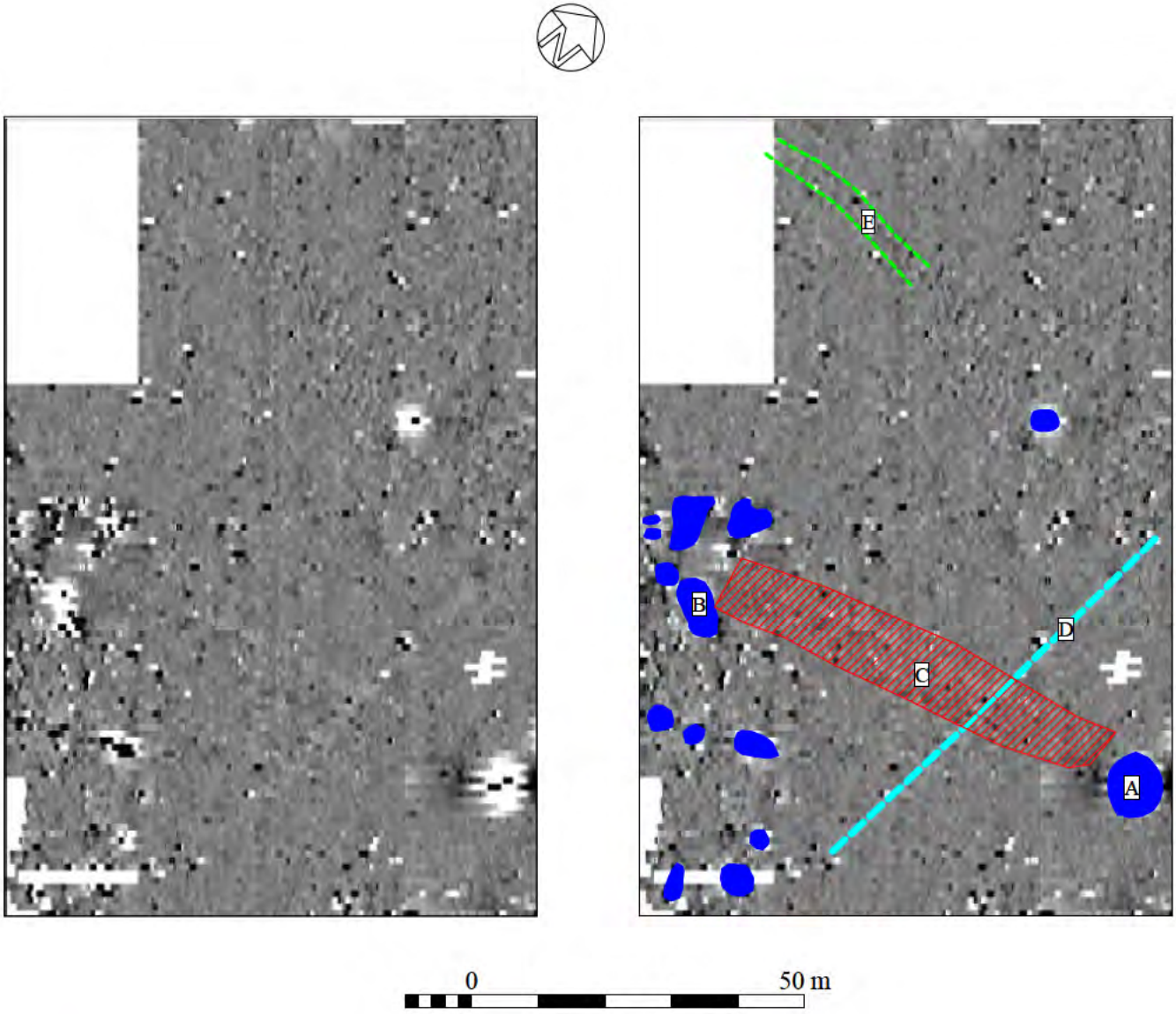
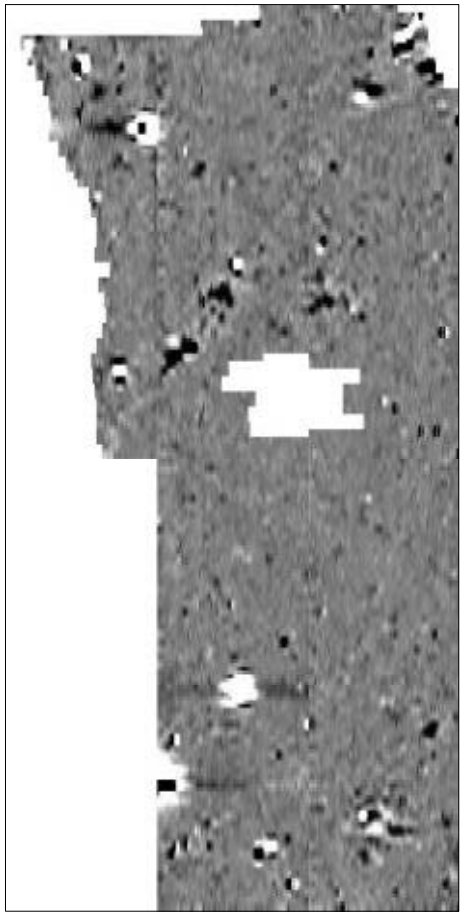
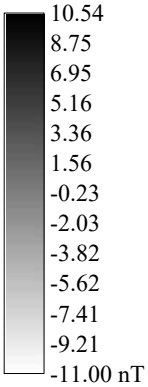



Figure 5: Area 1, Interpretation
Scale 1:1000





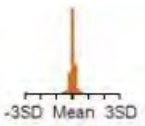





Figure 6: Area 2, Grey Scale Plot
Scale 1:1000

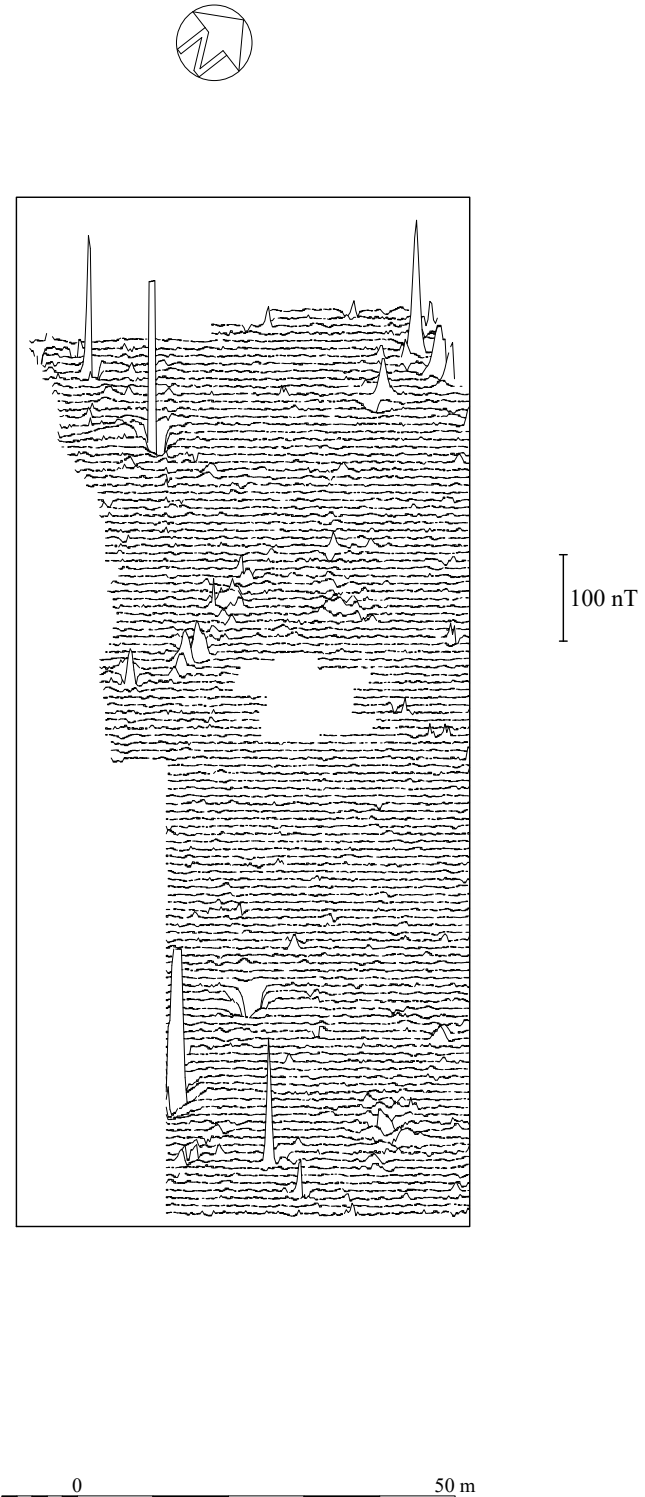



Figure 7: Area 2, X-Y Plot
Scale 1:1000

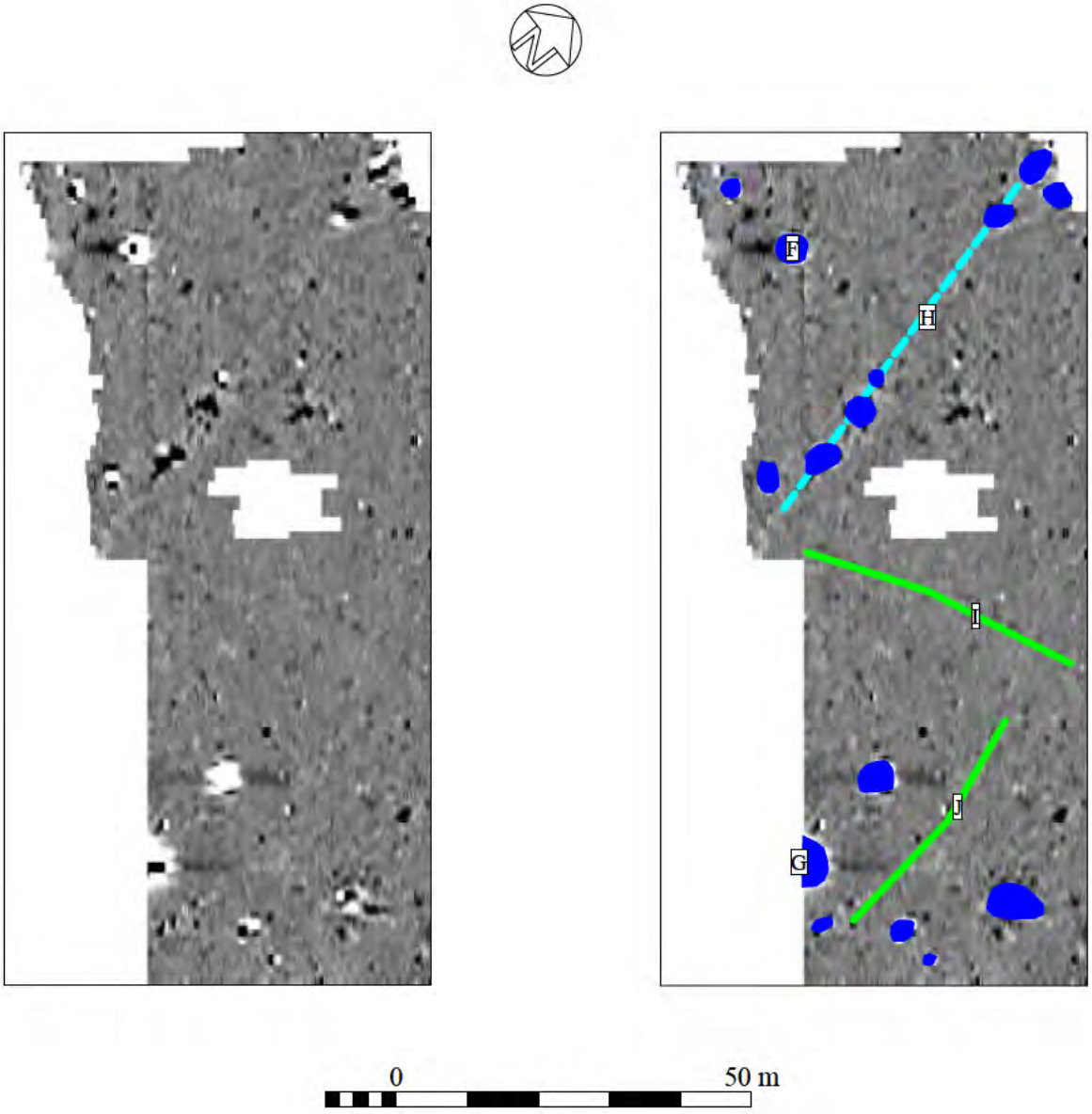



Figure 8: Area 2, Interpretation
Scale 1:1000


Figure 9: Location of the Magnetic Susceptibility Samples
Scale 1:1,500

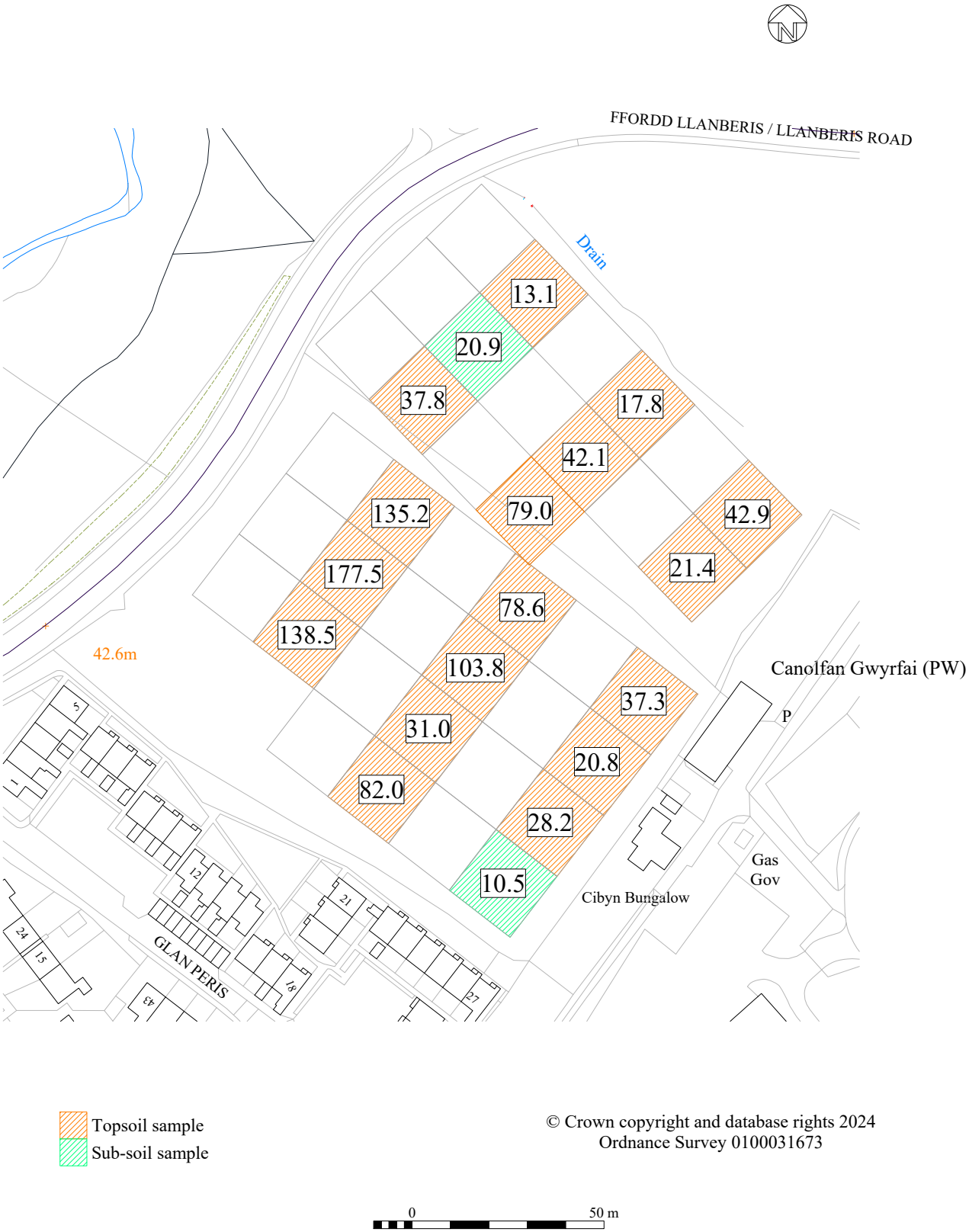



Figure 10: Magnetic Susceptibility Results
Scale 1:1,500

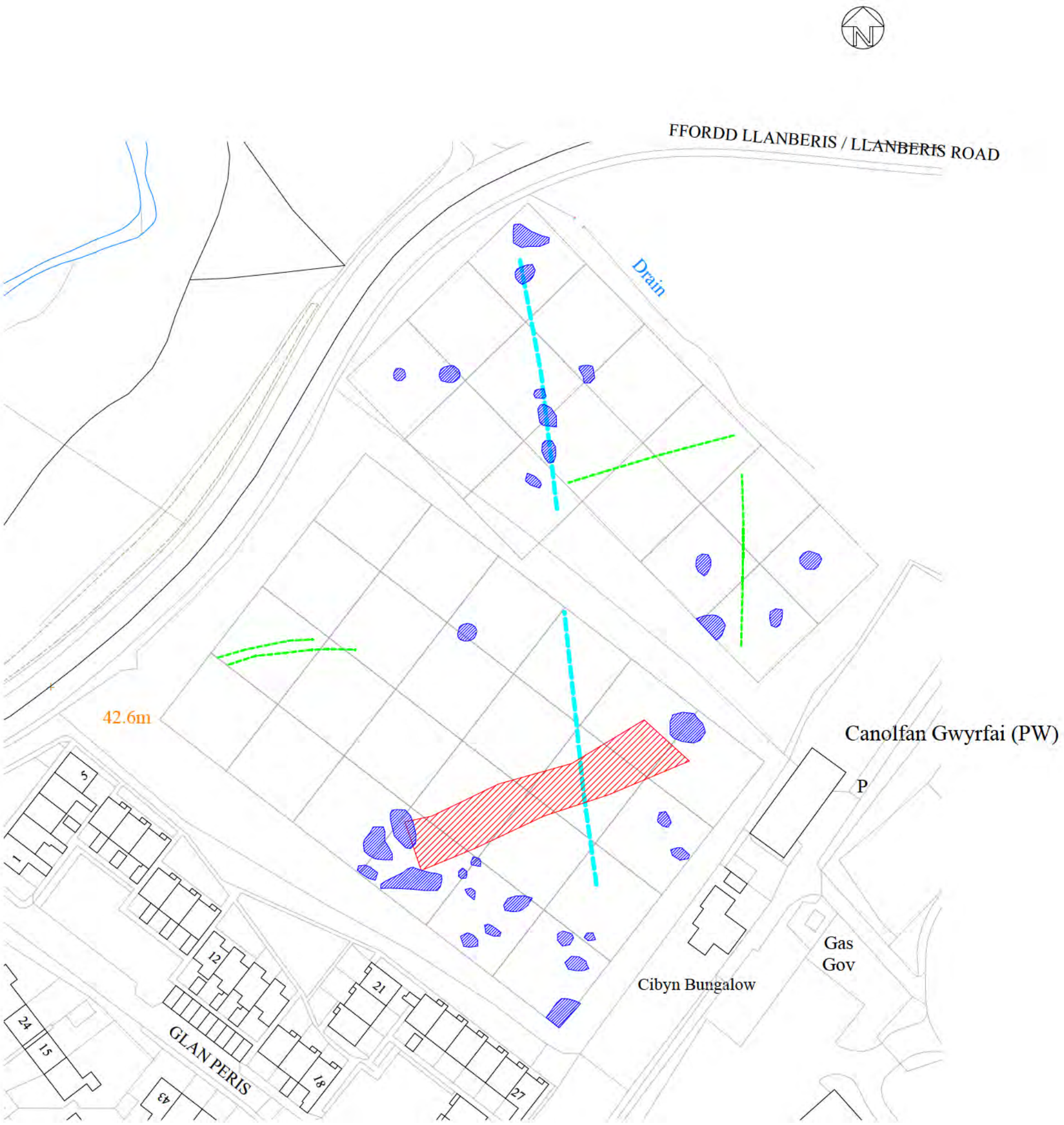





Figure 11: Summary
Scale 1:1,500

## 7.0 Conclusion

The proposed development site is an area of high archaeological potential. Although situated well outside of the main concentration of both Roman and Medieval activity in Caernarfon there is strong evidence from both the LiDAR data and the geophysical survey that the Roman Road from Canovium to Segontium passes through the site.

With the exception of the potential stretch of the Roman Road, the geophysical survey uncovered little evidence of archaeological activity, although as stated in the geophysical survey report "*It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it*" (Brooks 2024: 4). It was also noted that he magnetic susceptibility samples show a concentration of high value samples on the western side of Area 1, well away from the probable line of the Roman Road. This may suggest undetected archaeological activity, although it could equally have reflected the accumulation of soil in this area.

An examination of the known archaeological background of the immediate and wider area shows that there is the potential for stray finds or isolated features/feature groups of prehistoric, early medieval or medieval date given the previously undeveloped nature of the site. Although not evident from the geophysical survey, it is possible that the relatively short lived Post Medieval field boundaries subdividing Field 1 may also be encountered within the proposed development area.

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1899 (Published 1901) Edition Ordnance Survey Map

**Websites – all sites were visited 08/09/2024**
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https://geologyviewer.bgs.ac.uk/
https://maps.nls.uk/view/101606433

# Appendix A. Specification for Archaeological Works

# Specification for Archaeological Works (Desk Based Assessment & Geophysical Survey) at

# Tyddyn Fletcher, Ffordd Llanberis, Caernarfon

**NGR SH 49268 62780 (Central Point)**

**Report Number CR247-2024**

CR ARCHAEOLOGY
Compiled by C. Rees and M. Jones
On Behalf of Adra (Tai) Cyfyngedig

**Specification for Archaeological Works at Tyddyn Fletcher, Ffordd Llanberis, Caernarfon**

| | |
|---|---|
| **Planning Application Number:** | Pre-Application (Enquiry Number Y23/0562) |
| **National Grid Reference:** | SH 49268 62780 (Central Point) |
| **Client:** | Adra (Tai) Cyfyngedig |
| **Report Author:** | Catherine Rees and Matthew Jones |
| **Report Number:** | CR247-2024 |
| **Date:** | 26/07/2024 |

**Contents**

## 1.0 Introduction

CR Archaeology have been instructed by Adra (Tai) Cyfyngedig to conduct an Archaeological Desk Based Assessment and Geophysical Survey at the proposed site of a new residential development (Appendix A).

The site is located on land adjacent to Ffordd Llanberis (A4086), Caernarfon on the eastern outskirts of the town (Figure 1). The proposed development area is currently in agricultural use.

The site is approximately 650m from Segontium Roman Fort (PRN 3089, Scheduled Monument CN006), and a stretch of the Roman road between Segontium and Canovium (PRN 17856) may cross the site. It is also located approximately 400m from the extensive area of Roman and Early Medieval activity excavated at Ysgol yr Hendre (Kenney and Parry 2012 & 2013, Event PRN 44569, 44349). It was also noted that a Bronze Age burial urn was discovered in 1946 during the construction of the adjacent housing estate (PRN 3101).

This document has been prepared to supply the client and statutory bodies including the Local Planning Authority Archaeologist with information as to the archaeological potential, impact and constraints on the aforementioned scheme.

It is intended that the results of this work will inform decisions as to the nature of any additional heritage considerations/consultations which the scheme must be afforded and archaeological mitigation strategies or evaluation methodologies which may be required.

This Desk Based Assessment and Geophysical Survey examines the historic context and archaeological potential of the proposed development area.

## 2.0 Project Aims & Objectives

This phase of works for the development site aims to undertake a desk-based assessment, a walkover survey, and a geophysical (gradiometer) survey. It aims to examine the potential archaeological resource surviving on the site, and to provide information which will be utilised to determine an appropriate methodology for any further archaeological mitigation or evaluation methodologies which may be required.

The first aim of this scheme of works is to undertake desk based historical research exploring the history/archaeology of the site. This information will include a map progression and archival research in order to compile a coherent narrative history of the site and its environs.

The Gwynedd Historic Environment Record (HER), Gwynedd and Bangor University Archives, and relevant publications will be consulted to compile a record of known archaeological sites in the vicinity. The data gathered during this phase of works will also be utilised in the interpretation of the gradiometer results.

The second aim of this archaeological investigation is to undertake a walkover and geophysical survey of the site in order to identify and locate buried features.

It is intended that this document be utilised to inform further archaeological planning decisions and conditions at the site.

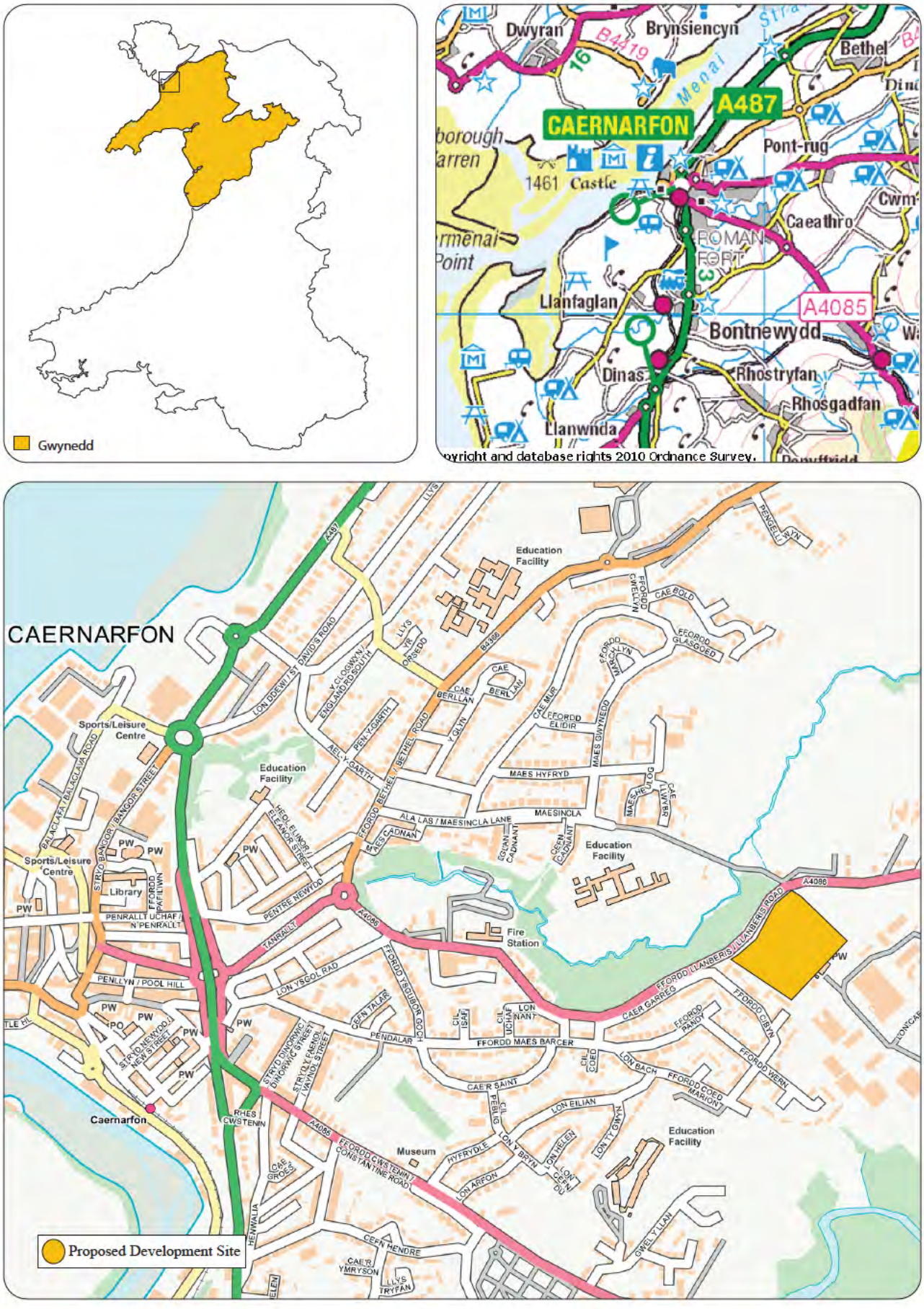


*Figure 1. Site Location Map*

*(Source: OS Open Data Mapping Contains Ordnance Survey data © Crown copyright and database right 2018)*

The objectives of this programme of works are:

- To locate and describe, by means of desktop analysis, a walkover survey, geophysical prospecting and subsequent evaluation trenching, archaeological features which may be present within the development area
- To make full and effective use of existing information to establish the archaeological significance of the site
- To help inform future decision making, design solutions, further evaluation & mitigation strategies

## 3.0 Brief Historical Background

The following section is, through necessity, very brief and is intended to merely place the site in context. A more detailed history of the site will form a key element in the proposed works.

The site has potential for Roman archaeology, and a stretch of the Roman road between Segontium and Canovium (PRN 17856) may cross the site. The site is approximately 750m from Segontium Roman Fort (PRN 3089), and approximately 400m from the area of Roman and Early Medieval activity excavated at Ysgol yr Hendre (Kenney and Parry 2012 & 2013, Event PRN 44569, 44349). It was also noted that a Bronze Age burial urn was discovered in 1946 during the construction of the adjacent housing estate (PRN 3101).

### 3.1 Topography

The site is located on land adjacent to Ffordd Llanberis (A4086), Caernarfon on the eastern outskirts of the town (Figure 1). The proposed development area is currently in agricultural use.

### 3.2 Geology

The bedrock geology at the site is recorded as "*Nant Ffrancon Subgroup - Siltstone. Sedimentary bedrock formed between 477.7 and 449 million years ago during the Ordovician period*" (https://geologyviewer.bgs.ac.uk/).

The site superficial geology is recorded as "*Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period*" (https://geologyviewer.bgs.ac.uk/).

## 4.0 Scheme of Works - Methodology

It is proposed that the archaeological works be conducted in two sections. Each is detailed separately below.

### 4.1 Desk Based Research

A complete and coherent history of the site will be compiled utilising material sourced from the Gwynedd Historic Environment Record (HER), the Royal Commission on the Ancient and Historical Monuments Wales (RCAHMW) database, Gwynedd and Bangor University Archives, and relevant publications. This will allow as comprehensive a history as possible to be compiled. A map progression of the area will be undertaken. Where appropriate the archive information will be supplemented with information from local libraries and specialist interest websites & journals.

In order to identify the character of archaeological remains in the vicinity of the site a search of the Gwynedd HER will be conducted examining an area within a 500m radius of the proposed works (the grid reference for the search is taken as the centre point of the development area). This will be expanded to 1000m to examine general trends, but this data will not be discussed in detail.

The RCAHMW database and aerial imagery of the site will be examined. The information collected will be discussed within the main report text.

The works will be carried out accordance with the CIfA Standards and Guidance for desk-based assessment (CIfA 1994 (2014, updated 2020).

This material will form the historical background for a full archaeological report and will be utilised to aid the interpretation of the results of the geophysical survey.

**4.2 Geophysical Survey**
Prior to the commencement of works a brief written record of the site will be compiled. This will include a note on any features/elements which may have an impact on the survey results - for example weather, geological features, fencing & overhead cables.

The survey will be carried out in accordance with English Heritage's guidance "*Geophysical Survey in Archaeological Field Evaluation*" (2008) and the CIfA "*Standard and Guidance for Archaeological Geophysical Survey*" (2014, updated 2020) and "*Universal Guidance for Archaeological Field Evaluation*" (2023).

A survey grid will be established over the site, orientated to provide a best possible fit to the area to be surveyed and to minimise the effects of the slight slope of the ground level on the site. The survey areas will be gridded with a 20 x 20 m or 30 x 30 m grid. These squares will be marked by plastic pegs and the grid will be tied to local features. Readings will be taken at 0.25 m intervals along transects 1.0 m apart with a zig-zag pattern being walked. The data will be downloaded on to a laptop computer in the field.

If possible, a limited number of small soil samples will be taken for magnetic susceptibility analysis as an aid to interpret the results of the Fluxgate gradiometer survey.

**4.2.1 Equipment**
The survey will be undertaken using a Geoscan FM 256 Fluxgate Gradiometer.

Sensitivity: 0.1nT
Sample Interval: 0.25m
Traverse Width: 1m
Traverse Method: Zig-Zag
Grid Square Size: 30m x 30m or 20x20m where possible, downsized to 20x10m where necessary.

It must however be noted that these settings may have to be adjusted dependant on ground conditions, but all changes will be recorded.

Geoplot v. 3.00v will be used to download and manipulate the geophysical data. Minimal processing will be applied to all images to ensure no false results are created by excessive image manipulation. Data will be downloaded to a portable computer during each rest period for the course of the day, to ensure data integrity and check ongoing results.

Grey scale plots will be produced using Geoplot v. 3.00v. X - Y plots will be produced using Golden software "Surfer" v. 10

A basic photographic record will be compiled prior to the commencement of the survey which will detail any above ground features and show the general topography of the site. Further

photographs will be taken to illustrate the setting of the site. It will be undertaken using a 20 mega-pixel Sony Alpha digital camera with a variety of standard and other lenses. Images will be captured in RAW format for later processing into high resolution JPG and TIF files.

**4.3 Timetable for Proposed Works**
It is envisaged that the geophysical survey will be undertaken on the 27th – 30th August 2024 with an estimated time frame of 2-3 days. Further time has been allotted for archive research, report compilation and site archiving.

**4.4 Staffing**
The project will be managed by Catherine Rees (MCIfA, BA (Archaeology), MA (Archaeology) Postgraduate Diploma (Historic Environment Conservation) & Matthew Jones (BA (Archaeology), MA (Archaeology). The geophysical survey will be conducted by Dr Ian Brooks and Matthew Jones.

All staff will have a skill set equivalent to the CIfA ACIfA/MIFA level. C.Vs for all staff employed on the project can be provided on request. All projects are carried out in accordance with CIfA *Standard and Guidance* documents.

**4.5 Monitoring**
The project will be subject to monitoring by Heneb (Planning). A projected time-scale and copy of the risk assessment can be provided on request to the monitoring body prior to the commencement of works.

**4.6 Health and Safety**
A risk assessment will be conducted prior to the commencement of works and site staff will be familiarised with its contents. A first aid kit will be located in the site vehicle.

All staff will be issued with appropriate Personal Protective Equipment (PPE) for the site work. Initially this is anticipated to consist of:

- Hi-visibility vests (EN471)
- Mobile telephone (to be kept in site vehicle)
- Suitable footwear & waterproofs.

**4.7 The Report**
The report will clearly and accurately incorporate information gained from the programme of archaeological works. It will present the documentary evidence gathered in such a way as to create a clear and coherent record. This will include illustrations of any cartographic/pictorial sources. The report will contain a site plan showing the locations of any photographs taken.
The desk-based assessment will consider the following:

- the nature, extent and degree of survival of archaeological sites, structures, deposits and landscapes within the study area
- the significance of any remains in their context both regionally and nationally
- the history of the site
- the potential impact of any proposed development on the setting of known sites of archaeological/historic importance
- the potential for further work with appropriate recommendations

In accordance with English Heritage guidelines the geophysical survey results element will include:

- a survey location plan demonstrating relationships to other mapped features (minimum scale 1:2500);
- an image of minimally processed survey data (minimum scale 1:1000);
- where appropriate a trace (or X–Y) plot of raw magnetic data
- a greyscale plot, or dot density plot (minimum scale 1:1000);
- one or more interpretative plans/diagrams (minimum scale 1:1000).

It is intended that this report will inform decisions as to the necessity and/or nature of any further archaeological mitigation strategies which may be required.

A copy of the report in Adobe PDF format will be sent to the appropriate monitoring archaeologist for approval before formal submission. A PDF digital copy of the report will be submitted to Heneb as part of the formal submission. A digital Adobe PDF version and a bound paper copy of the final report and will be lodged with the Gwynedd Historic Environment Record within six months of completion of the project.

### 4.7.1 Copyright

CR Archaeology and sub-contractors shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it hereby provides a licence to the client and the local authority for the use of the report by the client and the local authority in all matters directly relating to the project as described in the Project.

## 8.0 Bibliography


English Heritage. 2006. ***Management of Research Projects in the Historic Environment (MORPHE)***

Kenney, J. & Parry, L. 2012. ***Cae Ty Gwyn Playing Fields and Environs: Development of a New Primary School, Ysgol Hendre, at Llanbeblig, Caernarfon.***

Kenney, J., and Parry, L. 2013. ***Ysgol Yr Hendre, Llanbeblig, Caernarfon: Reports on Archaeological Excavations.***

The Chartered Institute for Archaeologists. 2014 (Last Revised 2022). ***Code of Conduct: Professional Ethics.***

The Chartered Institute for Archaeologists. 2019 (Revised 2021). ***Regulations for Professional Conduct.***

The Chartered Institute for Archaeologists. 1990 (Revised 2014). ***Code of Approved Practice For the Regulation of Contractual Arrangements in Field Archaeology.***

The Chartered Institute for Archaeologists. 2014 (Last Revised 2020). ***Standard and Guidance for Historic Environment Desk-Based Assessment.***

The Chartered Institute for Archaeologists. (Revised 2014). ***Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.***

The Chartered Institute for Archaeologists. 2014 (Last Revised June 2020). ***Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.***

The Chartered Institute for Archaeologists. 2011, Revised 2014. ***Standard and Guidance for Archaeological Geophysical Survey.***

The Chartered Institute for Archaeologists. 2023. ***Universal Guidance for Archaeological Field Evaluation.***

**Websites – all sites were visited 18/07/2024**

https://geologyviewer.bgs.ac.uk/

# Appendix A. Proposed Development Plans

Issues

Drain

EXISTING BUS STOP

APPROX WATER PIPE LOCATION

FUTURE PHASE 2

APPROX POSITION OF OVERHEAD CABLES

6m EASEMENT FOR OVERHEAD CABLES DIVERTED UNDERGROUND?

SWALE

FUTURE ACCESS TO PHASE 2

MATURE OAK TREE TO BE RETAINED?

ATTENUATION BASIN

AMENITY SPACE 1062m2

EQUIPPED PLAY SPACE 166M2

3m ACTIVE TRAVEL PATH

SUDS FEATURE

Caernarfon Pentecostal Church?

Bungalow

Gas Gov

INDICATIVE VISIBILITY SPLAY (4.5 X 90m?)

NEW SITE ENTRANCE

4500

INDICATIVE VISIBILITY SPLAY (4.5 X 90m?)

OPTIONAL BUS STOP

LINK

## UNIT KEY

| | GIFA | No. |
|---|---|---|
| - 2P1B COTTAGE STYLE APARTMENT | @65m² | x10 |
| - 3P2B BUNGALOW | @58m² | x3 |
| - 4P2B HOUSE | @83m² | x11 |
| - 5P3B HOUSE | @93m² | x5 |
| - 5P3B HOUSE DUAL ASPECT | @93m² | x5 |
| - 7P4B HOUSE | @114m² | x2 |
| TOTAL UNITS | | 36 |

# PROPOSED SITE - PH 1 - OPT C

SCALE: 1 : 500

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500 @ A2

| REV | DESCRIPTION | DATE | BY |
|---|---|---|---|
| A | UPDATES TO ADRA COMMENTS 13.02.24 | 14/02/24 | TA |



PROJECT
LLANBERIS ROAD, CAERNARFON
for ADRA

DRAWING TITLE
PROPOSED SITE LAYOUT - PHASE 1 - OPTION C

| SCALE | DATE | DRAWN | CHECKED |
|---|---|---|---|
| 1 : 500 @A2 | 09/02/24 | TA | SV |

DRAWING STATUS: PRELIMINARY

| JOB No | DRAWING No | REVISION |
|---|---|---|
| C1139 | 010 | A |

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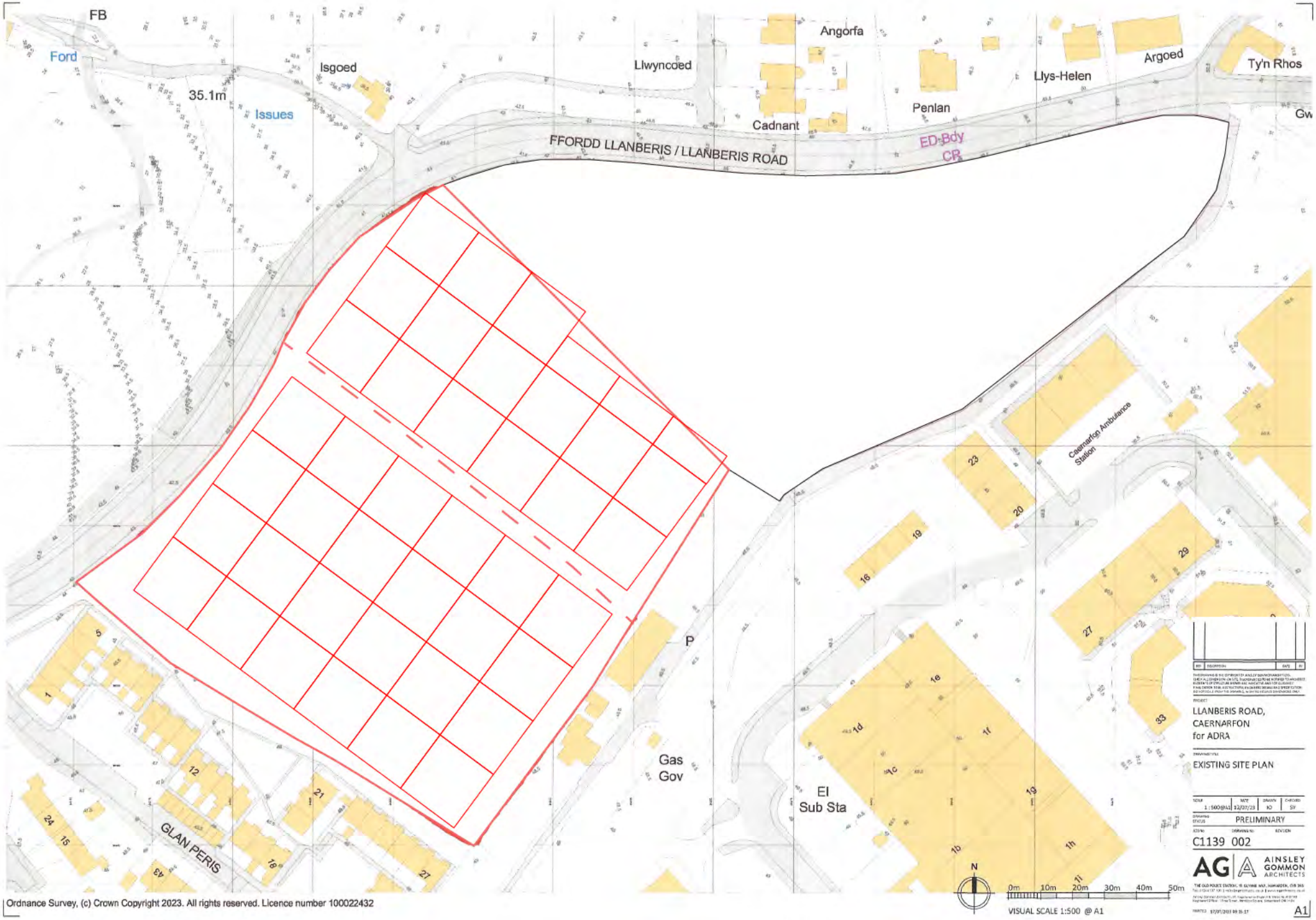
A2






*Proposed Geophysical Survey Grid Layout*

## Appendix B. Data Management Plan

**Data Management Plan**

**Project Outline**

| | |
|---|---|
| **Project Manager** | Catherine Rees |
| **Project Number** | CR247-2024 |
| **Project Name** | Ffordd_Llanberis_Caernarfon |
| **Author(s)** | C. Rees |
| **Origination Date:** | 17-07-2024 |
| **Reviser(s)** | C.Rees |
| **Date of last revision** | 14/10/2024 |
| **Project stages covered** | Desk based assessment<br>Walk over survey<br>Geophysical survey |
| **Version** | 1.0 |
| **Status** | Complete |
| **Summary of Changes** | Updated to complete |
| **File Name/Location** | H: CR Archaeology 2024-2025 Projects: CR247-2024_ Ffordd_Llanberis_Caernarfon |
| **Related Policies** | - |

**Data Collection/Creation**

| | |
|---|---|
| **Data to be Collected/Created** | The CR Archaeology standard pro forma recording system used on site. Images will be created according to standards set out in ADAPt Guidance. All file formats created will meet the standards set out in ADAPt.<br><br>The documentary archive will consist of: Text: Various Word Documents; including Project Design, Assessment Reports, Site Archive Completion Report.<br><br>Images: Hard copy drawings, digital images - site photography (JPEG & TIFF), scanned drawings |
| **How Data will be Collected/Created** | The data will be created according to the CR Archaeology Recording Manual, and ADAPt |
| **Relations** | References to the original material have been supplied. |

**Documentation and Metadata**

| | |
|---|---|
| **Metadata** | Metadata will be created to the standard set out in ADAPt |
| **Documentation** | Describe the types of documentation that will accompany the data to help secondary users to understand and reuse it. |

**Ethical and Legal Compliance**

| | |
|---|---|
| **Data Security Issues** | No data security or sensitive data. |
| **Intellectual Property Rights** | The data and reports created by any external specialists are CR Archaeology Copyright; this will be managed through their contracts. |

**Data Storage**

| | |
|---|---|
| **Storage and Backup** | Data will be stored on the CR Archaeology Network and during excavation will be managed in line with Project Procedures for backing up data and transfer to network. |
| **Access and Security** | Data will be made available to the project team through the CR Archaeology network. There are no security issues. |

**Selection and Preservation**

| | |
|---|---|
| **Preservation Plan** | A copy of the digital archive will be sent to the RCAHMW.<br><br>In the event of a negative result or no artefactual material being recovered the documentary and digital archives will be deposited with the RCAHMW.<br><br>Copies of the project report and photographs will be deposited with the appropriate HER (CPAT). |

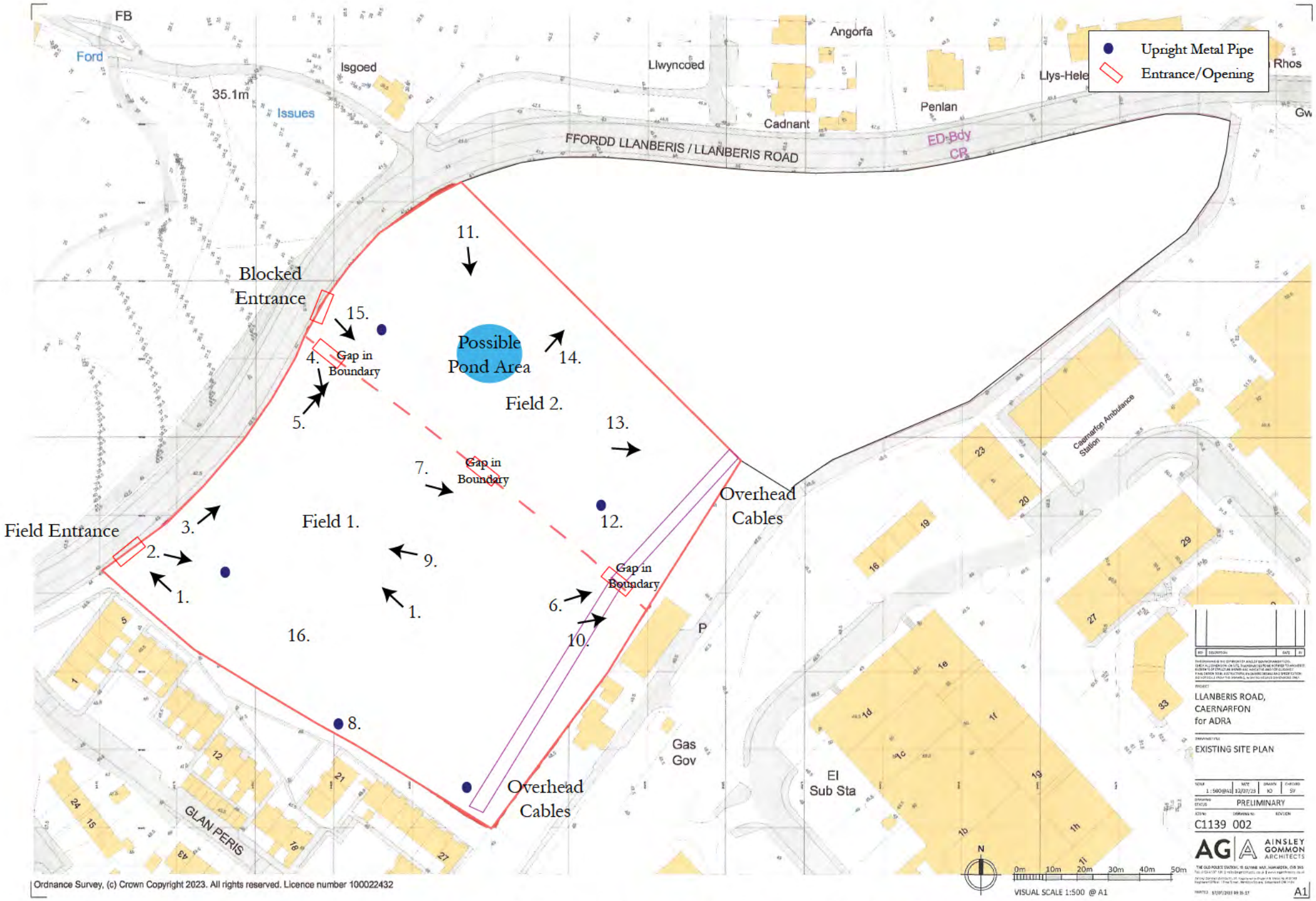
**Data Sharing**

| | |
|---|---|
| **Data Sharing Plan** | The data generated from this project will be made publicly available through the digital repositories. Awareness of the work will be raised through publication, and documentation with the HER. |
| **Data Sharing Restrictions** | There are no restrictions on the use of this data after project completion. |

**Responsibilities and Resources**

| | |
|---|---|
| **Responsibilities** | The Project Manager is responsible for ensuring the data management plan is followed. |
| **Resources** | Resources required to deliver this plan are covered by standard CR Archaeology resources and the project design. The costs of |

| | |
|---|---|
| | deposition of the archive are covered by the client. |






*Appendix C. Annotated Site Plan Showing Location and Direction of Photographic Plates*