1654

MAES GLAS, LLANAELHAEARN

GWERTHUSIAD ARCHEOLEGOL (AROLWG GEOFFISEGOL) / ARCHAEOLOGICAL EVALUATION (GEOPHYSICAL SURVEY)

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

MAES GLAS, LLANAELHAEARN

Gwerthusiad Archeolegol (Arolwg Geoffisegol) / Archaeological Evaluation (Geophysical Survey)

Yr Amgylchedd Hanesyddol yn Cofnodi Prif Gyfeirnod /
Historic Environment Record Event Primary Reference Number 46297

Prosiect Rhif / Project No. G2740

Adroddiad Rhif / Report No. 1654

Wedi'i baratoi ar gyfer / Prepared for: Cwmni Bro Antur Aelhaearn

Medi 2022 / September 2022

Ysgrifenwyd gan / Written by: Neil McGuinness with contributions from Stuart Reilly

Llun clawr / Cover photo: View of the central part of the proposed development area from the west (photo archive ref: G2740_026).

Cyhoeddwyd gan Ymddiriedolaeth Achaeolegol Gwynedd
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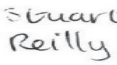
Reviewed by	Document Reviewer	Stuart Reilly		02/09/22
Approved by	Principal Archaeologist	John Roberts		02/09/22

Revision History			
Rev No.	**Summary of Changes**	**Ref Section**	**Purpose of Issue**

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CRYNODEB ANHECHNEGOL

Comisiynwyd Ymddiriedolaeth Archeolegol Gwynedd gan Gwmni Bro Antur Aelhaearn i gynnal arolwg geoffisegol cyn creu coetir newydd arfaethedig gyda mwynderau cysylltiedig ar lain o dir 0.54 ha ym Maes Glas, Llanaelhaearn, Gwynedd. Roedd amodau tir anffafriol yn golygu mai dim ond 0.1 ha o ardal y datblygiad arfaethedig oedd yn addas ar gyfer arolwg. Nid oes unrhyw anghysondebau archeolegol tebygol wedi'u nodi. Gall dau anomaledd o darddiad ansicr gynrychioli nodweddion tebyg i bydew, neu gallant gael eu hachosi gan amrywiadau magnetig yn y pridd neu ddaeareg waelodol, prosesau naturiol (taflu coed), neu gallent fod o ganlyniad i weithgareddau amaethyddol modern.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust was commissioned by Cwmni Bro Antur Aelhaearn to undertake a geophysical survey in advance of the creation of a proposed new woodland with associated amenities on a 0.54 ha plot of land at Maes Glas, Llanaelhaearn, Gwynedd. Adverse ground conditions meant that only 0.1 ha of the proposed development area was suitable for survey. No probable archaeological anomalies have been identified. Two anomalies of uncertain origin may represent pit-like features, or may be caused by magnetic variations in the soil or underlying geology, natural processes (tree throws), or could be due to modern agricultural activities.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Cwmni Bro Antur Aelhaearn* to undertake an archaeological evaluation (geophysical survey) in advance of a proposed new woodland with associated amenities on land at Maes Glas, Llanaelhaearn, Gwynedd (NGR SH3877544597; postcode LL54 5AF; Figure 01). The proposed development area measures 0.54 hectares and encompasses marginal ground and rough fields of pasture off the A499 at the southern edge of the village. The evaluation has been undertaken in support of a planning application for the development (ref.: C22/0535/37/LL).

The geophysical survey was conducted on the 31st of August 2022 in accordance with the following guidelines:

- *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008);
- *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* Version 1.1 (The Welsh Archaeological Trusts 2018);
- *Guidelines for digital archives* (Royal Commission on Ancient and Historic Monuments of Wales 2015);
- *Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider* (European Archaeological Council 2015);
- *Management of Archaeological Projects* (English Heritage 1991);
- *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England 2015); and
- *Standard and Guidance for Archaeological Geophysical Survey* (Chartered Institute for Archaeologists 2020).

The geophysical survey has been monitored by the Gwynedd Archaeological Planning Service and was undertaken in accordance with an approved Written Scheme of Investigation (Appendix I).

In accordance with the Gwynedd Historic Environment Record (HER) requirements, the HER was contacted at the onset of the project. The HER was informed of the project start date, its location (including grid reference) and an estimated timescale for the work. The Gwynedd

HER enquiry number for this project is GATHER1695 and the Event Primary Reference Number (PRN) is 46297. A bilingual event summary has been prepared for submission to the HER and data arising out of the project has been formatted in a manner suitable for accession to the HER under the guidelines set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records* (The Welsh Archaeological Trusts 2018).

GAT is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists and a member of the Federation of Archaeological Managers and Employers (FAME).

1.1 Site details

NGR / Postcode	SH3877544597 / LL54 5AF
Location	The survey area is located on the southern edge of the village of Llanaelhaearn, Gwynedd. It is bounded by properties that front onto the A499 to the east, a footpath and a children's play area to the north and northwest, and fields of rough grazing land to the south and west (Figure 01).
HER	Gwynedd Archaeological Trust HER
District	Gwynedd
Parish	Plwyf Beuno Sant, Uwch Gwyrfai
Topography	The survey area is relatively low lying and slopes down gently from west to east, the higher western side sits at a height of approximately 141m AOD and the ground drops to 140 m AOD to the east. It is bounded to the east by a water-filled ditch and to the north, west and south by post and wire fences. Two overgrown drainage / field boundary ditches cross the survey area from west to east, dividing it into three land parcels.
Current land use	The northernmost land parcel consists of overgrown former pasture with occasional self-seeded shrubs and trees. The central part of the survey area between the two drainage ditches was also overgrown, but the vegetation there has recently been cleared. The boggy southern part of the study area is overgrown and waterlogged. A metal gate providing access from the pasture land to the west is located in the southwestern corner of the central land parcel. Four beehives set within a small rectangular post and wire enclosure are situated in the northwestern corner of the central land parcel.
Geology	Solid: Nant Ffrancon Subgroup - Siltstone. Sedimentary bedrock formed between 477.7 and 449 million years ago during the Ordovician period (BGS 2022).

	Superficial: Till, Devensian - Diamicton. Sedimentary superficial deposits formed between 116 and 11.8 thousand years ago during the Quaternary period (BGS 2022).
Soils	Slowly permeable wet very acid upland soils with a peaty surface (Soilscapes 2022).
Survey methods	Magnetometer survey (fluxgate gradiometer)
Study area	0.54 ha

1.2 Geophysical survey aims and objectives

The aims and objectives of the geophysical survey are to:

- understand the archaeological potential of the development site and allow for a better-informed planning recommendation through the application of a geophysical survey, supported by sufficient desk-based research to aid interpretation of any archaeological evidence encountered, and to provide context for the site.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The proposed new woodland with associated amenities at Maes Glas, Llanaelhaearn is located to the immediate south of the centre of the historic village. While there are no known archaeological sites or upstanding remains within the site boundary there is a concentration of archaeological features associated with St. Aelhaearn's, Llanaelhaearn Parish Church (PRN 6937; Grade II* Listed Building LB4293) along with a scattering of other known archaeological sites within the local vicinity (Figure 02). The church is approximately 150m to the northwest of the survey area. The building that currently occupies the site has a 12th century nave, with a 14th century window and door, as well as a 15th century screen. It was extended and extensively restored in 1892. The church is dedicated to St. Aelhaearn and was founded during the Early Medieval period (410 – 1100 AD), as supported by the presence of four inscribed stones (PRNs 1563, 1564, 1565 & 1568) and an upright stone (PRN 1566) that date from this era.

There are 12 historic assets located within the search area recorded on the Gwynedd HER (Figure 02):

PRN	Name	Type	Location (NGR)
1563	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38684482
1564	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38714481
1565	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38694481
1566	Upright Stone, Llanaelhaearn Church	Early Medieval Stone Setting	SH38684481
1567	Incised Stone, Llanaelhaearn Church	Unknown Incised Stone	SH38674486
1568	Cross-incised Stone, Llanaelhaearn Churchyard Wall	Early Medieval Inscribed Stone	SH38724480
2232	Ffynnon Aelhaearn, Holy Well, Llanaelhaern	Unknown Holy Well	SH38424462
6937	St. Aelhaearn's, Llanaelhaearn Parish Church, Llanaelhaearn	Medieval Church / Post-medieval Church	SH38704481

PRN	Name	Type	Location (NGR)
12692	Telephone Box, Rhyd y Berw, Llanaelhaearn	Modern Telephone Box	SH3879844734
33358	Min y Ceiri, Llanaelhaearn	Modern House	SH3823344558
36321	Churchyard Extension, Llanaelhaearn	Modern Churchyard	SH3871144926
62493	Llanaelhaearn, Conservation Area	Multiperiod Landscape	SH3871544792

The proposed development is set within the designated Registered Historic Landscape – Llyn Ac Ynys Enlli (HLW [Gw] 8). The settlement pattern of the surrounding landscape is predominately one of dispersed small settlements. The description of the registered historic landscape makes reference to the extensive occupation of the Llyn peninsula throughout the prehistoric and historic periods.

2.1 Historic Mapping

The First Edition Caernarvonshire County Series 1-inch to 25-mile map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1889, Second Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1900 and Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1917 to 1918 were briefly examined (Figures 03 – 05). There is little variation between the OS Maps in the extent or development of the village, with no encroachment on the fields that make up the proposed development. The historic maps show the sourrounding buildings and field boundaries in the vicinity of the development site are broadly comparable with the existing layout. The main differences being: the thin strip to the west of the A499 has been developed during the course of the 20th century; modern housing has been constructed to the northwest of the development area; and modern post and wire fencing has been erected to mark the western edge of the development site. The historic maps do not indicate earlier activity.

3 METHODOLOGY

3.1 Technical detail

The survey was carried out in parallel traverses within a series of 20x20m grids that covered the accessible parts of the proposed development site (Figure 06). The survey was conducted using a Barrington Grad 601-2 dual fluxgate gradiometer and carried out at standard resolution with a 1.0m traverse interval and 0.25m sample interval. The grids were tied into the Ordnance Survey National Grid using a Trimble R8S high-precision GPS.

3.2 Instrumentation

The Bartington Grad 601-2 is a handheld dual fluxgate gradiometer which uses a pair of Grad-01-100 sensors. These are high stability fluxgate gradient sensors with a 1.0m separation between the sensing elements, giving a strong response to deeper anomalies. Each sensor consists of two vertically aligned fluxgates set 1000mm apart. Their cores are driven in and out of magnetic saturation by a 1,000Hz alternating current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them producing an electrical pulse proportional to the field strength in a sensor coil. The high frequency of the detection cycle produces what is in effect a continuous output. The magnetic variations are measured in nano Teslas (nT). The earth's magnetic field strength is about 48,000 nT; typical archaeological features produce readings of below 15nT although burnt features and iron objects can result in changes of several hundred nT. The machine is capable of detecting changes as low as 0.1nT and anomalies down to a depth of approximately one meter.

The instrument detects variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetized iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil, therefore contain greater amounts of iron and can, therefore, be detected with the gradiometer. This is a simplified description as there are other processes and materials which can produce detectable anomalies. The most obvious is the presence of pieces of iron in the soil or immediate environs which usually produce very high readings and can mask the relatively weak readings produced by variations in the soil. Strong readings are also produced by archaeological features such as hearths or kilns as fired clay acquires a permanent thermo-remnant magnetic field upon cooling. This material can also get spread into the soil leading to a more generalized magnetic enhancement around settlement sites.

Not all surveys can produce good results as results can be masked by large magnetic variations in the bedrock or soil or high levels of natural background “noise” (interference consisting of random signals produced by material within the soil). In some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features.

3.3 Data collection

The gradiometer includes an onboard data logger. Readings are taken along parallel traverses of one axis of a 20m x 20m grid. The traverse interval is 1.0 m. Readings are logged at intervals of 0.25m along each traverse. Marked guide ropes are used to ensure high positional accuracy during the survey.

3.4 Data processing

The data collected in each 20m x 20m grid is transferred from the data-logger to a personal computer where it is compiled and processed using TerraSurveyor v.3.0.33.10 software. Additional analysis of the data is carried out using MagPick v3.25.

The numeric data are converted to a greyscale plot where data values are represented by modulation of the intensity of a greyscale within a rectangular area corresponding to the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed. X-Y trace plots of the collected data are also used to aid interpretation.

The Bartington Grad 601-2 captures raw data in the range of +/- 3000 nT. When raw data is presented in greyscale format all but the extreme high or low readings are rendered in the central range of the greyscale and therefore not visible against the background. The data is minimally processed by clipping as archaeological features tend to produce readings within the +/-15nt range.

Corrections may also be made to the data to compensate for instrument drift and other data collection inconsistencies. These corrections may include:

- de-striping using *zero mean traverse* which sets the background mean of each traverse within each grid to zero, removing striping effects and edge discontinuities;
- de-staggering in order to correct for slight differences in the speed of walking on forward and reverse traverses;

- de-spiking to remove high or low readings caused by stray pieces of iron, fences, etc. in order to reduce background magnetic noise;
- the application of a high pass filter to remove low frequency, large scale spatial detail for example a slowly changing geological background;
- the application of a low pass filter to remove high frequency, small scale spatial detail in order to smooth data or to enhance larger weak anomalies; and
- interpolation to produce a smoothed grayscale plot with more but smaller pixels in order to aid clarity.

3.5 Presentation of results and interpretation

The results of the survey are presented as a minimally processed greyscale plot (raw data clipped to +/- 10nT) and a processed greyscale plot if further processing or enhancement has been performed. X-Y trace plots of the collected data may also be included if they are necessary to support the interpretation of specific anomalies visible on the greyscale plots.

Magnetic anomalies are identified, interpreted and plotted onto an interpretative plot with reference numbers linking the anomalies to descriptions in the written report. When interpreting the results, several factors are taken into consideration, including the shape, scale and intensity of the anomaly and the local conditions at the site (geology, pedology, topography, etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as Abbey Wall or Roman Road. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: *Probable*, or *Possible* Archaeology. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible*.

3.6 Interpretation categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, Roman Fort, Wall, etc.) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

Archaeology / Probable Archaeology	*This term is used when the form, nature and pattern of* the responses are clearly or very probably archaeological and/or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
Possible Archaeology	These anomalies exhibit either weak signal strength and/or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
Industrial / Burnt-Fired	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metalworking areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
Former Field Boundary (probable and possible)	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. *Possible* denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
Ridge and Furrow	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity
Agriculture (ploughing)	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
Land Drain	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
Natural	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
Magnetic Disturbance	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present.

Service	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. PVC) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
Ferrous	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above-ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
Uncertain Origin	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning give little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of *Possible Archaeology / Natural* or (in the case of linear responses) *Possible Archaeology / Agriculture*; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: low and poorly defined).

4 RESULTS

The geophysical survey was conducted in dry sunny conditions on Wednesday 31st August 2022. Unfortunately, not all of the proposed development area was accessible to the survey. The northern end of the site consists of rough, overgrown ground; the southern half is overgrown and waterlogged. The ground conditions made it impossible to conduct the survey in these areas. The survey was limited to the recently cleared ground at the centre of the area, though four beehives in the northwestern corner of the central plot further restricted its coverage here (Figure 06). In total, 0.1 ha (19%) of the 0.54 ha development plot was surveyed.

The results of the survey are presented as a minimally processed greyscale plot (raw data clipped to +/- 10nT; Figure 07), a processed greyscale plot (raw data clipped to +/- 10nT and de-striped; Figure 08) and an interpretative plan (Figure 09). Specific anomalies have been given numerical labels which appear in the text below, as well as on the interpretative plan (Figure 09).

4.1 Archaeology / Probable Archaeology

No definitive archaeological responses have been identified in the results

4.2 Uncertain Origin

Two anomalies of uncertain origin have been identified within the survey area (Figure 09). Both [1] and [2] are ill-defined pit-like weak-moderate negative responses on the western side of the survey area. They lack the defined morphology of anomalies that would normally be interpreted as being of archaeological origin and are isolated and form no obvious pattern. These anomalies probably reflect variations in the pedology or underlying geology, or could be due to natural processes (tree throws) or modern agricultural activity.

4.3 Ferrous

High magnitude ferrous responses close to the survey area's western, southern and eastern boundaries are due to adjacent metal fences, gates and ferrous material that has accumulated against the boundaries.

Smaller-scale ferrous anomalies consisting of consists of a single high magnitude positive anomaly with an associated negative response ("iron spikes") are present throughout the

data, and particularly in the eastern part of the survey area. They are characteristic of small pieces of ferrous debris (or brick/tile) in the topsoil and are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretative plot (Figure 09).

5 DATA APPRAISAL AND CONFIDENCE ASSESSMENT

English Heritage guidelines (English Heritage, 2008, Table 4) state that magnetometer survey can be recommended over sedimentary solid geology, although a wide range of magnetic susceptibility in the parent rock can result in very variable background responses. Magnetic response is generally poor on glacial till drift geologies. The results of this magnetometer survey did not indicate the presence of probable archaeological features, however evidence for two anomalies of uncertain origin is present in the data. Consequently, the technique is likely to have detected any substantial archaeological features, if present. It is still however possible that archaeological features remain undetected due to the nature of the local geology.

6 CONCLUSIONS

The magnetometer survey of the central portion of the proposed development plot at Maes Glas, Llanaelhaearn, has not revealed any probable archaeological anomalies. Two anomalies of uncertain origin may represent pit-like features, or may be caused by magnetic variations in the soil or underlying geology, natural processes (tree throws), or could be due to modern agricultural activities.

7 SOURCES CONSULTED

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The Welsh Archaeological Trusts, 2018, *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1)

FIGURES

Figure 01: Location of the proposed development

Development area footprint

Co-ordinate System OSGB 1936 / British National Grid EPSG:27700

N

0 50 100
metres

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SITE: Maes Glas, Llanaelhaearn

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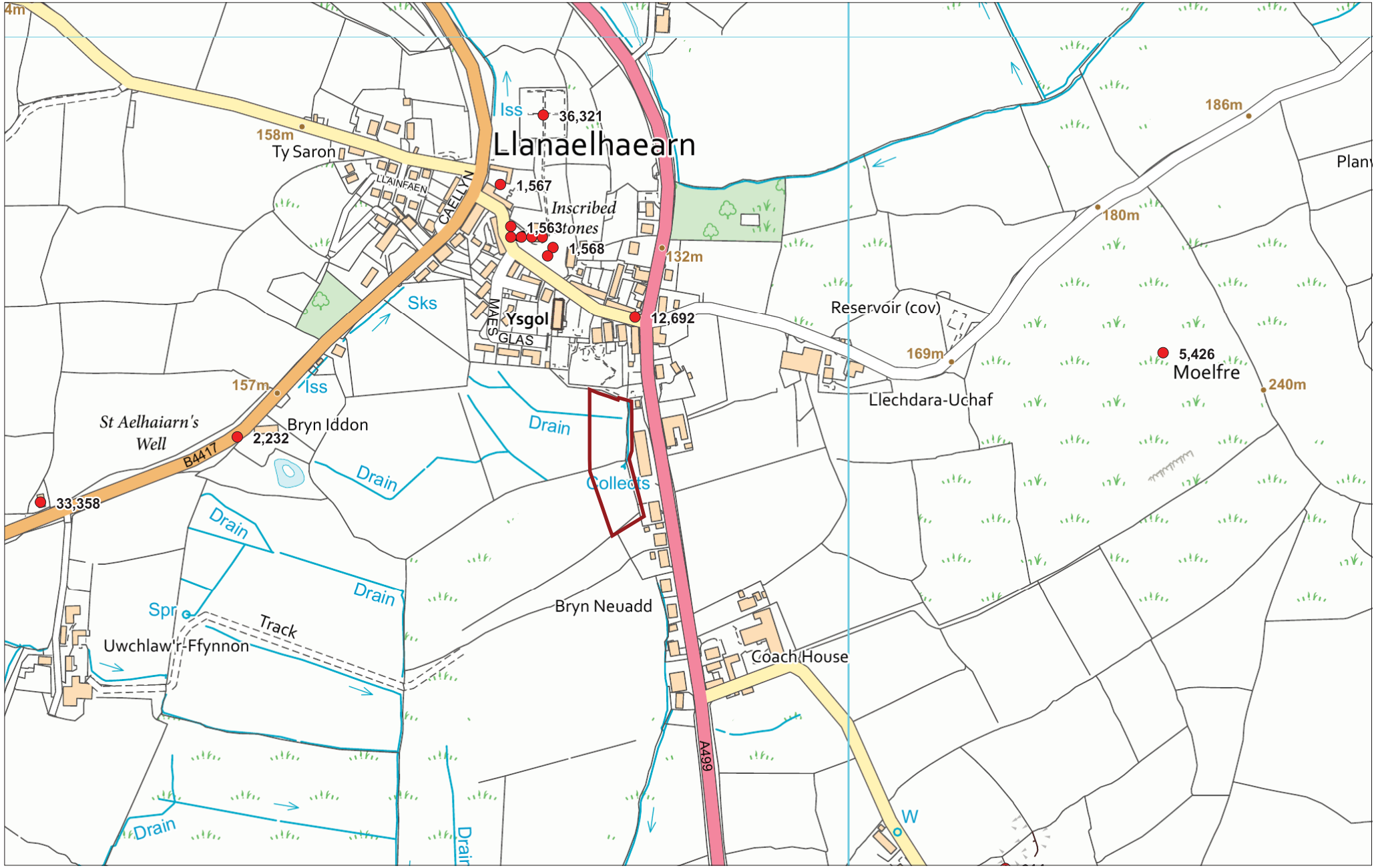

Figure 02: Location of known assets. Site boundary highligthed in red. Based on Ordnance Survey 1:10000 County Series Map Sheet SH34SE. Scale: 1 to 5000@A4. © Crown copyright. All rights reserved. License number AL100020895

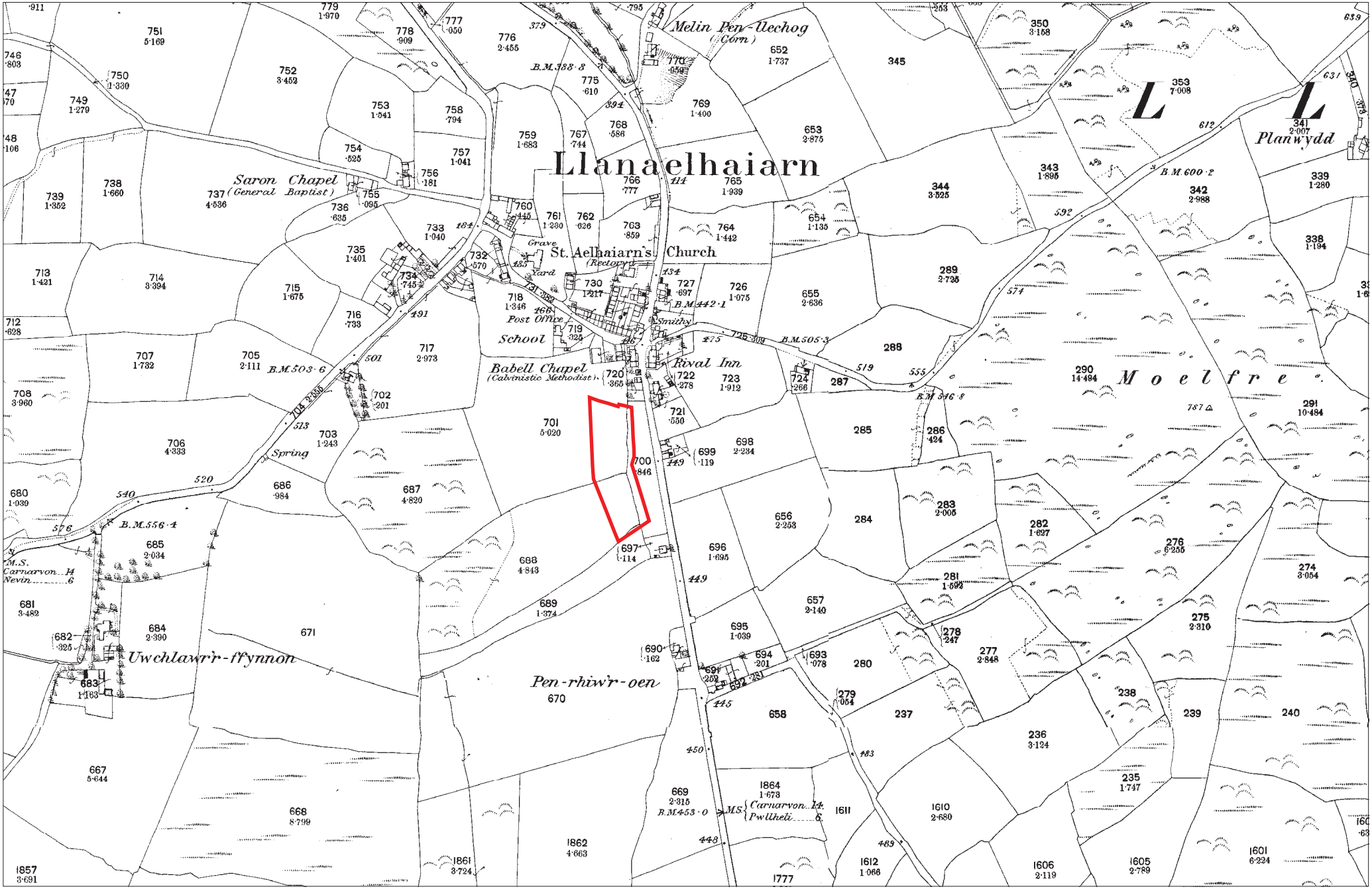

Figure 03: Reproduction of the First Edition 25 Inch to 1 Mile Ordnance Survey Caernarvonshire County Series Map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1889. Site boundary highlighted in red. Scale: 1 to 5000@A4.

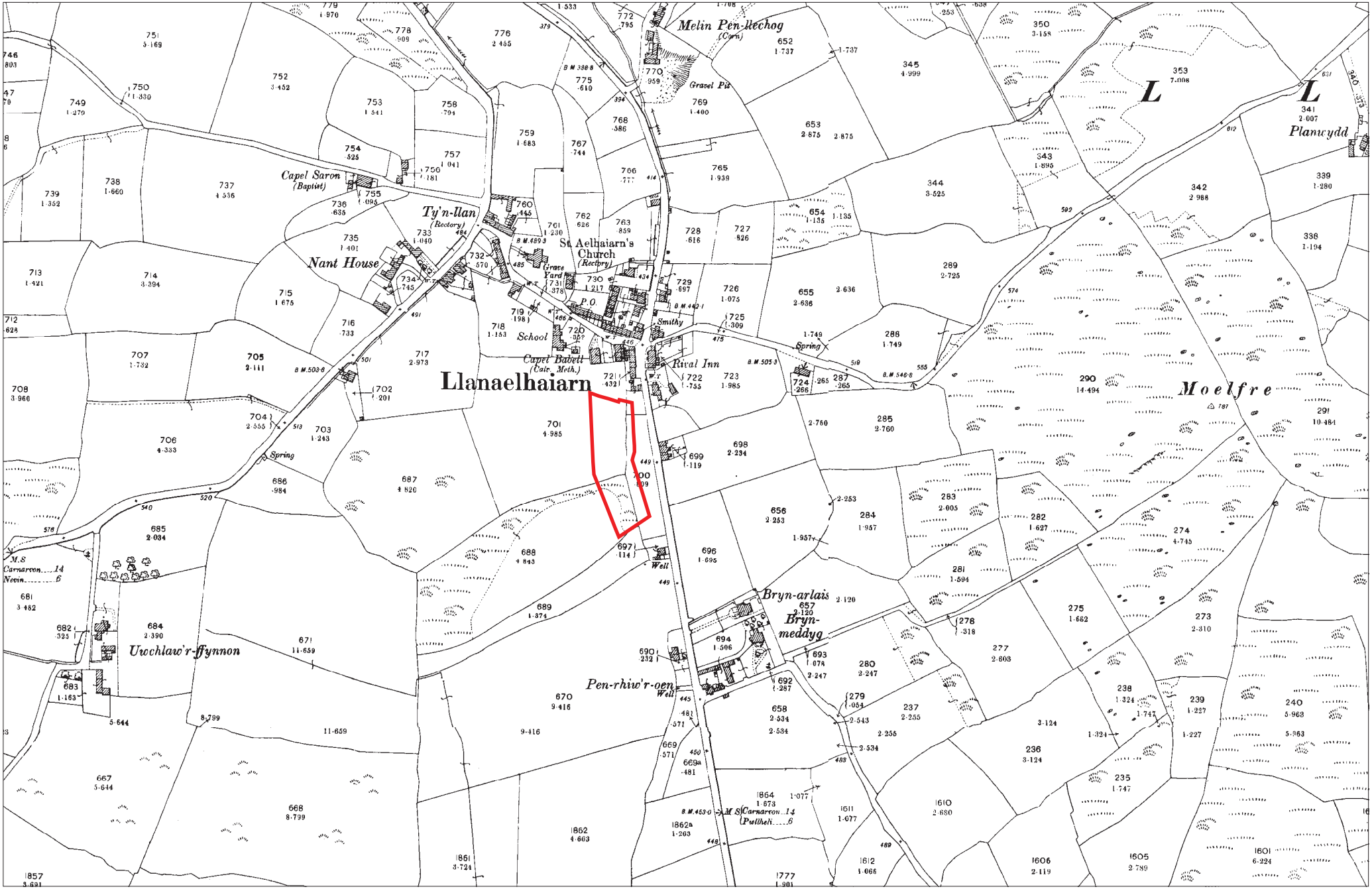

Figure 04: Reproduction of the Second Edition 25 Inch to 1 Mile Ordnance Survey Caernarvonshire County Series Map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1900. Site boundary highlighted in red. Scale: 1 to 5000@A4.

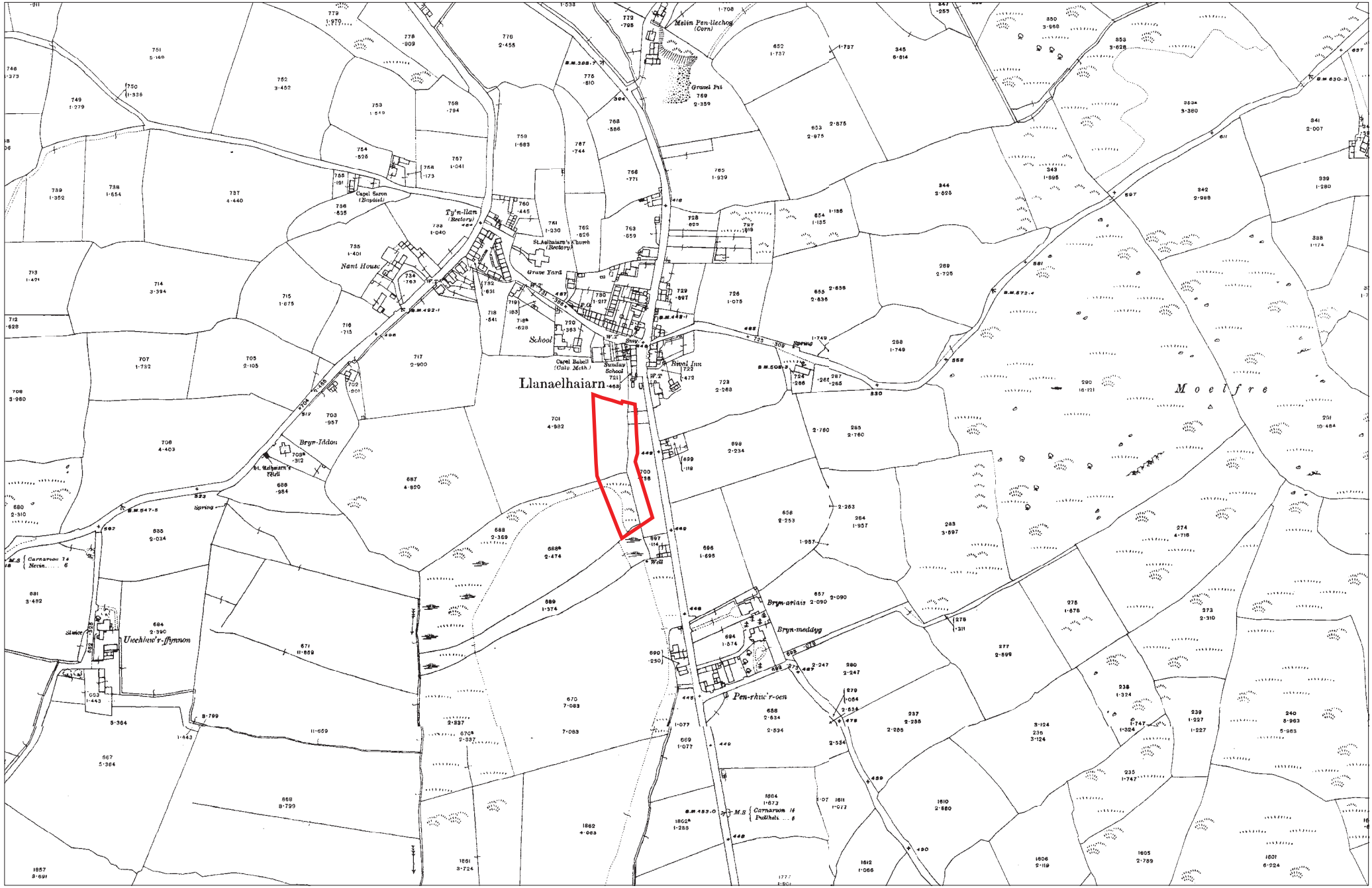

Figure 05: Reproduction of the Third Edition 25 Inch to 1 Mile Ordnance Survey Caernarvonshire County Series Map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1917 to 1918. Site boundary highlighted in red. Scale: 1 to 5000@A4.

238,700

238,800

344,600

Drain

Collects

Figure 06: Location of survey grids

Survey area showing 20m grid

Development area footprint

Post and wire fencing

Co-ordinate System OSGB 1936 / British National Grid EPSG:27700

N

0 5 10
metres

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238,700

238,800

344,600

Drain

Collects

Figure 07: Geophysical survey minimally processed greyscale plot (raw data clipped to +/- 10 nT)

Development area footprint

Post and wire fencing

10 nT

0 nT

-10 nT

Co-ordinate System OSGB 1936 / British National Grid EPSG:27700

N

0 5 10

metres

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G2740	G P/07		A

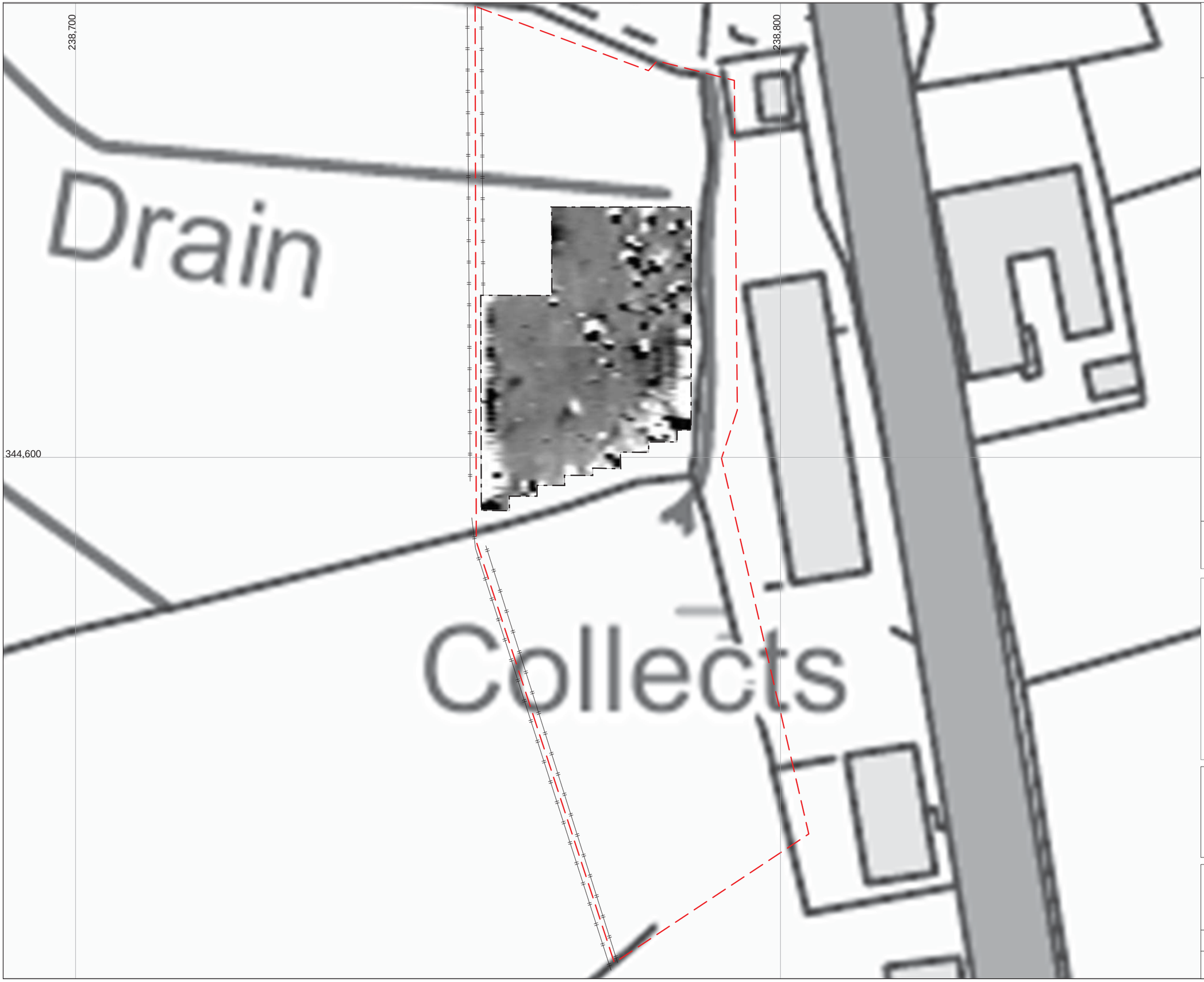

Figure 08: Geophysical survey processed greyscale plot (raw data clipped to +/- 10 nT and de-striped)

Development area footprint

Post and wire fencing

10 nT
0 nT
-10 nT

Co-ordinate System OSGB 1936 / British National Grid EPSG:27700

N

0 5 10
metres

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust
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Craig Beuno,
Ffordd y Garth,
Bangor, Gwynedd
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Ffacs / Fax: +44 (0)1248 370925
e-bost / e-mail: gat@heneb.uk

CLIENT: Cwmni Bro Antur Aelhaearn

SITE: Maes Glas, Llanaelhaearn

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:500	01/09/22	NMC	JR
PROJECT NO:	DRAWING NO:		REVISION:
G2740	GP/08		A

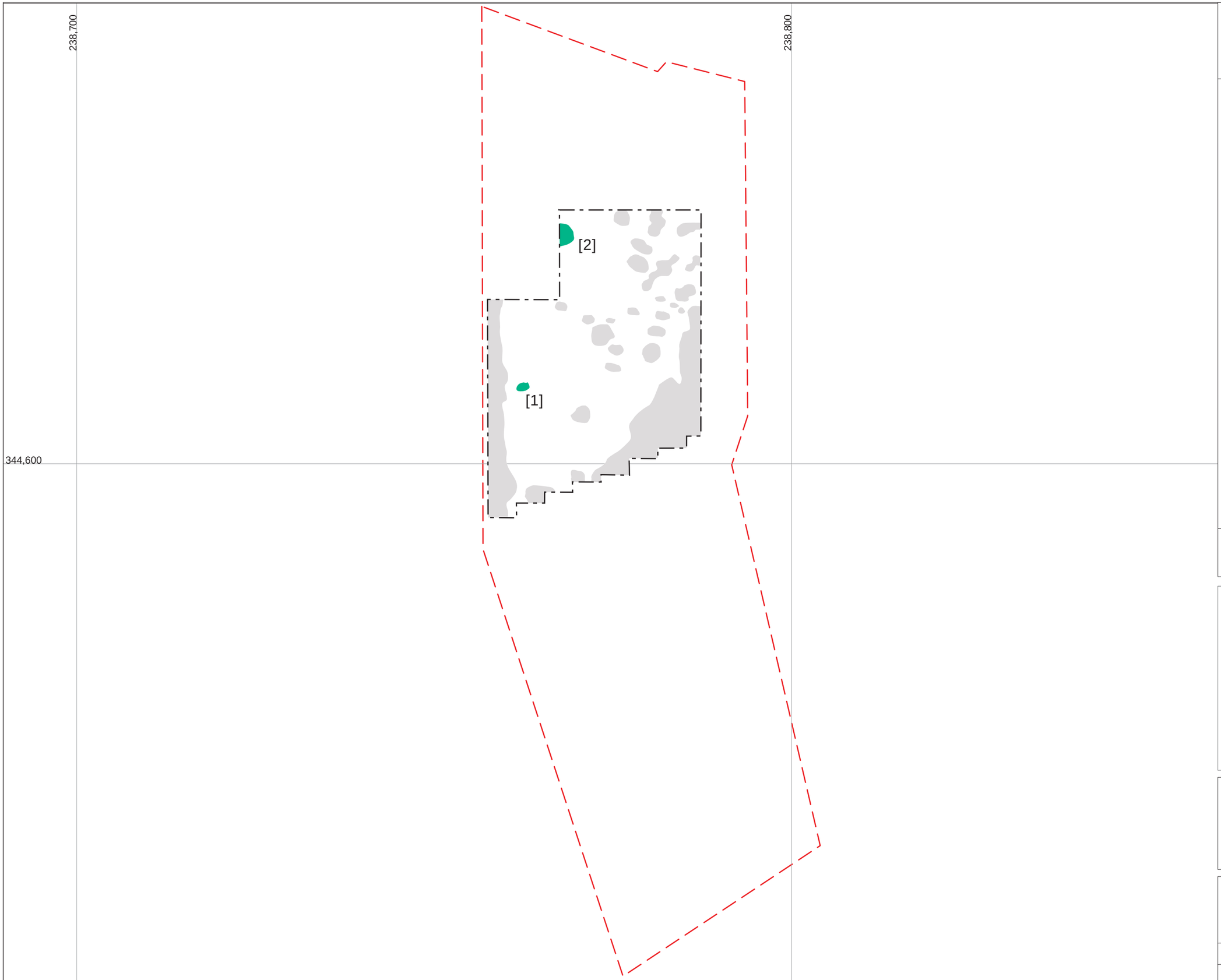

Figure 09: Geophysical survey interpretative plan

Development area footprint

Uncertain

Ferrous

Co-ordinate System OSGB 1936 / British National Grid EPSG:27700

N

0 5 10
metres

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Ffacs / Fax: +44 (0)1248 370925
e-bost / e-mail: gat@heneb.uk

CLIENT: Cwmni Bro Antur Aelhaearn

SITE: Maes Glas, Llanaelhaearn

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:500	01/09/22	NMC	JR
PROJECT NO:	DRAWING NO:		REVISION:
G2740	GP/09		A

APPENDIX I

Gwynedd Archaeological Trust Approved Written Scheme of Investigation

MAES GLAS, LLANAELHAEARN, GWYNEDD (G2740)

WRITTEN SCHEME OF INVESTIGATION FOR EVALUATION (GEOPHYSICAL SURVEY)

Prepared for Cwmni Bro Antur Aelhaearn

August 2022

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	**Printed Name**	**Signature**	**Date**
Originated by	Document Author	Stuart Reilly	Stuart Reilly	10/08/2022
Reviewed by	Document Reviewer	John Roberts		
Approved by	Principal Archaeologist	John Roberts		

Revision History			
Rev No.	**Summary of Changes**	**Ref Section**	**Purpose of Issue**

All GAT staff should sign their copy to confirm the project specification is read and understood and retain a copy of the specification for the duration of their involvement with the project. On completion, the specification should be retained with the project archive:

Name	Signature	Date

MAES GLAS, LLANAELHAEARN, GWYNEDD (G2740)

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL EVALUATION (GEOPHYSICAL SURVEY)

Prepared for *Cwmni Bro Antur Aelhaearn*, August 2022

CONTENTS

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Cwmni Bro Antur Aelhaearn* to undertake an archaeological evaluation (geophysical survey) in advance of a proposed new woodland with associated amenities on land at Maes Glas, Llanaelhaearn, Gwynedd (NGR SH3877544597; post code LL54 5AF; Figure 01). The proposed development areas measures 0.54 hectares and is encompasses marginal ground and rough fields of pasture off the A499 at the southern edge of the village. The evaluation will be undertaken as part of a planning application (ref.: C22/0535/37/LL).

The geophysical survey will be undertaken in September 2022 and will conform to the following guidelines:

- Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) Version 1.1 (The Welsh Archaeological Trusts, 2018);
- Guidelines for digital archives (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015);
- Standard and Guidance for Archaeological Geophysical Survey (Chartered Institute for Archaeologists, 2020).

GAT is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists and a member of the Federation of Archaeological Managers and Employers (FAME).

1.1 Aims & Objectives

The aims and objectives are to:

- understand the archaeological potential of the development site and allow for a better-informed planning recommendation through the application of a geophysical survey. The proposed development is located within the Registered Historic Landscape – Llyn Ac Ynys Enlli (HLW [Gw] 8) and is located to the immediate south of the centre of Llanaelhaearn which retains a medieval core.

1.2 Monitoring Arrangements

The archaeological evaluation will be monitored by the Gwynedd archaeological Planning Service (GAPS); the content of this WSI and all subsequent reporting by GAT must be approved by GAPS prior to final issue. GAPS have stated that the evaluation may be followed by trial trenching to further investigate the sub-surface potential, and the possibility of archaeology within the site. If trial trenching is required, this will be defined in a separate written scheme of investigation further to the completion of the geophysical survey.

1.3 Historic Environment Record

In line with the Gwynedd Historic Environment Record (HER) requirements, the HER will be contacted at the onset of the project to ensure that any data arising is formatted in a manner suitable for accession to the HER and follows the guidance set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018). The HER will be informed of the project start date, location including grid reference, estimated timescale for the work, and further relevant information associated with the project.

The GAT HER Enquiry Number for this project is **GATHER1695** and the Event PRN is **46297**. The GAT HER will also be responsible for supplying Primary Reference Numbers (PRN) for any new assets identified and recorded.

Prior to submission of data to the HER, a bilingual event summary document will be prepared in *Microsoft Word* based on the format defined in section 4.2 of *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The proposed new woodland with associated amenities at Maes Glas, Llanaelhaearn is located to the immediate south of the centre of the historic village. While there are no known archaeological sites or upstanding remains within the site boundary there is a concentration of archaeological features associated with St. Aelhaearn's, Llanaelhaearn Parish Church (PRN 6937) along with a scatter of other known archaeological sites within the local vicinity (Figure 02). The church is approximately 160m to the north of the proposed site. The building that currently occupies the site has a 12th century nave, with 14th century window and door, as well as a 15th century screen. It was extended and extensively restored in 1892. The church is dedicated to St. Aelhaearn and was founded during the Early Medieval period (410 – 1100 AD), as supported by the presence of four inscribed stones (PRNs 1563, 1564, 1565 & 1568) and an upright stone (PRN 1566) that date from this era.

There are 12 archaeological assets located within the search area (Figure 02):

PRN	Name	Type	Location (NGR)
1563	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38684482
1564	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38714481
1565	Inscribed Stone, Llanaelhaearn Church	Early Medieval Inscribed Stone	SH38694481
1566	Upright Stone, Llanaelhaearn Church	Early Medieval Stone Setting	SH38684481
1567	Incised Stone, Llanaelhaearn Church	Unknown Incised Stone	SH38674486

PRN	Name	Type	Location (NGR)
1568	Cross-incised Stone, Llanaelhaearn Churchyard Wall	Early Medieval Inscribed Stone	SH38724480
2232	Ffynnon Aelhaearn, Holy Well, Llanaelhaern	Unknown Holy Well	SH38424462
6937	St. Aelhaearn's, Llanaelhaearn Parish Church, Llanaelhaearn	Medieval Church / Post-medieval Church	SH38704481
12692	Telephone Box, Rhyd y Berw, Llanaelhaearn	Modern Telephone Box	SH3879844734
33358	Min y Ceiri, Llanaelhaearn	Modern House	SH3823344558
36321	Churchyard Extension, Llanaelhaearn	Modern Churchyard	SH3871144926
62493	Llanaelhaearn, Conservation Area	Multiperiod Landscape	SH3871544792

The proposed development is set within the designated Registered Historic Landscape – Llyn Ac Ynys Enlli (HLW [Gw] 8). The description of the registered historic landscape makes reference to the extensive occupation of the Llyn peninsular throughout the prehistoric and historic periods. Dispersed small settlements dominate this landscape.

2.1 Historic Mapping

The First edition Caernarvonshire County Series 1-inch to 25-mile map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1889, Second Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1900 and Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1917 to 1918 were briefly examined (Figures 03 – 05). There is little variation between the OS Maps in the extent

or development of the village, with no encroachment on the fields that make up the proposed development. The historic maps show the field boundaries are broadly comparable with the existing layout. The main differences being the thin strip of land next to the A499 has been developed as has the northern rectangular field that consists part of the site. These areas have been encroached on by modern, later 20th century development due to the expansion of the village. The historic maps do not indicate earlier activity.

3 METHODOLOGY

3.1 Geophysical Survey

3.1.1 Summary

The geophysical survey will be undertaken by GAT and will incorporate the area defined in Figure 01 and will be carried out in a series of 20m grids, which will be tied into the Ordnance Survey grid using a Trimble R8 high precision GPS system. The survey will be conducted as a **magnetometer survey** using a Bartington Grad 601-2 dual fluxgate gradiometer with a 1.0m traverse interval and a 0.25m sample interval. The survey is scheduled for September 2022.

3.1.2 Instrumentation

The Bartington Grad 601-2 dual fluxgate gradiometer uses a pair of Grad-01-100 sensors. These are high stability fluxgate gradient sensors with a 1.0m separation between the sensing elements, giving a strong response to deeper anomalies. The instrument detects variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetized iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil, therefore contain greater amounts of iron and can therefore be detected with the gradiometer. This is a simplified description as there are other processes and materials which can produce detectable anomalies. The most obvious is the presence of pieces of iron in the soil or immediate environs which usually produce very high readings and can mask the relatively weak readings produced by variations in the soil. Strong readings are also produced by archaeological features such as hearths or kilns as fired clay acquires a permanent thermo-remnant magnetic field upon cooling. This material can also get spread into the soil leading to a more generalized magnetic enhancement around settlement sites. Not all surveys can produce good results as results can be masked by large magnetic variations in the bedrock or soil or high levels of natural background "noise" (interference consisting of random signals produced by material with in the soil). In some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features. The Bartington Grad 601 is a hand held instrument and readings can be taken automatically as the operator walks at a constant speed along a series of fixed length traverses. The sensor consists of two vertically aligned fluxgates set 500mm apart. Their cores are driven in and out of magnetic saturation by a 1,000Hz alternating current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them producing an electrical pulse proportional to the field strength in a sensor coil. The high frequency of the detection cycle produces what is in effect a continuous output. The

gradiometer can detect anomalies down to a depth of approximately one meter. The magnetic variations are measured in nanoTeslas (nT). The earth's magnetic field strength is about 48,000 nT; typical archaeological features produce readings of below 15nT although burnt features and iron objects can result in changes of several hundred nT. The machine is capable of detecting changes as low as 0.1nT.

3.1.3 Data Collection

The gradiometer includes an on-board data-logger. Readings are taken along parallel traverses of one axis of a 20m x 20m grid. The traverse interval is 1.0m and readings are logged at intervals of 0.25m along each traverse. Marked guide ropes are used to ensure high positional accuracy during the high resolution survey. The data is transferred from the data-logger to a computer where it is compiled and processed using ArchaeoSurveyor2 software. The data is presented as a grey scale plot where data values are represented by modulation of the intensity of a grey scale within a rectangular area corresponding to the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed. This is supplemented by an interpretation diagram showing the main feature of the survey with reference numbers linking the anomalies to descriptions in the written report. It should be noted that the interpretation is based on the examination of the shape, scale and intensity of the anomaly and comparison to features found in previous surveys and excavations etc. In some cases the shape of an anomaly is sufficient to allow a definite interpretation e.g. a Roman fort. In other cases all that can be provided is the most likely interpretation. The survey will often detect several overlying phases of archaeological remains and it is not usually possible to distinguish between them. Weak and poorly defined anomalies are most 4 susceptible to misinterpretation due to the propensity of the human brain to define shapes and patterns in random background "noise". An assessment of the confidence of the interpretation is given in the text.

3.1.4 Data Processing

The data collected in each 20m x 20m grid is transferred from the data-logger to a personal computer where it is compiled and processed using TerraSurveyor v.3.0.33.10 software. Additional analysis of the data is carried out using MagPick v3.25.

The numeric data are converted to a greyscale plot where data values are represented by modulation of the intensity of a greyscale within a rectangular area corresponding to the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed. X-Y trace plots of the collected data are also used to aid interpretation.

The Bartington Grad 601-2 captures raw data in the range of +/- 3000 nT. When raw data is presented in greyscale format all but the extreme high or low readings are rendered in the central range of the greyscale and therefore not visible against the background. The data is minimally processed by clipping as archaeological features tend to produce readings within the +/-15nt range.

Corrections may also be made to the data to compensate for instrument drift and other data collection inconsistencies. These corrections may include:

- de-striping using zero mean traverse which sets the background mean of each traverse within each grid to zero, removing striping effects and edge discontinuities;
- de-staggering in order to correct for slight differences in the speed of walking on forward and reverse traverses;
- de-spiking to remove high or low readings caused by stray pieces of iron, fences, etc. in order to reduce background magnetic noise;
- the application of a high pass filter to remove low frequency, large scale spatial detail for example a slowly changing geological background;
- the application of a low pass filter to remove high frequency, small scale spatial detail in order to smooth data or to enhance larger weak anomalies; and
- interpolation to produce a smoothed grayscale plot with more but smaller pixels in order to aid clarity.

3.1.5 Presentation of Results & Interpretation

The results of the survey are presented as a minimally processed greyscale plot (raw data clipped to +/- 15nT) and a processed greyscale plot if further processing or enhancement has been performed. X-Y trace plots of the collected data may also be included if they are necessary to support the interpretation of specific anomalies visible on the greyscale plots.

Magnetic anomalies are identified, interpreted and plotted onto an interpretative plot with reference numbers linking the anomalies to descriptions within the written report. When interpreting the results, several factors are taken into consideration, including the shape, scale and intensity of the anomaly and the local conditions at the site (geology, pedology, topography, etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as Abbey Wall or Roman Road. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: Probable, or Possible Archaeology. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible.*

3.2 Data Processing and Report Compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

1. Front cover;
2. Inner cover;
3. Figures and Plates List;
4. Non-technical summary (Welsh/English);
5. Introduction;
6. Methodology;
    i. Geophysical survey;
7. Results;
    a. Geophysical survey
    b. Gazetteer of features;
8. Conclusions and recommendations;
    a. Conclusion;
    b. Table of sites and recommendations;
9. Acknowledgements;
10. Bibliography;
    a. Primary sources;
    b. Secondary sources;
11. Figures; inc.:
    - location plan;
    - historic mapping;
    - location plan with identified features;
    - grey scale plot;
    - anomaly identification and interpretation;
12. Appendix I (approved written scheme of investigation);

    Back cover.

3.3 Data Management Plan

The physical archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data will be confirmed in an updated Selection Strategy document appended to the final report.

3.4 Dissemination

On final approval, the following dissemination and archiving of the report and digital dataset will apply:

- A digital report(s) will be provided to the client and GAPS (draft report then final report);
- A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
    - Photographic metadata (Microsoft Access);
    - Photographic archive (TIFF format);
    - Project Information form (Excel);
    - File Information form (Excel) – Microsoft Word report text final;
    - File Information form (Excel) – Photographic metadata (general);
    - File Information form (Excel) – Adobe PDF report final; and
    - File Information form (Excel) - Photographic metadata (detail).

3.5 Selection Strategy

As defined in *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020) section 3.3.1, a project specific selection strategy and data management plan should be prepared. In support of this, the Chartered Institute for Archaeologist (CIfA), have stated that it is "widely accepted that not all the records and materials collected or created during the course of an Archaeological Project require preservation in perpetuity. These records and materials constitute the Working Project Archive which will be subject to Selection, in order to establish what will be retained for long-term curation". The aim of selection is to ensure that all the elements retained from the Working Project Archive for inclusion in the Archaeological Archive are appropriate to establish the significance of the project and support "future research, outreach, engagement, display and learning activities". Selection should be "focused on selecting what is to be retained to support these future needs, rather than deciding what can be dispersed" and can be qualified by a selection strategy, which details the project-specific selection process, agreed by all parties (including GAPS, client and/or landowner), which will be applied to a Working Project Archive prior to its transfer into curatorial care as the Archaeological Archive.

The selection strategy will be is summarised in Appendix I and will be confirmed in the mitigation report; the strategy will take into account:

- The aims and objectives of the project.
- The brief and/or Written Scheme of Investigation (WSI)).
- The Collecting Institution's collection policy and/or deposition guidelines.
- Local and regional research frameworks.
- Relevant thematic or period specific research frameworks.
- The project's Data Management Plan (DMP).
- Internal recording and reporting policies.
- Material-specific guidance documents.

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section and will be completed by a team led by a Senior Archaeologist, who will also have responsibility for interpreting and presently the survey and preparing the report. The project manager will be responsible for reviewing and approving the report prior to submission.

5 INSURANCE

5.1 Public/Products Liability

Limit of Indemnity- £5,000,000 any one event in respect of Public Liability

INSURER Ecclesiastical Insurance Office Plc.

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/UN/000375

EXPIRY DATE 21/06/2023

5.2 Employers Liability

Limit of Indemnity- £10,000,000 any one occurrence.

The cover has been issued on the insurers standard policy form and is subject to their usual terms and conditions. A copy of the policy wording is available on request.

INSURER Ecclesiastical Insurance Office Plc.

POLICY TYPE Employers Liability

POLICY NUMBER 24765101 CHC / UN/000375

EXPIRY DATE 21/06/2023

5.3 Professional Indemnity

Limit of Indemnity- £5,000,000 in respect of each and every claim

INSURER Hiscox Insurance Company Limited

POLICY TYPE Professional Indemnity

POLICY NUMBER PL-PSC10002389775/00

EXPIRY DATE 22/07/2023

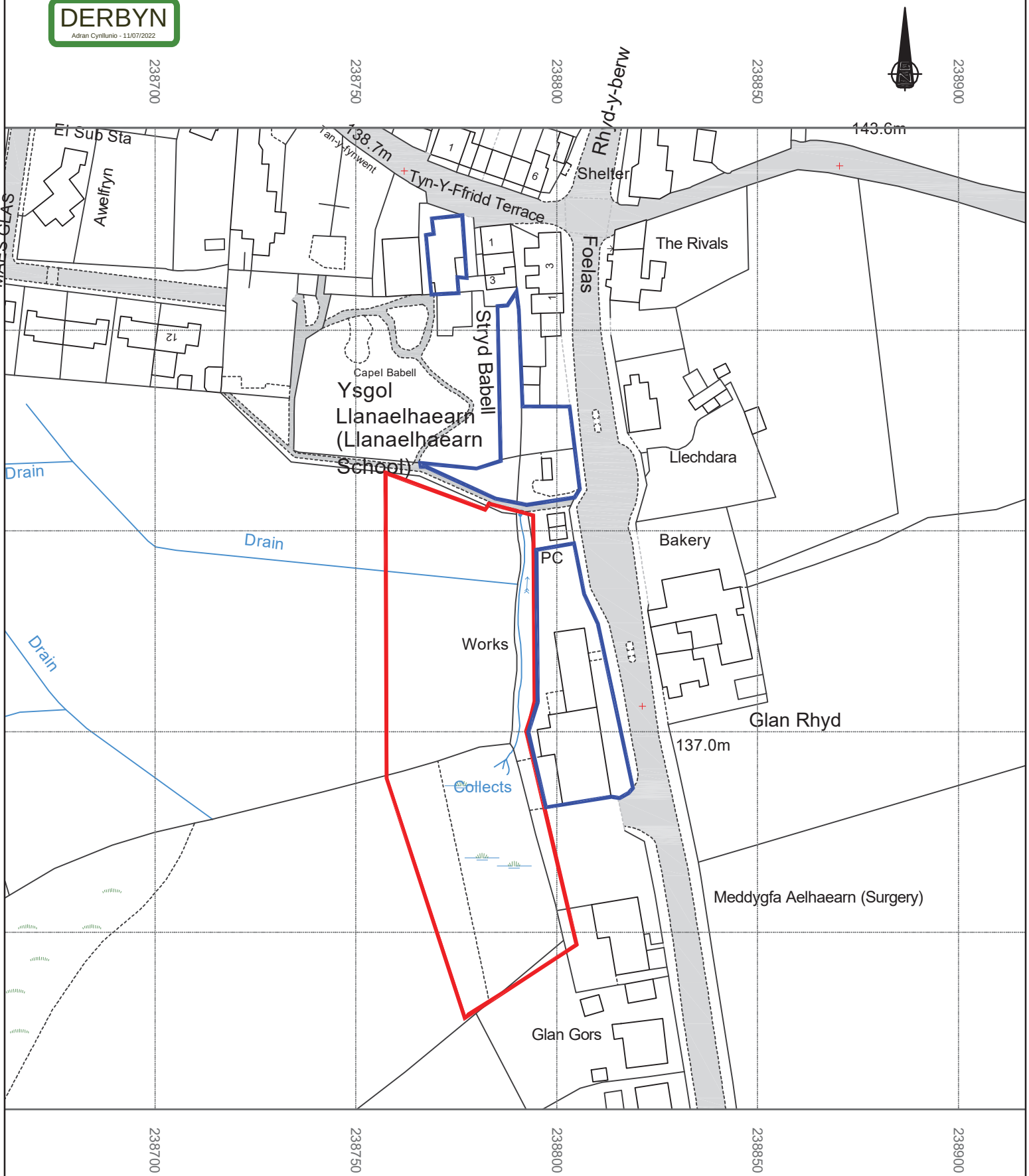
6 SOURCES CONSULTED

1. English Heritage, 1991, Management of Archaeological Projects.
2. English Heritage, 2015, Management of Research Projects in the Historic Environment (MoRPHE).
3. *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1).
4. Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*.
5. *Standard and Guidance for Archaeological Geophysical Survey* (Chartered Institute for Archaeologists, 2020).

FIGURE 01

Reproduction of NRG Engineering Services Ltd. Location Plan. Scale 1 to 1250@A4

DERBYN
Adran Cynllunio - 11/07/2022



Point Features (Where Applicable)

Water Meter, Gully, Fire Hydrant, Rodding Eye, Earth Rod, Stop Valve, Gas Valve, Air Valve, Electricity Cabinet, Underground Service Marker Post, Telecom Cover, Electric Cover, Inspection Cover (Circular), Inspection Cover (Square), Inspection Cover (Rectangular), Inspection Cover (Triangular), Electricity Pole, Telegraph Pole, Overhead Cable, Stay Wire Anchor, Lamp Post, Litter Bin, Bollard, Seat, Post, Road Sign, Post Box, Reflective Hazard Post, Traffic Light, Telephone Kiosk, Fences, Safety Fence, Gate, Stile, Tree, Tree Bole, Tree Canopy, Undergrowth, Hedge, Permanent Ground Marker, Permanent Benchmark, Spot Height, Invert Level, Water Level

Additional Notes For Fencing

Post and Wire	P/W
Post and Rail	P/R
Chainlink	C/L
Palisade	PAL
Close Boarded	C/B
Concrete Panel	C/P
Safety Fence	S/F

Building And Floorplan Features

Floor Level	FL
Damp Proof Course Level	DPC
Soffit Level	SOF
Eaves Level	EL
Ridge Level	RL

Notes

NRG Engineering Services Ltd
Castle View
Station Road
Llanfairfechan
Conwy
LL33 0AN
Tel: 01248 681240
email: nrg@nrgsurveys.co.uk
www.nrgsurveys.co.uk

CLIENT

PROJECT: Maes Glas, Llanaelhaearn, LL54 5AL

TITLE: Location Plan

SCALE	DETAIL	REV
1250@A4		OSGB36

DRAWN BY	REVISED	DATE
DB	NG	05/07/2022

FIGURE 02

Location of known assets. Site boundary highlighted in red. Based on Ordnance Survey 1:10000 County Series Map Sheet SH34SE. Scale: 1 to 5000@A4. © Crown copyright. All rights reserved. License number AL100020895

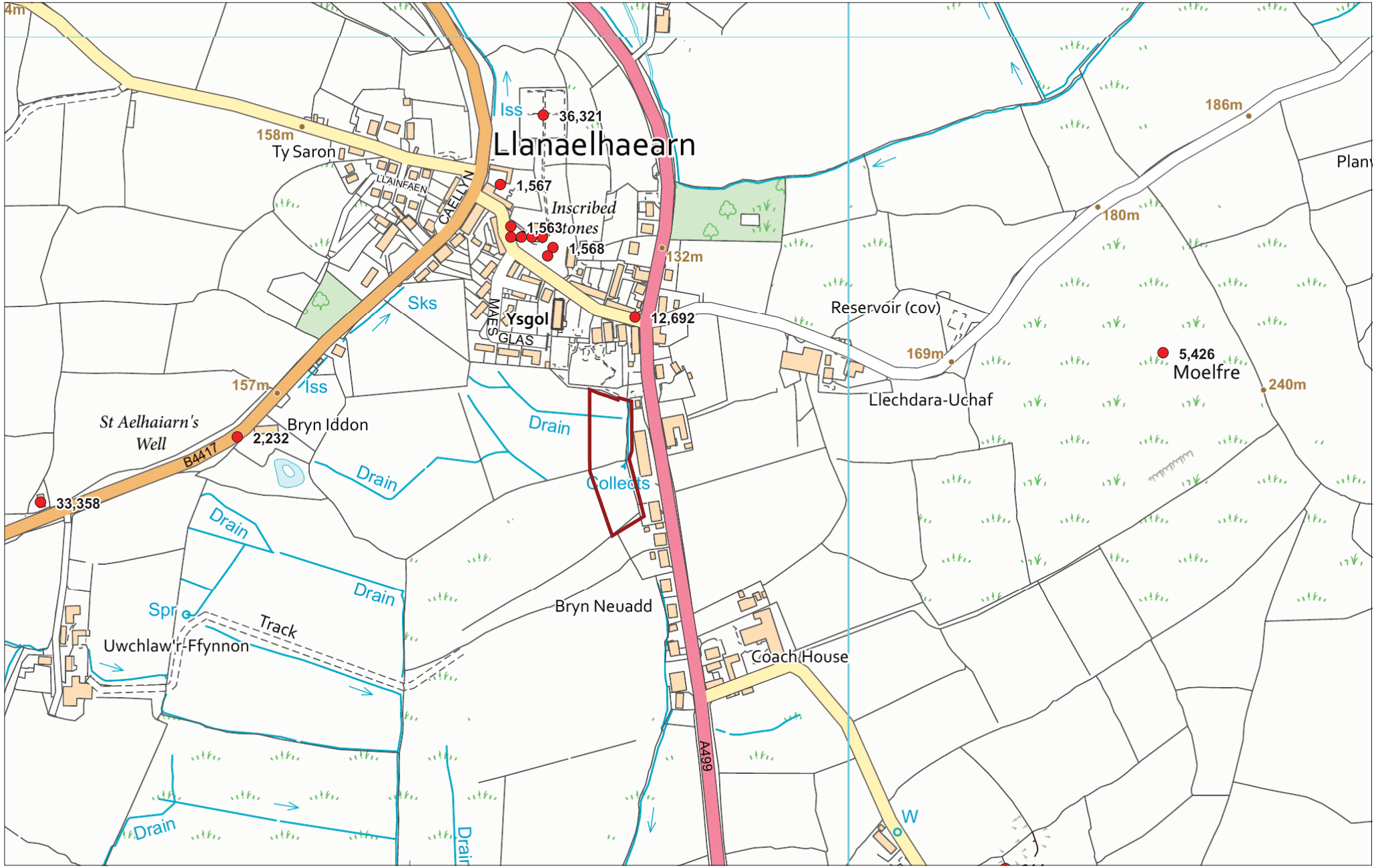


Figure 02: Location of known assets. Site boundary highligthed in red. Based on Ordnance Survey 1:10000 County Series Map Sheet SH34SE. Scale: 1 to 5000@A4. © Crown copyright. All rights reserved. License number AL100020895

FIGURE 03

Reproduction of the First Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1889. Site boundary highlighted in red. Scale: 1 to 5000@A4.

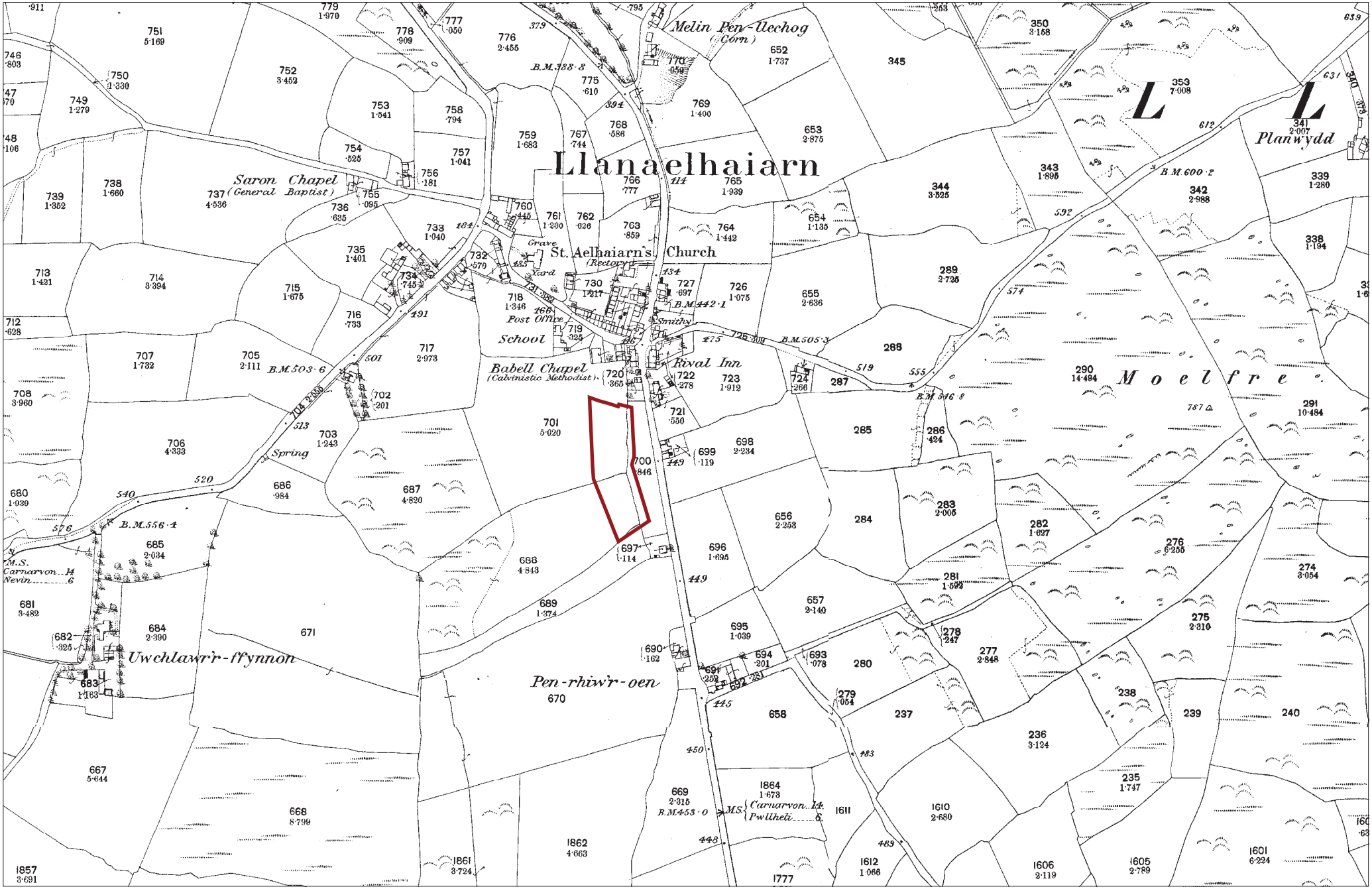


Figure 03: Reproduction of the First Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1889. Site boundary highlighted in red. Scale: 1 to 5000@A4.

FIGURE 04

Reproduction of the Second Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1900. Site boundary highlighted in red. Scale: 1 to 5000@A4.

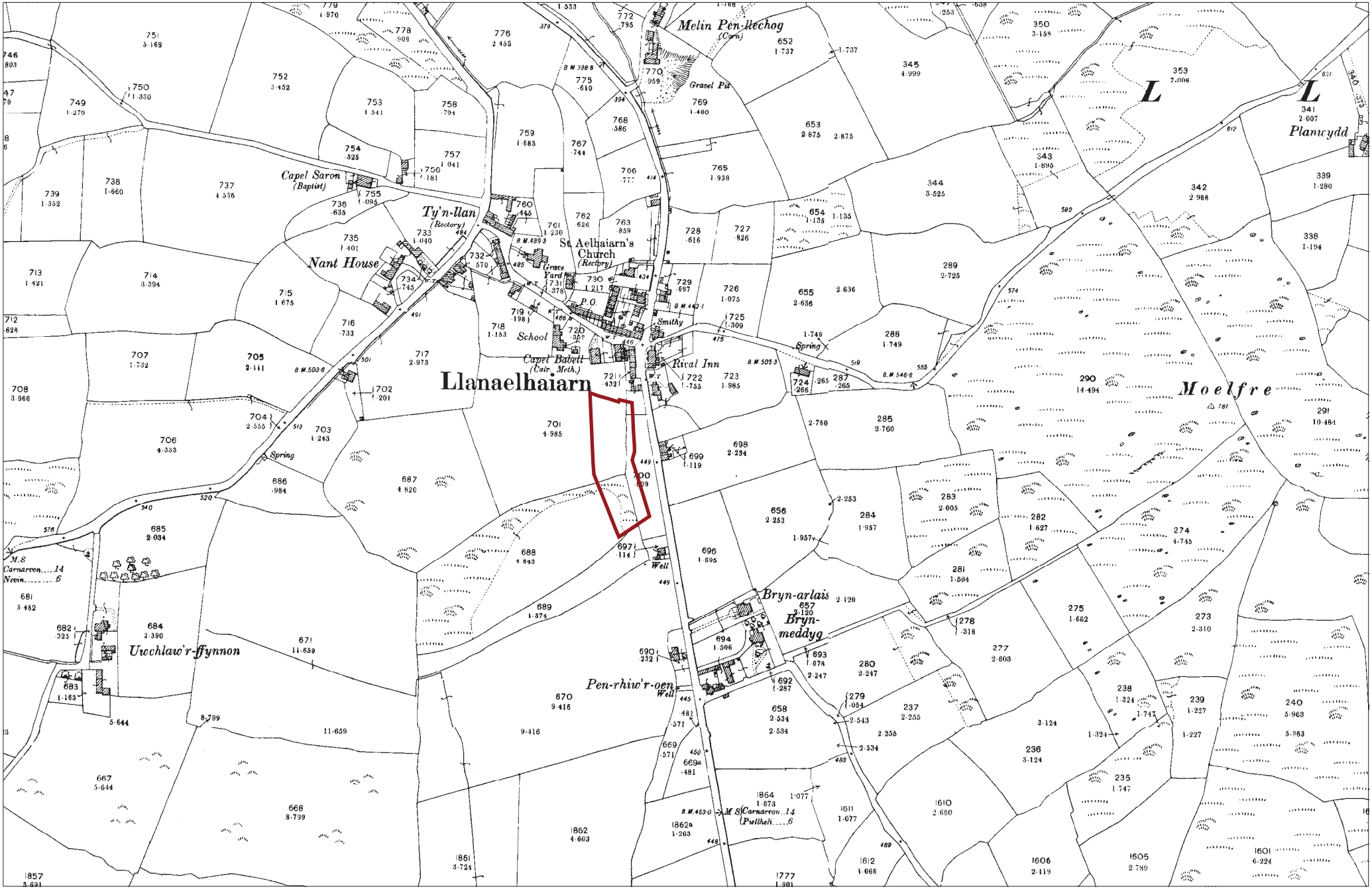


Figure 04: Reproduction of the Second Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1900. Site boundary highlighted in red. Scale: 1 to 5000@A4.

FIGURE 05

Reproduction of the Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1917 to 1918. Site boundary highlighted in red. Scale: 1 to 5000@A4.

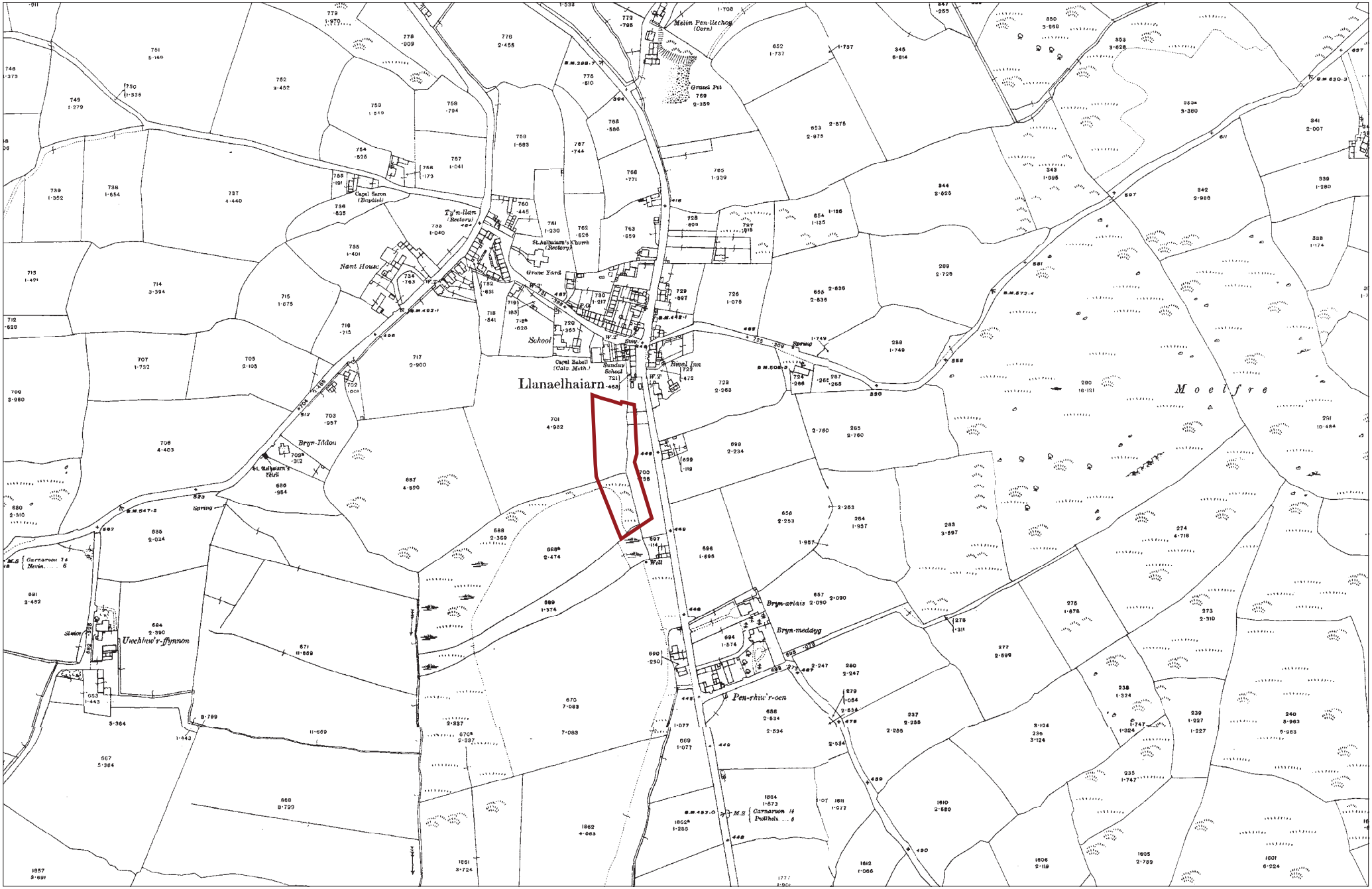


Figure 05: Reproduction of the Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series map (sheets XXV.16, XXVI.13, XXXII.4 and XXX.1), published 1917 to 1918. Site boundary highlighted in red. Scale: 1 to 5000@A4.

APPENDIX I

Gwynedd Archaeological Trust Selection Strategy pro-forma

[G2740_Maes_Glas_Llanaelhaearn] [10/08/2022 v1.0]

Selection Strategy

Project Information

Project Management

Project Manager	John Roberts john.roberts@heneb.co.uk
Archaeological Archive Manager	John Roberts john.roberts@heneb.co.uk
Organisation	Gwynedd Archaeological Trust

Stakeholders		**Date Contacted**
Collecting Institution(s)	GAT Historic Environment Record	10/08/2022
	RCAHMW	On completion of Project Archive
	Oriel Mon, Rhosmeirch, Llangefni, LL77 7TQ	If applicable, post fieldwork based on artefact recovery
Project Lead / Project Assurance	Gwynedd Archaeological Planning Services	tba
Landowner / Developer	Cwmni Bro Antur Aelhaearn	n/a
Other		

Resources

Resources required Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.	No unusual resources required outside of GAT normal operating equipment and personnel.

Context

Describe below the context of this Selection Strategy. You should refer to:

- The aims and objectives of the project;

- Local Authority guidance (including the brief);
- Research Frameworks;
- The repository collection development policy and/or deposition policy;
- Material-specific guidance documents.

Note: This section may be copied from your Project Design/WSI to ensure all Stakeholders receive this context information.

The full aims and objectives of this project are detailed in the project specific written scheme of investigation (WSI).

Gwynedd Archaeological Trust (GAT) has been asked by Cwmni Bro Antur Aelhaearn to undertake an archaeological evaluation (geophysical survey) in advance of a proposed new woodland with associated amenities on land at Maes Glas, Llanaelhaearn, Gwynedd (NGR SH3877544597; post code LL54 5AF; Figure 01). The proposed development areas measures 0.54 hectares and is encompasses marginal ground and rough fields of pasture off the A499 at the southern edge of the village. The evaluation will be undertaken as part of a planning application (ref.: C22/0535/37/LL).

1 – Digital Data

Stakeholders

Name the individual(s) responsible for the Digital Data Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Collections Curator).

John Roberts (GAT Principal Archaeologist)

Selection

Location of Data Management Plan (DMP)
Selection of digital data elements should be considered in your project's DMP. For the purpose of the Selection Strategy, you can either copy the selection section of your DMP below, or attach it as an appendix to this document. Please indicate here if the DMP is attached.

All digital data will be collected, stored and selected in lines with the Gwynedd Archaeological Trust (GAT) Data Management Plan located on GAT's servers (available on request).

The selection strategy in your DMP should:

1.1 Define what digital data will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have digital data that should be included in the archaeological archive.
1.2 Identify the selection review points during the project (i.e. project planning, data gathering, analysis and reporting and archive compilation).
1.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
1.4 Identify any selection decisions that differ from standard guidelines and explain why.

Following the completion of the fieldwork, a working project archive will be created based on following task list;
1. Pro-formas: all cross referenced and complete;

2. Photographic Metadata: completed in *Microsoft Access* and cross-referenced with all pro-formas;
3. Survey data: downloaded using a Computer Aided Design package;
4. Sections (if relevant): all cross referenced and complete;
5. Plans (if relevant): all cross referenced and complete;
6. Artefacts (if relevant): quantified and identified; register completed;
7. Ecofacts (if relevant): quantified and register completed;
8. Context register (if relevant): quantified and register completed.

All relevant site archive data will be added to a digital project register specific to this project, which will be prepared in *Microsoft Excel.*

This data will then be used as the basis for the physical and digital dataset archives. Information from these will be used to compile the project report. The physical archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. Deselected

digital data will be confirmed in an updated digital management plan appended to the final report

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Sean Derby – Historic Environment Record, Gwynedd Archaeological Trust;
Gareth Edwards, *Head of Knowledge and Understanding, RCAHMW*

Selection

Describe your Selection Strategy for the Documents elements of the archaeological archive. To do this you must:

2.1 Define which documents will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have documents that should be included in the archaeological archive.
2.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
2.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
2.4 Identify any selection decisions that differ from standard guidelines and explain why.

• A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
• A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
- Photographic metadata (Microsoft Access);
- Photographic archive (TIFF format);
- Project Information form (Excel);
- File Information form (Excel) – Microsoft Word report text final;
- File Information form (Excel) – Photographic metadata (general);
- File Information form (Excel) – Adobe PDF report final; and
- File Information form (Excel) - Photographic metadata (detail).

De-Selected Documents

Describe the procedure for dealing with De-selected material and what specialist advice has informed this procedure.

It is envisaged that the material de-selected from inclusion in the preserved archive will be duplicates or re-productions created during the analysis phase of the project. De-selected material will therefor either be retained to supplement GAT's research files or recycled.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

3 – Materials

Note: This step should be completed for each material component of the archaeological archive. Copy this table for the various materials as required, providing the 'Material Type' and a section identifier (eg. '3.1') for each.

Material type	Bulk Finds	**Section 3.**	

Stakeholders

Name the individual(s) responsible for the Materials Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Tom Fildes –Planning Archaeologist, Gwynedd Archaeological Planning Service;
Oriel Mon, Rhosmeirch, Llangefni, LL77 7TQ

There are known findspots within the local area and any diagnostic artefacts recovered during the watching brief will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on-site and the context from which they were retrieved noted but the sherds will not be retained. The artefacts will be treated according to guidelines issued by the UK Institute of Conservation, in particular the advice provided within *First Aid for Finds* (Watkinson and Neal 2001).

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and Historic England (2012) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy via Lucy Whittingham Project Manager (post-excavation), AOC Archaeology, telephone: 0208 843 7380. All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum (in this case Oriel Mon, Rhosmeirch, Llangefni, LL77 7TQ), where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff. All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the Portable Antiquities Scheme acts as advisor on technical matters, and may be the recipient body for the objects.

The Treasure Valuation Committee, based at the British Museum, and informed by the Portable Antiquities Scheme, will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled. GAT will contact the landowner for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Oriel Mon, Rhosmeirch, Llangefni, LL77 7TQ). A GAT produced pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. Artefacts to be donated will then be transferred to Oriel Mon.

Selection

Describe your Selection Strategy for each material type and or object type. To do this you must:

3.1 State the Selection Strategy you are applying to each category of material, how this will be done, and

why.
3.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
3.3 Reference all relevant standards, policies or guidelines (e.g. thematic, period, and regional, Research Frameworks, repository deposition policies) and specialist advice sought.
3.4 Identify any selection decisions that differ from standard guidelines and explain why.

The Materials Selection Template may be useful in structuring this section.

The full material archive returned to the GAT offices will be reviewed following analysis: Stakeholders (see above) will make selection decisions based on specialists reports and selection recommendations and SDMS collecting policy. The selection will take place during archive completion.

Uncollected Material

If you are practising selection in the field, describe the process that will be applied. To do this you must:

- Detail how you will characterise, quantify and record all uncollected material on site.
- Explain how you will dispose of, or re-distribute, uncollected material.

Any uncollected material will be left on-site to be incorporated into backfill.

De-Selected Material

Describe what you will do with the de-selected material. All processed material should have been adequately recorded before de-selection.

All bulk finds will be assessed and recorded to appropriate standards. De-selected material will be returned to the landowner as agreed by the landowner and curatorial archaeologist.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

Materials Selection Template

This table may be inserted into Section 3 of the main Selection Strategy Template to help present differing

selection strategies for different material types

Find Type	Selection Strategy	Stakeholders	Review Points

Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email:gat@heneb.co.uk