1640

TIR ODDI AR CROWN STREET, GWALCHMAI / LAND OFF CROWN STREET, GWALCHMAI

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

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

TIR ODDI AR CROWN STREET, GWALCHMAI / LAND OFF CROWN STREET, GWALCHMAI

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

Yr Amgylchedd Hanesyddol yn Cofnodi Prif Gyfeirnod /
Historic Environment Record Event Primary Reference Number 46269

Prosiect Rhif / Project No. G2730

Adroddiad Rhif / Report No. 1640

Wedi'i baratoi ar gyfer / Prepared for: AMP Construction and Groundworks Ltd

Gorffennaf 2022 / July 2022

Ysgrifenwyd gan / Written by: Neil McGuinness with contributions from John Roberts

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Published by Gwynedd Archaeological Trust
Gwynedd Archaeological Trust
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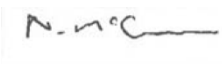
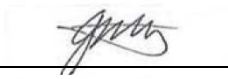
Originated by	Document Author	Neil McGuinness		01/07/20
Reviewed by	Document Reviewer	John Roberts		01/07/20
Approved by	Principal Archaeologist	John Roberts		01/07/20

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

CONTENTS

LIST OF FIGURES

CRYNODEB ANHECHNEGOL

Comisiynwyd Ymddiriedolaeth Archeolegol Gwynedd gan AMP Construction a Groundworks Cyf i gynnal arolwg geoffisegol ar lain 0.87 ha o laswelltir wedi'i wella ar dir oddi ar Crown Street, Gwalchmai, Ynys Môn, sy'n ffurfio ôl troed datblygiad preswyl arfaethedig. Nid oes unrhyw nodweddion archeolegol pendant wedi'u nodi. Gall tueddiadau llinol negyddol o darddiad ansicr gynrychioli cloddiau caeau blaenorol sy'n rhagflaenu'r ffiniau a ddangosir ar fapiau hanesyddol sydd ar gael ar gyfer yr ardal neu gallant fod yn ddraeniau tir modern. Gall ardal o amrywiad daearegol naturiol yng nghornel ddeheuol ochr ogledd-ddwyreiniol ardal yr arolwg guddio presenoldeb anomaleddau archeolegol gwannach gerllaw os ydynt yn bresennol.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust was commissioned by AMP Construction and Groundworks Ltd to undertake a geophysical survey on a 0.87 ha plot of improved grassland on land off Crown Street, Gwalchmai, Ynys Mon, that forms the footprint of a proposed residential development. No definite archaeological features have been identified. Linear negative trends of uncertain origin may represent former field banks that predate the boundaries depicted on available historic mapping for the area or they may be modern land drains. An area of natural geological variation in the southern corner of the northeastern side of the survey area may mask the presence of nearby weaker archaeological anomalies if they are present.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) have been asked by AMP Construction and Groundworks Ltd to undertake an archaeological evaluation (geophysical survey) in advance of a proposed residential development on land off Crown Street, Gwalchmai, Ynys Mon, LL65 4RT (NGR SH39407598; Figure 01). The proposed development area measures 0.87 ha and is located within a field of improved pasture on the eastern side of Crown Street at the eastern end of the village. The evaluation has been undertaken as part of a planning application (ref.: PALM/2021/11) for 31 affordable homes, new vehicular and pedestrian access, a new estate road and associated works.

The geophysical survey was undertaken on the 23rd and 24th of June 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,

location including grid reference and estimated timescale for the work. The GAT HER enquiry number is GATHER1651 and the event primary reference number is 46269. 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	SH39407598 / LL65 4RT
Location	The survey area is located on the eastern edge of the village of Gwalchmai, Ynys Mon. It is bounded by Crown Street to the west and northwest, a domestic residence Llain Rallt to the northeast, pasture fields to the east, and a children's play area and modern housing on the eastern side of Crown Street to the south (Figure 01).
HER	Gwynedd Archaeological Trust HER
District	Ynys Môn
Parish	Trewalchmai
Topography	The survey area appears relatively flat but rises gradually and steadily from southwest to northeast. The highest parts at the northern edge of the field are approximately 79m AOD. The lowest parts are along the southern boundary where the ground height is approximately 75m. A low bedrock outcrop is visible along the internal dividing fence line approximately halfway along its length.
Current land use	A pasture field bisected by a modern post and wire stock fence. Access from Crown Street is gained via a metal agricultural gate in the southwestern corner. A further gate is situated at the northwestern end of the internal post and wire division. The field is bounded to the west by a low stone wall and to the north, east and south by mature hedgerows supplemented with post and wire stock fencing. The extreme northern, eastern and western edges of the field are overgrown and inaccessible. A corrugated iron barn and a wooden shed are located in the southwestern corner of the field on the southern boundary.
Geology	Solid: Central Anglesey Shear Zone And Berw Shear Zone (undifferentiated) – Metamorphic Schist, Mica (BGS 2022).

	Superficial: Till, Devensian - Diamicton (BGS 2022).
Soils	Freely draining slightly acid loamy soil (Soilscapes 2022).
Survey methods	Magnetometer survey (fluxgate gradiometer)
Study area	0.87 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. The site is within an area of known Second World War activity.

2 BACKGROUND

Though there is no known archaeological activity recorded within the survey area, there is known archaeological activity within the locality. The Gwynedd HER records the site of a former Second World War Prisoner of War (POW) camp c.122m to the southwest of the proposed development (PRN 34669; NGR SH39237586; Figure 02).

Part of the camp was uncovered during archaeological mitigation on a housing development in 2017 (GAT Report 1413) and the results suggested that instead of being for POWs, it was more likely part of RAF Mona, which was used as a relief landing ground to assist RAF Valley and RAF Bodorgan during the War. This was based on the recovery of an RAF canteen mug from the topsoil adjacent to concrete bases that were part of the camp and a site plan of RAF Mona from the Second World War (Figure 06), which depicts the layout of the airfield. The plan shows the runways and associated infrastructure along with several dispersed numbered areas, which are associated with the airfield, including 'Site No. 4' that corresponds with the location of the camp at Gwalchmai and is listed as 'Officers Quarters'. Whilst the site plan doesn't show any RAF infrastructure on the current plot, it does show further RAF sites in the surrounding area to the east and south, which are listed in the HER as PRNs 93685 to 93688 (Figure 02), along with several former air-raid shelters (PRNs 90177 to 90179; Figure 02). Based on this information, there is potential for further Second World War activity to present within the local area, including at the development site.

On the 1841 Parish of Trewalchmai Tithe Award Map, the enclosure that comprises the proposed development site appears more or less as it does today. Examination of the Anglesey County Series 25-inch map Sheet XVII.4 First (1889), Second (1900) and Third (1922) Edition (Figures 03, 04 and 05 respectively) reveal that, with the exception of the insertion of the modern post and wire fence that now bisects the field NW-SE, the local field systems have not substantially changed beyond modern housing encroachment; the location of the proposed development site appears little changed with no obvious development beyond local road improvements along its western boundary.

3 METHODOLOGY

3.1 Technical detail

The survey was carried out in parallel traverses within a series of 20x20m grids that cover the footprint of the proposed development site (Figure 07). 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 on-board 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 +/- 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 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 Thursday 23rd and Friday 24th June 2022. The results are presented as a minimally processed greyscale plot (raw data clipped to +/- 15nT; Figure 08), a processed greyscale plot (raw data clipped to +/- 15nT and de-striped; Figure 09) and an interpretative plan (Figure 10). Specific anomalies have been given numerical labels which appear in the text below, as well as on the interpretative plan (Figure 10).

4.1 Probable Archaeology

No definitive archaeological responses have been identified in the results

4.2 Uncertain Origin

Anomalies of uncertain origin have been identified within the survey area (Figure 10). One relatively well-defined low-moderate negative straight linear trend runs northeast-southwest across the northeastern side of the survey area. The anomaly appears to terminate to the southwest but a short length of straight linear trend [3] with similar characteristics reappears on the same alignment though slightly further north. Another less well-defined low-moderate negative polarity straight linear trend [2] runs perpendicular to [1] on the eastern side of the field and its southeastern end appears to terminate at its junction with [1]. These may represent the remains of former field boundary banks that predate the boundaries depicted on historic mapping where material with a lower magnetic magnitude relative to the background top soil has built up, or they may be more recent agricultural features such as land drains.

Similarly, a moderate to weak-moderate negative straight linear trend [4] in the southwestern part of the survey area appears to lie on broadly the same alignment as [1] and may be a continuation of it, again possibly a former early field bank or a modern field drain. A less well-defined and slightly more curvilinear weak-moderate negative trend [5] that runs northwest-southeast in the southwest part of the survey area may also represent the remains of an early banked field boundary or a modern agricultural feature.

4.3 Natural

A substantial clearly defined area of strong positive magnetic response with an associated negative halo [6] has been detected in the southern corner of the northeastern eastern part of the survey area. This response is typical of magnetic variation in the underlying geology. The strongly magnetic response may mask the presence of nearby weaker anomalies that might be archaeologically significant.

4.4 Ferrous

High magnitude ferrous responses close to field boundaries are due to adjacent metal fences, gates, structures 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 southwestern 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.

5 DATA APPRAISAL AND CONFIDENCE ASSESSMENT

English Heritage guidelines (English Heritage, 2008, Table 4) states that magnetometer survey can be effective over metamorphic solid geology, but that magnetic response is generally poor on glacial till drift geologies. The results from this magnetometer survey did not indicate the presence of possible archaeological features, however evidence for 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 proposed development plot on Land off Crown Street, Gwalchmai, has not revealed any definite archaeological anomalies. Five linear negative trends have been assigned to the category of uncertain. The trends may represent former field banks that predate the boundaries depicted on available historic mapping for the area or they may possibly be land drains. An area of natural geological variation in the southern corner of northeastern side of the survey area may mask the presence of nearby weaker archaeological anomalies if they are present.

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 05: SIte Location

Development area footprint

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

Background mapping reproduced from Ordnance Survey VectorMap Local with the permission of H.M.S.O © Crown Copyright and database right 2022, License AL100020895

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metres

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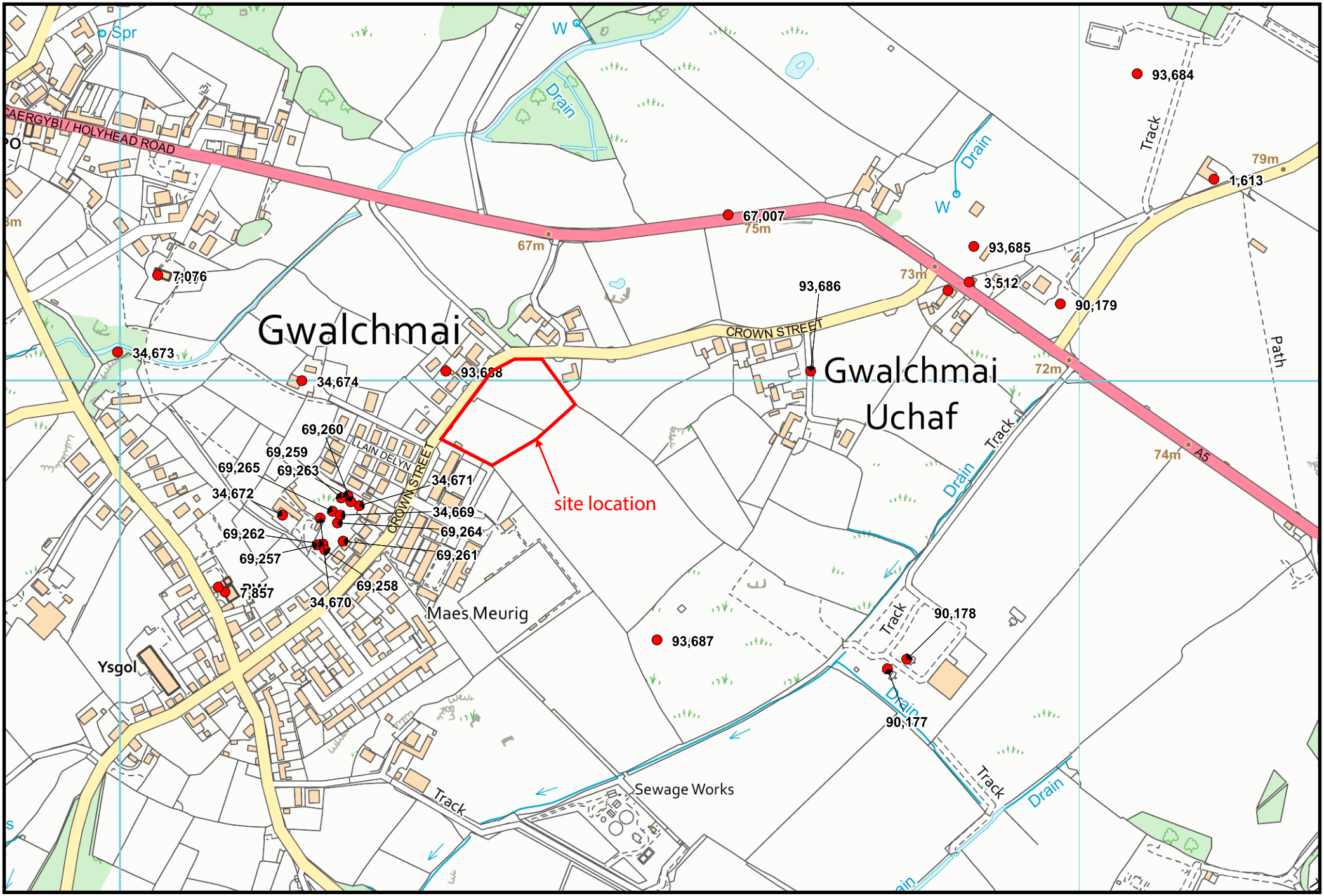

FIGURE 02: Location of known assets. Based on Ordnance Survey 1:10000 County Series Map Sheet SH37NE. Scale: 1 to 5000@A4.

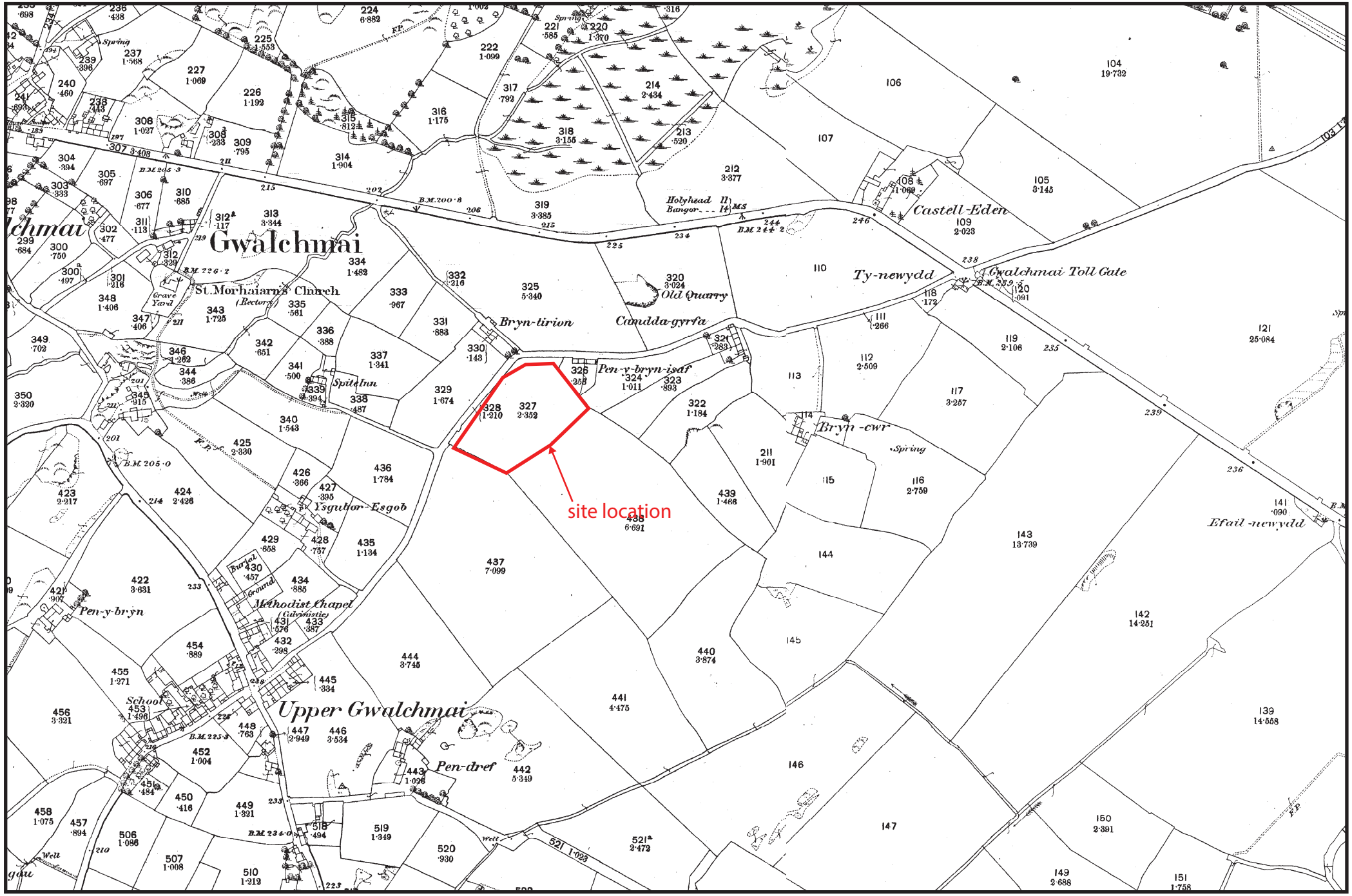

FIGURE 03: Reproduction of the First Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1889).]
Scale: 1 to 5000@A4.

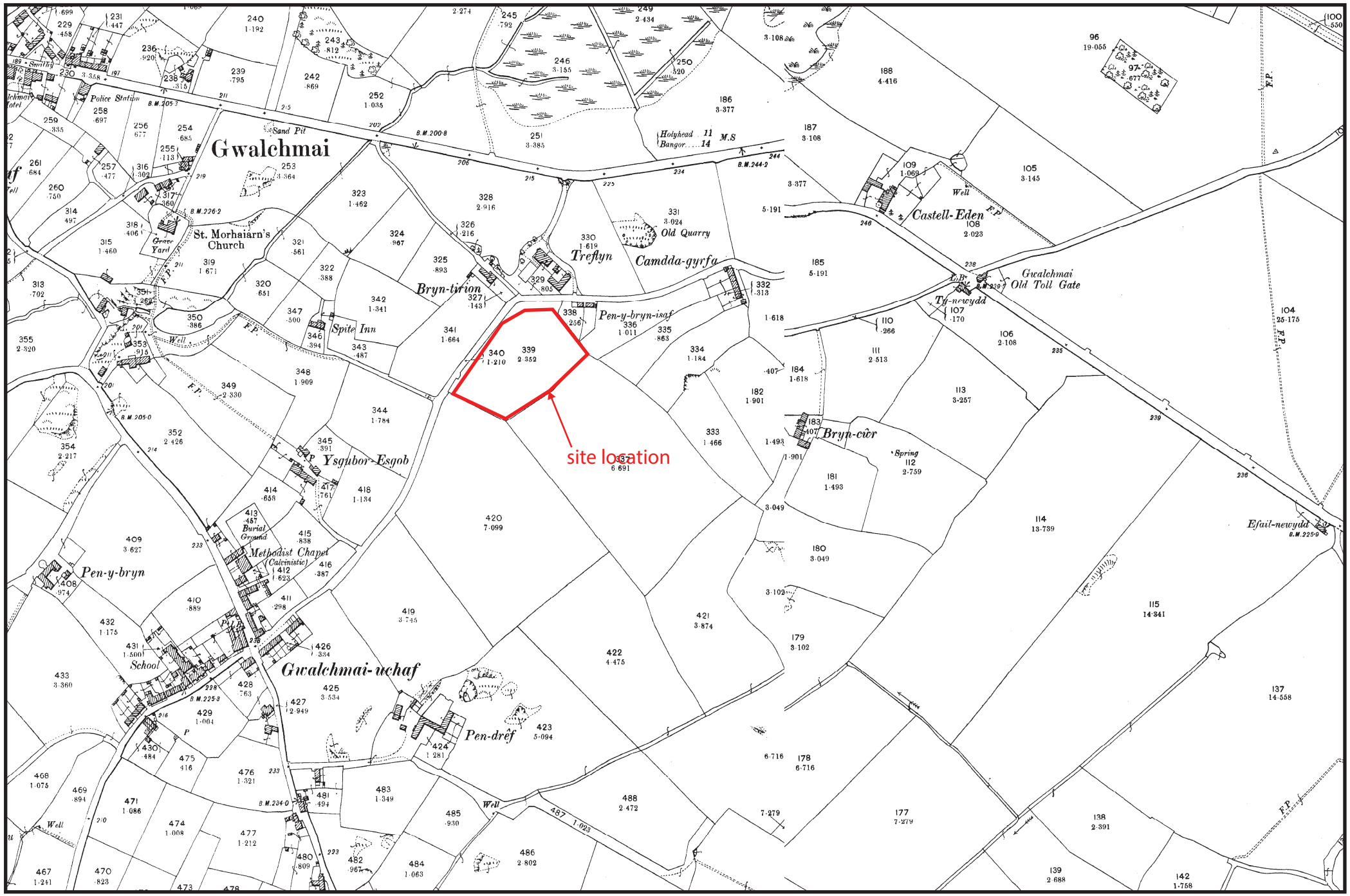

FIGURE 04: Reproduction of the Second Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1900). Scale: 1 to 5000@A4.

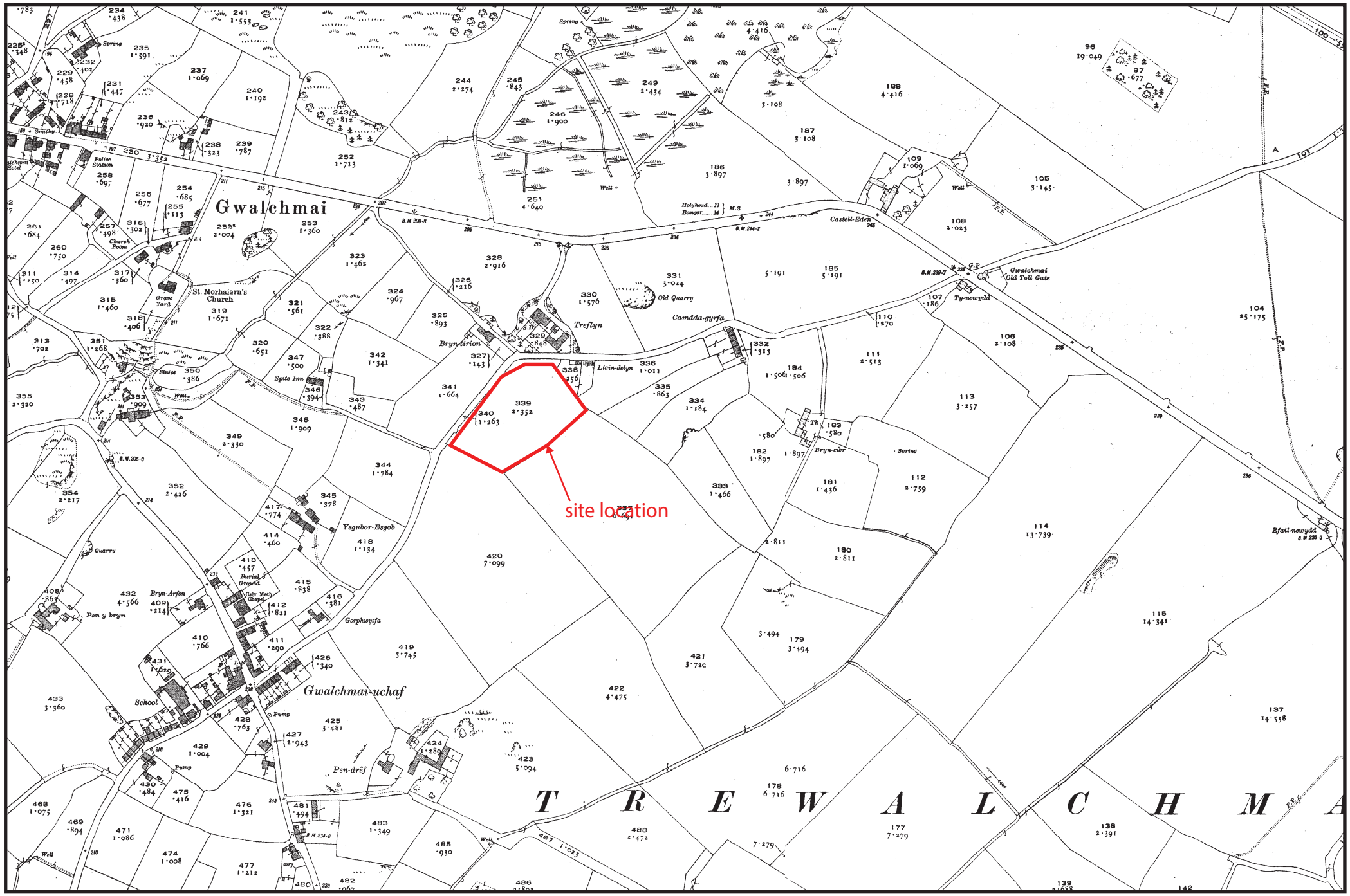

FIGURE 05: Reproduction of the Third Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1922).
Scale: 1 to 5000@A4.

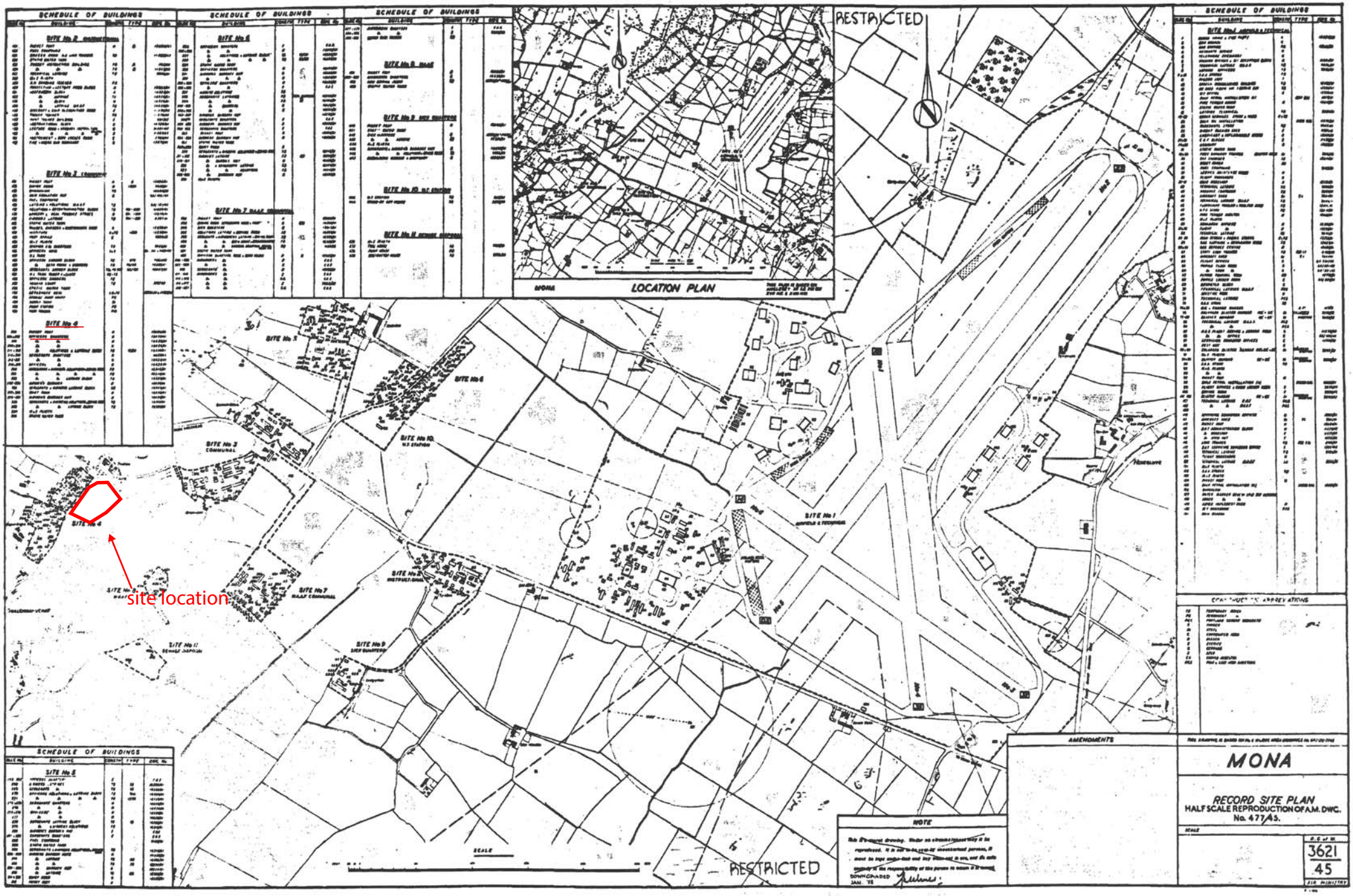

Figure 06: Reproduction of Air Ministry Record Site Plan of RAF Mona No. 477/45 (National Archives).

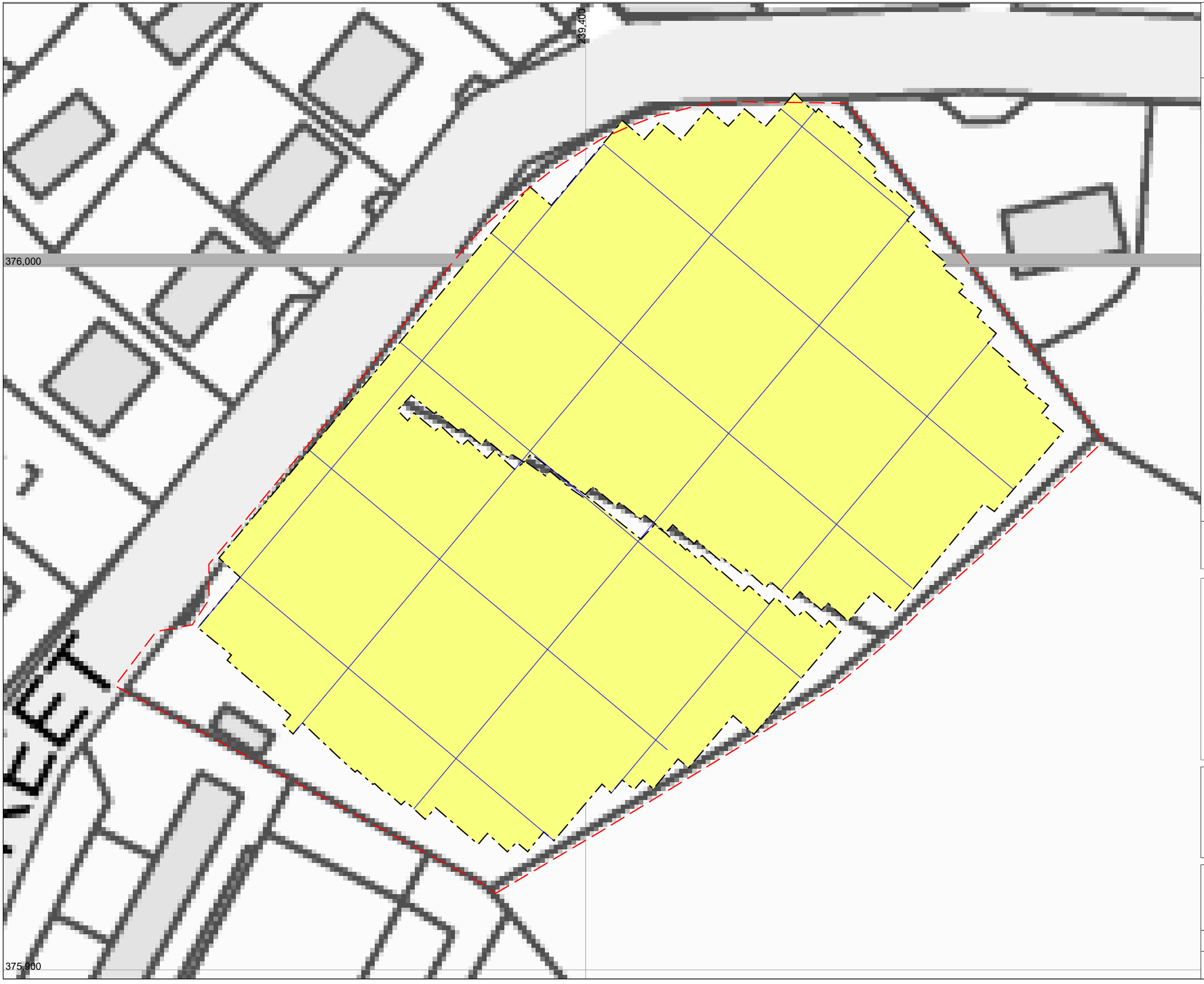

Figure 07: Location of survey grids

Survey area showing 20m grid

Development area footprint

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

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0 5 10
metres

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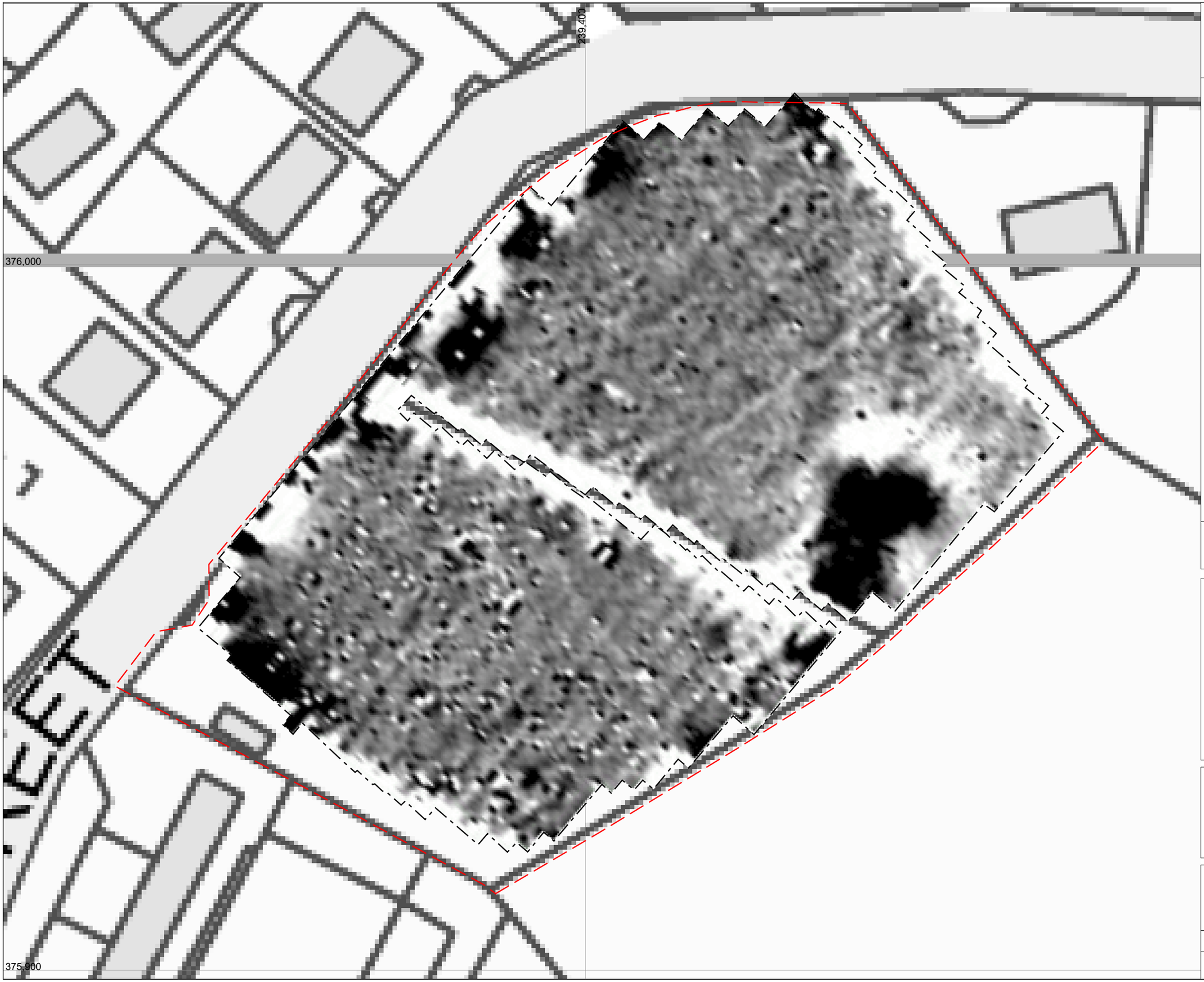

Figure 08: Geophysical survey minimally processed greyscale plot (raw data clipped to +/- 15nT)

15 nT
0 nT
-15 nT

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

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metres

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1:500	29/06/22	NMC	JR
PROJECT NO:	DRAWING NO:		REVISION:
G2730	GP/08		A

Figure 09: Geophysical survey processed greyscale plot (raw data clipped to +/- 15nT and de-striped)

239,400

376,000

375,900

15 nT
0 nT
-15 nT

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

N

0 5 10
metres

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust
www.heneb.co.uk

Craig Beuno,
Ffordd y Garth,
Bangor, Gwynedd
LL57 2RT

Ffon / Phone: +44 (0) 1248 352535
Ffacs / Fax: +44 (0)1248 370925
e-bost / e-mail: gat@heneb.uk

CLIENT:
AMP Construction and Groundworks Ltd

SITE:
Land off Crown Street, Gwalchmai

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:500	29/06/22	NMC	JR
PROJECT NO:	DRAWING NO:		REVISION:
G2730	GP/09		A

Figure 10: Geophysical survey interpretative plan

239,400

376,000

375,900

[1]

[2]

[3]

[4]

[5]

[6]

Uncertain trend

Natural

Ferrous

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

N

0 5 10
metres

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Land off Crown Street, Gwalchmai

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:500	29/06/22	NMC	JR
PROJECT NO:	DRAWING NO:		REVISION:
G2730	GP/10		A

APPENDIX I

Gwynedd Archaeological Trust Approved Written Scheme of Investigation

CROWN STREET, GWALCHMAI, YNYS MON (G2730)

WRITTEN SCHEME OF INVESTIGATION FOR EVALUATION (GEOPHYSICAL SURVEY)

Prepared for AMP Construction and Groundworks Ltd

May 2022

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	**Printed Name**	**Signature**	**Date**
Originated by	Document Author	John Roberts		
Reviewed by	Document Reviewer	Robert Evans		
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

CROWN STREET, GWALCHMAI, YNYS MON (G2730)

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL EVALUATION (GEOPHYSICAL SURVEY)

Prepared for *AMP Construction and Groundworks Ltd*, May 2022

CONTENTS

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by AMP Construction and Groundworks Ltd to undertake an archaeological evaluation (geophysical survey) in advance of a proposed residential development on land off Crown Street, Trewalchmai, Gwalchmai, Ynys Mon, LL65 4RT (NGR SH39407598; Figure 01). The proposed development area measures 0.84ha and is located within a field of improved pasture along Crown Street at the southern end of the village. The evaluation will be undertaken as part of a planning application (ref.: PALM/2021/11) for 31 affordable homes, new vehicular and pedestrian access, construction of new estate road together with associated works.

The geophysical survey will be undertaken in June 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, supported by sufficient desk-based research to aid interpretation of any archaeological evidence encountered, and to provide context for the site. The site is within an area of known Second World War activity.

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 should be supported by sufficient desk-based research to aid interpretation of any archaeological evidence encountered, and to provide context for the site. GAPS have also stated that the survey will likely require additional evaluation in the form of Trial Trenching in order to interrogate the results (any required trial trenching 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 GATHER1651 and the Event PRN is 46269. 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

There is known archaeological activity within the local area and the regional Historic Environment Record (HER) lists the site of a former Second World War Prisoner of War (POW) camp c.122m to the southeast of the current proposed development (PRN 34,669; NGR SH39237586; cf. Figure 02). Part of the camp was uncovered during archaeological mitigation on a housing development in 2017 (GAT Report 1413) and the results suggested that instead of being for POWs, it was more likely part of RAF Mona, which was used as a relief landing ground to assist RAF Valley and RAF Bodorgan during the War. This was based on the recovery of an RAF canteen mug from the topsoil adjacent to concrete bases that were part of the camp and a site plan of RAF Mona from the Second World War (Figure 06), which depicts the layout of the airfield. The plan shows the runways and associated infrastructure along with several dispersed numbered areas, which are associated with the airfield, including 'Site No. 4' that corresponds with the location of the camp at Gwalchmai and is listed as 'Officers Quarters'. Whilst the site plan doesn't show any RAF infrastructure on the current plot, it does show further RAF sites in the surrounding area to the east and south, which are listed in the HER as PRNs 93685 to 93688 (cf. Figure 02), along with several former air raid shelters (PRNs 90177 to 90179; cf. Figure 02). Based on this information, there is potential for further Second World War activity to present within the local area, including at the development site.

An examination of the Anglesey County Series 25-inch map Sheet XVII.4 First (1889), Second (1900) and Third (1922) Edition Ordnance Survey maps (Figures 03, 04 and 05 respectively) revealed that the local field systems have not substantially changed beyond modern housing encroachment; the location of the proposed development appears little changed with no obvious development beyond local road improvements along the northern boundary.

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 June 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 Aviva Insurance Limited

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/UN/000375

EXPIRY DATE 21/06/2022

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 Aviva Insurance Limited

POLICY TYPE Employers Liability

POLICY NUMBER 24765101 CHC / UN/000375

EXPIRY DATE 21/06/2022

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 22/07/2022

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. Reilly S, 2017. Llain Delyn, Gwalchmai: Archaeological Mitigation. Gwynedd Archaeological Trust report 1413.
5. Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*
6. *Standard and Guidance for Archaeological Geophysical Survey* (Chartered Institute for Archaeologists, 2020).

FIGURE 01

Reproduction of Russell-Hughes Cyf. Drawing No. 2947:21:1. Scale 1 to 1250@A4

ROAD LEVEL PHOTO 2

ROAD LEVEL PHOTO 3

ROAD LEVEL PHOTO 1

AERIAL PHOTO OF DEVELOPMENT SITE

Track
Treflyn
Bryn Tirion
Treflyn Lodge
Anwylfa
Treflyn Araf
Trem Elidir
ROAD LEVEL PHOTO 3
Coed Treflyn
Ynys Manaw
Llys y Gwynt
Gerllan
Angorfa
Llwyn Onn
Llain Rallt
Spite Inn
Rhos Felin
High View
Track
Gwel Arfon
Yr Aelwyd
Plas Elfan
ROAD LEVEL PHOTO 2
ROAD LEVEL PHOTO 1
LLAIN DELYN
80
73
83
81
72
84
86
87
104
Pav
Surg
Crown St
Llain Delyn

Peidiwch a chymryd mesuriadau graddfa oddi ar y dyluniad hwn
Os yn amau - gofynnwch
Do not scale from this drawing
If in doubt - ask

Mae'r dyluniad hwn yn hawlfraint Penseiri Russell-Hughes ac ni chaniateir ei gopio neu ei atgynhyrchu heb ganiatad

This drawing is the copyright of Russell-Hughes architects and must not be copied or reproduced without permission

Newidiadau - Amendments

Cynllun - Job

RESIDENTIAL DEVELOPMENT ON LAND AT CROWN STREET, GWALCHMAI UCHAF

Dyluniad - Drawing

LOCATION PLAN

Rhif Dyluniad - Drawing No.
2947:21:1

Graddfa - Scale
1:1250 A3

Dyddiad - Date
October 2021

russell-hughes cyf
penseiri/architects

56 Bridge Street,
Llangefni,
Ynys Mon
LL77 7HH

Tel: 01248 722333
Fax: 01248 750600
E-mail: info@russellhughes.co.uk

N

FIGURE 02

Location of known assets. Based on Ordnance Survey 1:10000 County Series Map Sheet SH37NE. Scale: 1 to 5000@A4. © Crown copyright. All rights reserved. License number AL100020895

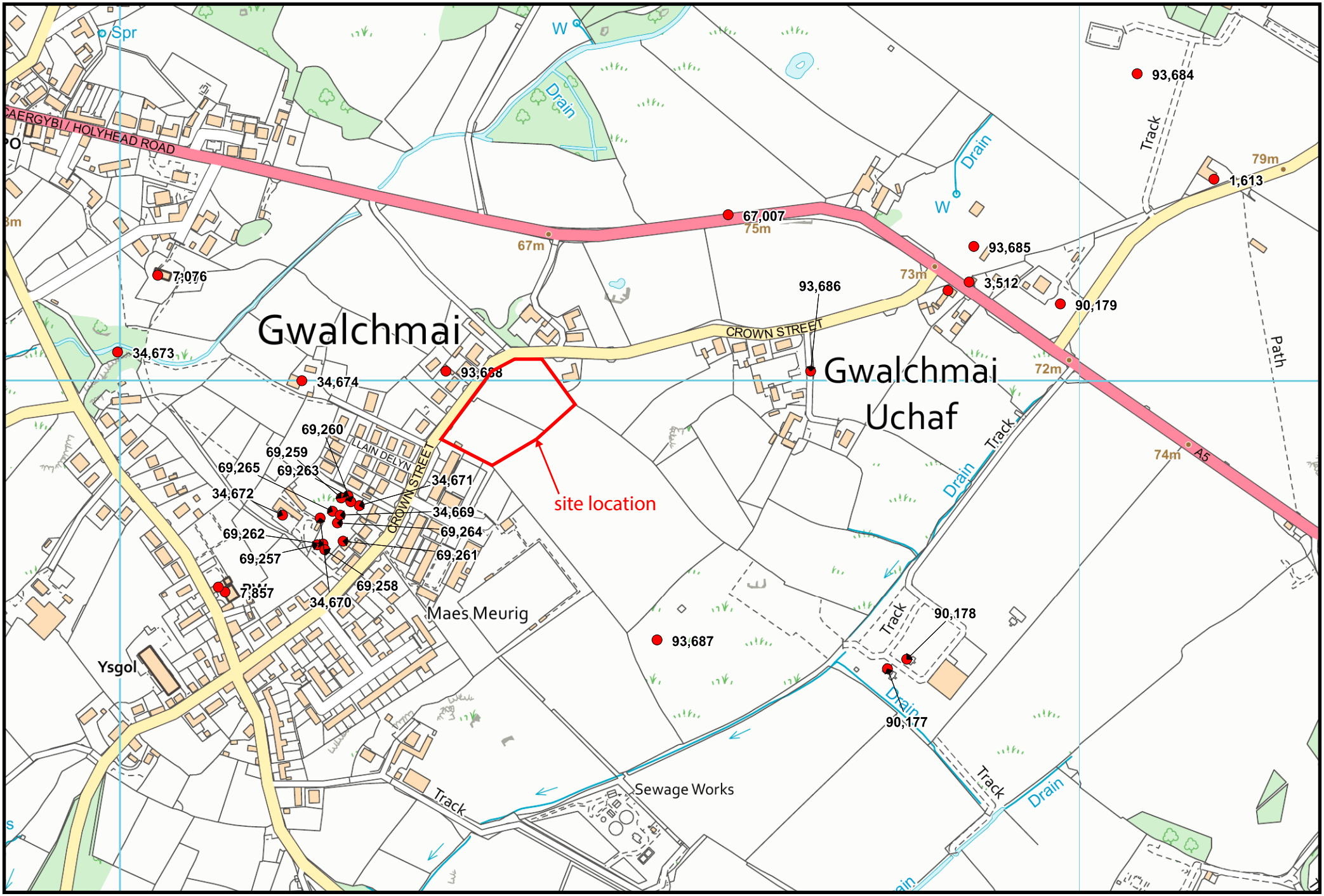

FIGURE 02: Location of known assets. Based on Ordnance Survey 1:10000 County Series Map Sheet SH37NE. Scale: 1 to 5000@A4.

FIGURE 03

Reproduction of the First Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1889). Scale: 1 to 5000@A4.

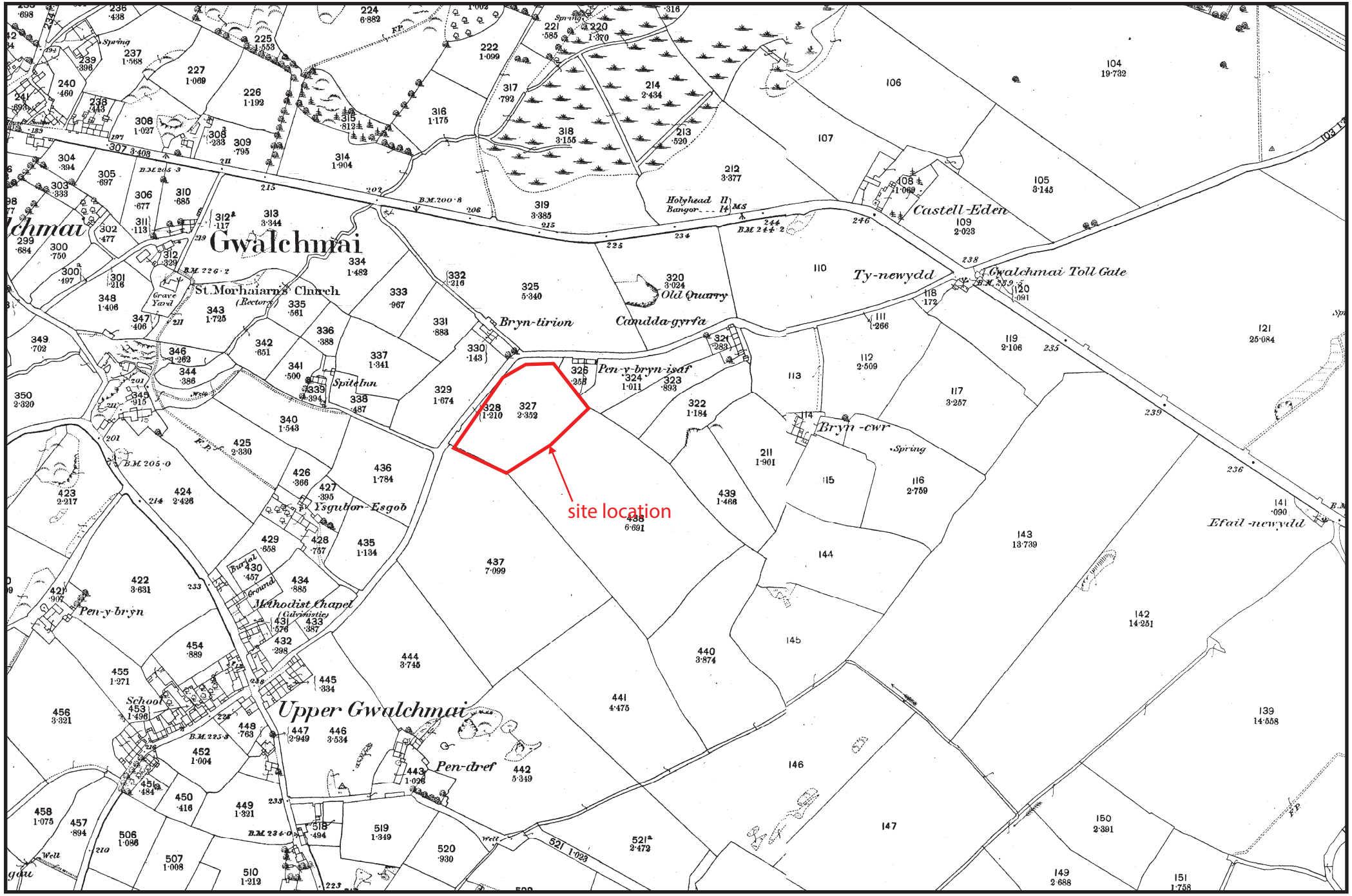

FIGURE 03: Reproduction of the First Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1889).]
Scale: 1 to 5000@A4.

FIGURE 04

Reproduction of the Second Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1900). Scale: 1 to 5000@A4.

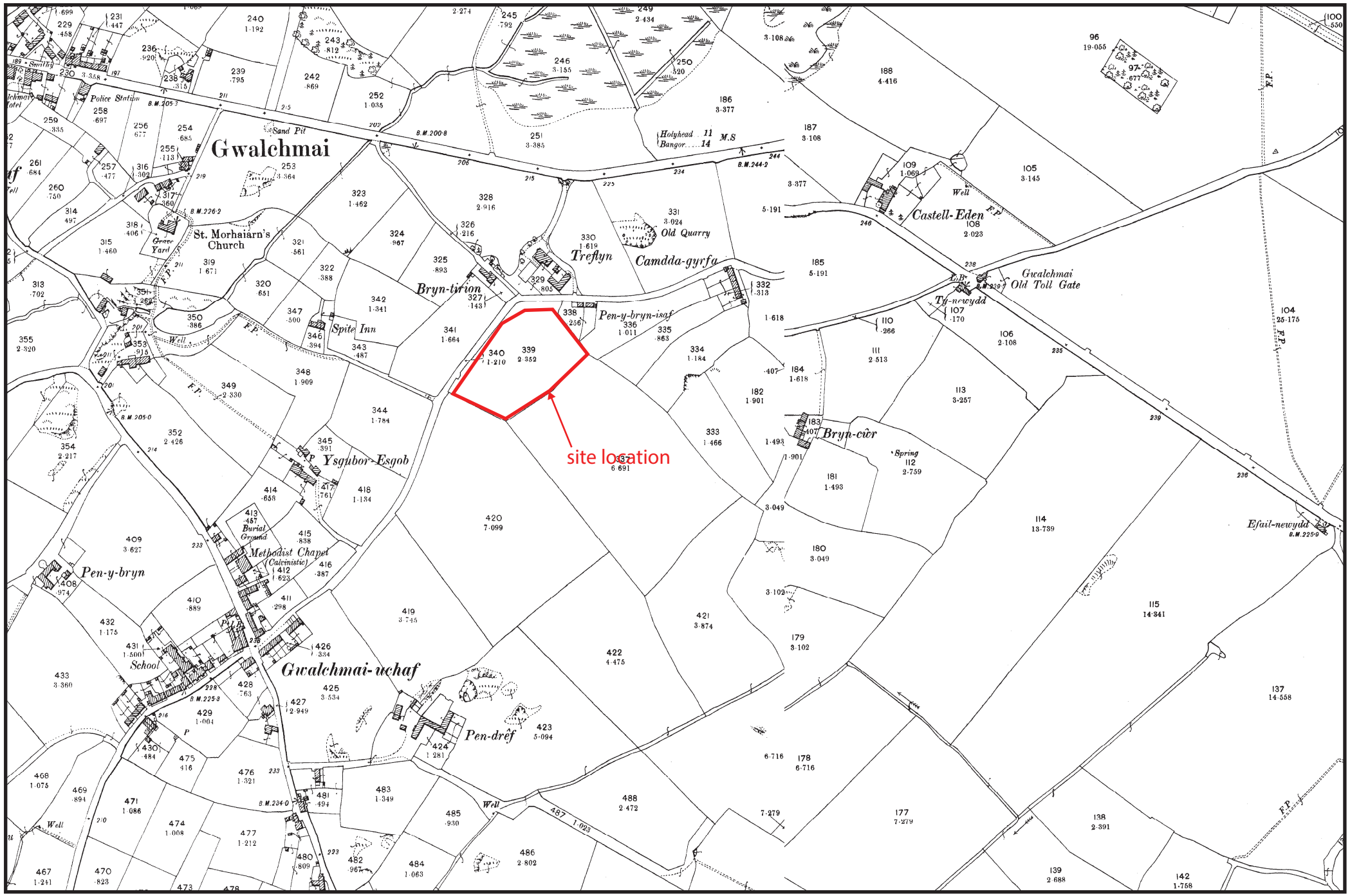

FIGURE 04: Reproduction of the Second Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1900). Scale: 1 to 5000@A4.

FIGURE 05

Reproduction of the Third Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1922). Scale: 1 to 5000@A4.

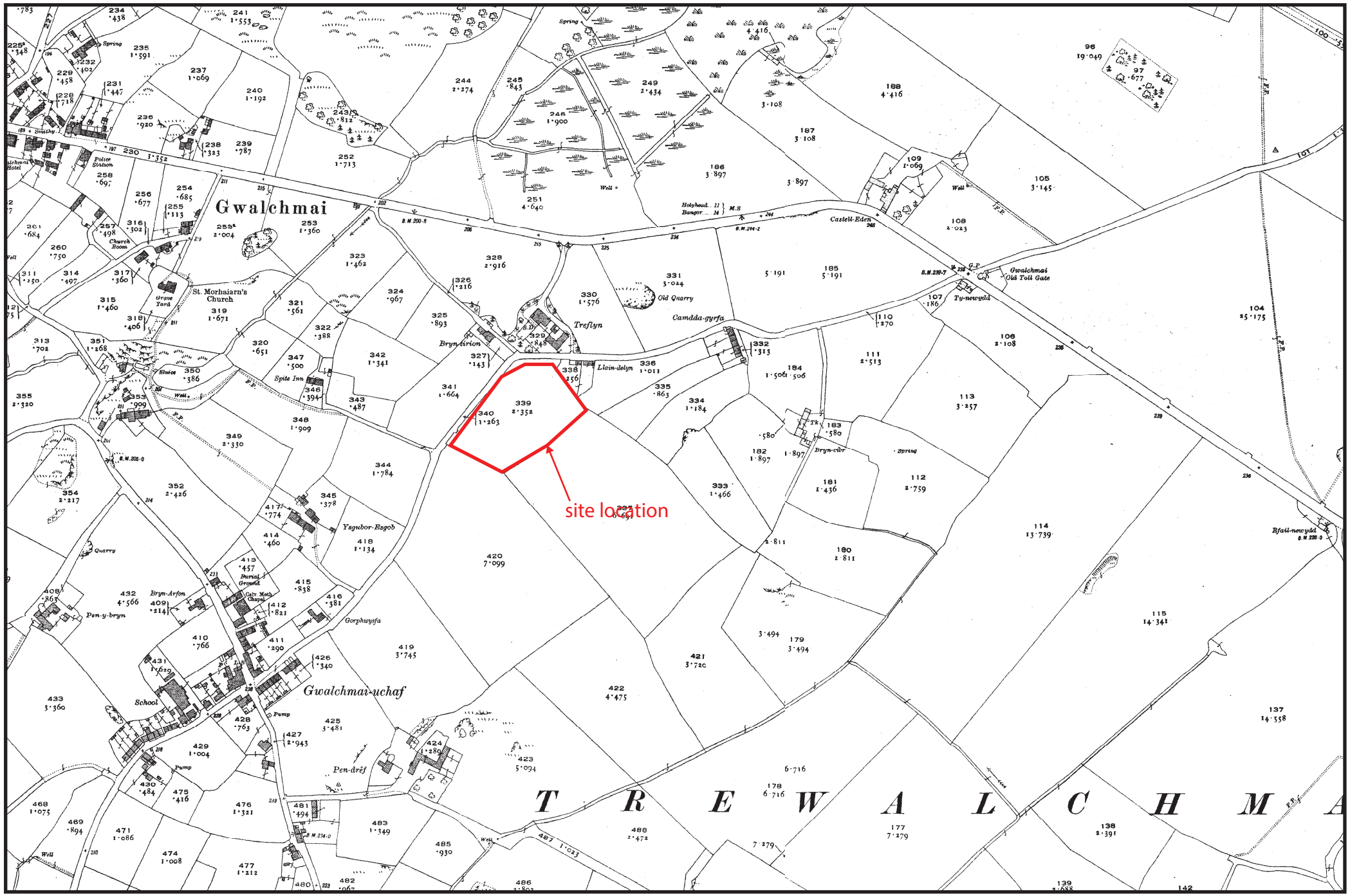

FIGURE 05: Reproduction of the Third Edition Ordnance Survey Anglesey County Series 25-inch to 1-inch Map Sheet XVII.4 (published 1922).
Scale: 1 to 5000@A4.

FIGURE 06

Reproduction of Air Ministry Record Site Plan of RAF Mona No. 477/45 (National Archives). Not to Scale.

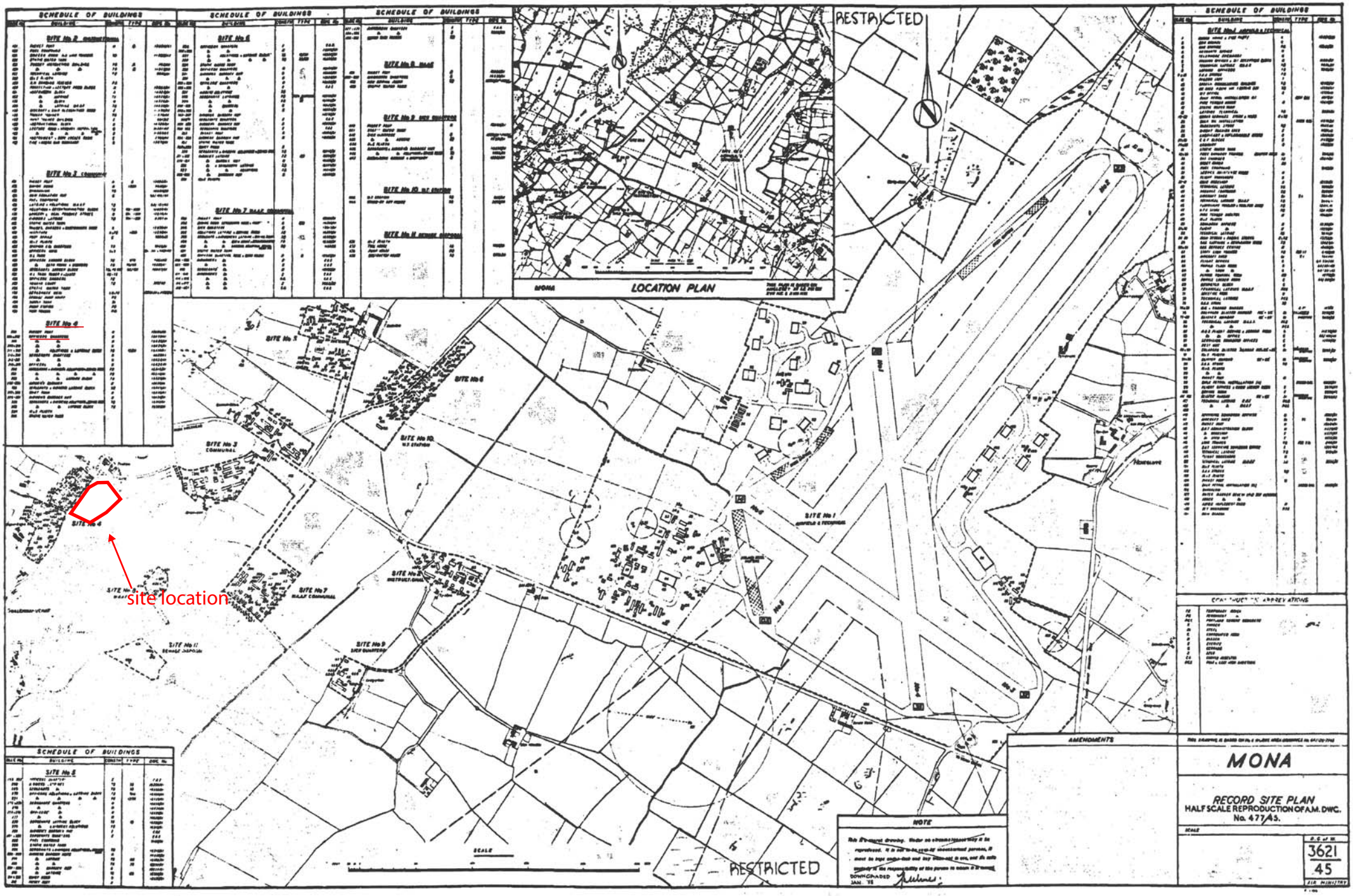

Figure 06: Reproduction of Air Ministry Record Site Plan of RAF Mona No. 477/45 (National Archives).

APPENDIX I

Gwynedd Archaeological Trust Selection Strategy pro-forma

G2730_Crown_Street_Gwalchmai 01/06/2022 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	31/05/2022
	RCAHMW	On completion of Project Archive
	Oriel Ynys Môn, Rhosmeirch Llangefni LL77 7TQ	If applicable, post-fieldwork based on artefact recovery
Project Lead / Project Assurance	Gwynedd Archaeological Planning Services	tbc
Landowner / Developer	Private landowner	Contact via client
Other (client)	AMP Construction and Groundworks Ltd	N/A

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 WSI.

Gwynedd Archaeological Trust (GAT) has been asked by AMP Construction and Groundworks Ltd to undertake an archaeological evaluation (geophysical survey) in advance of a proposed residential development on land off Crown Street, Trewalchmai, Gwalchmai, Ynys Mon, LL65 4RT (NGR SH39407598; WSI Figure 01). The proposed development area measures 0.84ha and is located within a field of improved pasture along Crown Street at the southern end of the village. The evaluation will be undertaken as part of a planning application (ref.: PALM/2021/11) for 31 affordable homes, new vehicular and pedestrian access, construction of new estate road together with associated works. The geophysical survey will be undertaken in June 2022.

Gwynedd Archaeological Trust. 2022. *Crown Street, Gwalchmai, Ynys Mon Written Scheme of Investigation.* Project G2730.

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. De-

selected 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.

It is envisaged that the de-selected material will be retained on the GAT servers for 2 years following the completion of the project at which point they will be reviewed and deleted as necessary in line with the GAT DMP.

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;
Jenny Emmett – Senior Planning Archaeologist, Gwynedd Archaeological Planning Service;
Ian Jones, *Curatorial Officer at Oriel Ynys Môn*

Diagnostic artefacts 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.
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.
The artefacts will be treated according to guidelines issued by the UK Institute of Conservation (Watkinson and Neal 2001) in particular the advice provided within *First Aid for Finds* (Rescue 1999) and Historic England.
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 | email: lucy.whittingham@aocarchaeology.com).
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 Ynys Môn, Rhosmeirch Llangefni LL77 7TQ), where they can receive specialist treatment and study.
GAT will contact the landowner via client for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Oriel Ynys Môn). 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 will be transferred to the Oriel in accordance with their guidelines.

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

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