High Pastures, Deganwy, Conwy

Geophysical Survey

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

High Pastures, Deganwy, Conwy

Geophysical Survey

Prosiect Rhif / Project No. G2607

Adroddiad Rhif / Report No.1488

Prepared for: Beech Developments Ltd

April 2019

Written by: Neil McGuinness

Gwynedd HER Event PRN: 45434

Cyhoeddwyd gan Ymddiriedolaeth Achaeolegol Gwynedd
Ymddiriedolaeth Archaeolegol Gwynedd
Craig Beuno, Ffordd y Garth,
Bangor, Gwynedd, LL57 2RT

Published by Gwynedd Archaeological Trust
Gwynedd Archaeological Trust
Craig Beuno, Garth Road,
Bangor, Gwynedd, LL57 2RT

Approvals Table				
	Role	**Printed Name**	**Signature**	**Date**
Originated by	Document Author	NEIL McGUINNESS	N. McGuinness	17/05/19
Reviewed by	Document Reviewer	STUART REILLY	Stuart Reilly	17/05/19
Approved by	Principal Archaeologist	JOHN ROBERTS		17/05/19

Revision History			
Rev No.	**Summary of Changes**	**Ref Section**	**Purpose of Issue**
1.1	Changes to conclusion to account for possible influence of local geology on results and include references to EAC guidelines	1, 5, 6	Requested by GAPS

CONTENTS

LIST OF FIGURES

CRYNODEB ANHECHNEGOL

Roedd Ymddiriedolaeth Archeolegol Gwynedd ei dirprwyo gan Beech Developments Ltd i ymgymryd arolwg geoffiseg archeolegol ar safle o fir 4.56ha ar y gornel o Ffordd Pentwyn a Lon Marl, Deganwy ar y blaen o adeiladwaith o ddatblygiad tai preswyl newydd.

Dynodwyd yr arolwg geoffisegol tair ardal o weddillion posib archeolegol : grup o bydewau; grup o bydewau/tyllau pyst; a chornel o amgaead cae. Mae dau adeilad anheddiad posib hefyd wedi ei dynodi. Anomaleddau arall llai arwyddocaol yn gynnwys cribau amaethu ol-ganaoloesol terfyn cae, pibelli dwr, gwrthrychau effaith gwres a haearnaidd a ffensys.

Mae'n argymelledig i redeg rhaglen ymhellach o asesiad archeolegol i'r nodweddion archeolegol tebygol a posibl cyn i'r dechreuad y gweithgareddau adeiladu, i gadarnhau canlyniadau'r arolwg a chymeriadaeth y nodweddion archeolegol. Mae'n hefyd yn awgrymedig fod y lleoliad arfaethedig y ddwy prawf pydew daearegol yn ailystyried er mwyn i osgoi trawiad a nodweddion archeolegol dichonol.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust (GAT) was commissioned by Beech Developments Ltd to undertake an archaeological geophysical survey on a 4.56ha site on land at the corner of Pentywyn Road and Marl Lane, Deganwy in advance of the construction of a new residential housing development.

The geophysical survey identified three areas of probable archaeological remains: a group of pits; a group of pits/postholes; and the corner of a field enclosure. Two possible settlement structures were also identified. Other less significant anomalies included cultivation ridges Post-medieval field boundaries, water pipes, ferrous and heat affected objects and fencing.

A further programme of archaeological evaluation is recommended for the probable and possible archaeological features prior to the commencement of construction activities to verify the survey results and characterise the archaeological features. It is also recommended that the proposed locations of two geological trial pits are reconsidered in order to avoid impacting potential archaeological features.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by Beech Developments Ltd to undertake a programme of non-invasive archaeological evaluation using geophysical survey as part of a staged programme of archaeological mitigation for a new residential housing development, High Pastures, on land at the corner of Pentywyn Road and Marl Lane, Deganwy, Conwy (centred on NGR SH 79181 79214; Figure 01). The works have been carried out as per condition 3 of the planning consent for planning application 0/43059. The development includes the erection of 110 residential dwelling units with associated access, parking, a balancing pond and landscaping. The plot covers an area of approximately 4.56 ha on land within three fields of improved grassland.

In addition to being part of the archaeological mitigation of the site prior to the commencement of construction related groundworks, the geophysical survey has been undertaken in advance of Geological Investigation (GI) works which are scheduled to take place in late April 2019. The results of the survey will be used to inform the choice of exploratory locations and determine the level of any archaeological mitigation that may be required before or during the GI works.

The survey was conducted over 5 days between Monday 8th April and Friday 12th April 2019 and was conducted as specified in the Gwynedd Archaeological Planning Service (GAPS) approved Written Scheme of Investigation (Appendix I) and in accordance with the following guidance:

- *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, 2014); and

- *EAC Guidelines for the use of Geophysics in Archaeology: Questions to Ask and Points to Consider* (Schmidt et al, 2015).

The project has been monitored by GAPS and the content of this report by GAT has been approved by GAPS prior to final issue.

Gwynedd Archaeological Trust 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	SH 79181 79214/ LL31 9YF
Location	The site is located within three improved grassland fields set aside for pasture and covers an area of approximately 4.56ha. It is located on the north-eastern edge of the town of Deganwy, Conwy, on land at the corner of Pentywyn Road and Marl Lane (SH 79181 79214). The development site is bounded by Pentywyn Road and modern housing to the west, Marl Lane and modern housing to the south, a modern housing estate to the east and further pasture fields to the north and north-east (Figure 01)
HER	Gwynedd Archaeological Trust HER
District	Conwy
Parish	Eglwysrhos
Topography	Located on the southern and south eastern slopes of a hill whose highest point is 46m AOD. The sites slopes from north-west to south-east with a north-east south-west aligned valley which becomes more pronounced at the north-east end of the site.
Current Land Use	Pasture
Geology	Solid: mudstone and siltstone. Superficial: predominately blown sand (BGS 2019)
Soils	Sand dune soils on north-western part of the development area, slowly permeable seasonally wet acid loamy and clayey soils on the south eastern side (Soilscapes 2019)
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	c. 4.56 ha

1.2 Geophysical Survey Aims and Objectives

The key aim and objective of the geophysical survey is to:

- establish the extent to which potential archaeological remains survive at the location of the development.

If previously unknown potential archaeological features are identified through geophysical survey, they may need to be evaluated with trial trenches or targeted excavation to confirm their existence and to establish their date and function, and following on from this, to assess the implications of the findings on the current understanding of the historical development of the area.

The trial trenches or targeted excavations should be excavated in advance of any groundworks undertaken by the site owner. If this is not viable then the location of trial pits/boreholes for a ground investigation (GI) survey will be co-ordinated with Beech Developments Ltd and GAPS to avoid where practicable areas of interest identified on the geophysical survey. If it is not feasible to relocate the exploratory locations, a programme of archaeological mitigation will be developed specific to the GI works.

Any archaeological features encountered may require preservation by record, i.e. further investigation, or preservation in-situ that may require amending the layout of the proposed development.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The development area has been the subject of two previous GAT desk based studies (McGuinness, Evans and Reilly 2016; McGuinness 2016). The field numbers referred to below represent the three fields within which the development is located: field 1 to the west, field 2 in the centre, and field 3 to the east.

A desk based assessment and walkover survey for the development (McGuinness, Evans and Reilly, 2016) identified two archaeological features within the development footprint, both which appear to be Post-medieval in date (Figure 02). The grassed over foundations of a straight linear stone field boundary (PRN 67,448) runs northwest-southeast parallel to, and to the east of, the post and wire fence that forms the present day boundary between fields 1 and 2. It appears to be of drystone construction with shaped face stones and a rubble core. It is 0.75m wide and between 0.2-0.3m high and approximately 225m long. A straight linear boundary is shown in this location on both the 1846 Tithe map and the 1st edition Ordnance Survey map of 1899. A small rectangular structure, probably a field barn (PRN 67,448) is also depicted on the 1899 map aligned NW-SE parallel with the field boundary mentioned above in the south-western corner of field 2. No above ground traces of the structure survive.

The archaeological remains of two post-medieval farmsteads are located immediately adjacent to the development (Figure 02). Pen-tywyn (PRN 67,442) is located to the north of the development site, on the eastern side of Pentywyn road. It is shown on the 1846 Eglwysrhos tithe map and the 1889 1st edition Ordnance Survey map. On the later map it is depicted as a small rectangular building set back from the road and measuring approximately 5x4m. It sits at the north-east end of a rectangular enclosure which adjoins another sub rectangular enclosure that lies to the south west of the building towards the roadside. Structural remains associated with the farmstead are visible as low earthworks in the field adjacent to the north-western corner of field 3. Yr-efail (PRN 67,440) lies just outside the southern corner of field 1 on the northern side of Marl Lane. It is shown on the 1846 Eglwysrhos tithe map and the 1889 1st edition Ordnance Survey map sitting at the western corner of a sub rectangular enclosure. On the 1st edition Ordnance Survey map it is depicted as a north-east south-west aligned range of four sub rectangular buildings approximately 27m long. No trace of the farmstead can be seen today and it lies underneath an electricity sub-station and modern housing built within the limits of its enclosure.

Despite the lack of archaeological sites within the development itself, it is located in a landscape rich in archaeological and historical significance. The wider archaeological

landscape is discussed in detail in the reports mentioned above (McGuinness, Evans and Reilly 2016; McGuinness 2016) and a brief summary is provided below.

The closest prehistoric activity to the development is located approximately 1km to the north and was uncovered during an archaeological evaluation to the south and east of Llanrhos church in 2001 in advance of a proposed extension to the cemetery. The evaluation identified a bank which survived as a slight earthwork bank, four shallow gullies and a possible posthole, along with charcoal, burnt daub, some wattle impressions and a flint core and flake material (PRN 12994). The wattle impressions suggested the presence of nearby structures. These were interpreted as being evidence for a possible prehistoric occupation area.

Prehistoric activity is also represented by chance finds of artefacts. A broken polished axe made of sedimentary rock of Ordovican origin (PRN 5182; SH 78207930) was found on the surface of a field leading to Deganwy Castle. Another axe (PRN 4581; SH 78508010) came from Plas Mariandir approximately 1km north west of the development area. A third axe (PRN 2831; SH 78527952) was found near Cae'r Dail on the Vardre. This axe is complete and was made of a stone other than Graig Lwyd.

Evidence for Roman (43 AD – 450 AD) and Early Medieval (450 AD – 1066 AD) activity in the immediate area of the development are concentrated on or between the hills of the Deganwy Castle Scheduled Monument (CN016; PRN 30,301), located around 1km to the west of the development site. Evidence for Roman settlement was found during excavations carried out in Deganwy by Leslie Alcock in the 1960s (Alcock 1967). He found sherds of pottery dated to the 3rd and 4th centuries AD, and a series of coins from Gallienus (260-8) to Valens (364-78). Alcock's excavations also produced evidence for a 6th century site of some status. He reports 'about a dozen sherds of east Mediterranean amphorae of Tintagel Class B' (Alcock 1967, 198), although there was only a single sherd of class Bi type closely datable to the late 5th to mid-6th century (Edwards and Lane 1988, 51).

The main phase of activity at Deganwy Castle appears is Medieval (1066 AD – 1547 AD). It was built by Robert of Rhuddlan in the 11th century and destroyed following a siege by Llywelyn ap Gruffydd in 1263. The remains of the castle survive today with an associated settlement (PRN 30,308) and field systems (PRN 30,311). More evidence for medieval settlement in the area comes from the church of St. Mary at Llanrhos (PRN 6932), 1km to the north of the development. Early traditions associate the church with the 6th century prince Maelgwyn Gwynedd, and it is also listed in the Norwich taxation of 1254.

Post-medieval (1547 – 1800 AD) activity in the immediate area of the development includes the former site of a Calvinistic Methodist Llanrhos Chapel (NPRN 97146) located on the

opposite side of Pentywyn Road at the northern corner of the site (Figure 02). The Post-medieval landscape was largely dominated by large estates, dispersed farmsteads and small villages. The development lies 600m to the west of Bodysgallen Hall, a large country house constructed in 1620 by Robert Wynne on the western slopes of Bryn Pydew. Bodysgallen Hall is a Grade I Listed Building (Cadw LB 3334; PRN 2830) and, along with a cluster of associated Grade II Listed Buildings, is located within a Grade I Registered Historic Park and Garden ((PGd) 7 (CON)). The Hall is now a National Trust owned property and has been used as a hotel since 1981.

3 METHODOLOGY

3.1 Geophysical Survey

3.1.1 Technical Detail

The survey was carried out in a series of traverses within 162x20m grids covering the footprint of the proposed development (Figure 03). The grids were tied into the Ordnance Survey grid using a Trimble high precision GPS system. The survey was conducted using a Bartington Grad 601-2 dual fluxgate gradiometer. The surveys were carried out at standard resolution with a 1.0m traverse interval and 0.25m sample interval.

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 mu-metal 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 1.0 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. The data is transferred from the data-logger to a computer where it is compiled and processed using TerraSurveyor V3.0 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 is presented with a minimum of processing although corrections may be made to compensate for instrument drift and other data collection inconsistencies. High readings caused by stray pieces of iron, fences, etc. are usually modified on the grey scale plot as they have a tendency to compress the rest of the data. The data is however carefully examined before this procedure is carried out as kilns and other burnt features can produce similar readings. The data on some 'noisy' or very complex sites can benefit from 'smoothing'. Grey-scale plots are always somewhat pixellated due to the resolution of the

survey. This at times makes it difficult to see less obvious anomalies (Figure 02). The readings in the plots can therefore be interpolated thus producing more but smaller pixels and a small amount of smoothing based on a low pass filter can be applied. This reduces the perceived effects of background noise thus making anomalies easier to see. Any further processing is noted in relation to the individual plot.

4 RESULTS

4.1 Geophysical Survey Results

The results of the geophysical survey are shown as a minimally processed plot (Figure 04; raw data clipped to +/- 15 nT and de-striped), and as an interpretative plot (Figure 05).

Probable archaeology

A number of magnetic responses were recorded that could be interpreted as of definite archaeological interest. A group of four weak positive subcircular anomalies (1) in field 1 most likely represent the remains of infilled cut features such as pits. A second group of 8 similar weak positive responses in the northern corner of field 2 (2) may represent infilled cut features such as small pits or postholes. An L shaped moderate linear positive anomaly in the north-western corner of field 3 (3) may represent the corner of a former ditched enclosure that predates any of the field boundaries identified on historic mapping.

Possible archaeology

Two feint sub-circular rings of weakly positive response (4) may be the remains of small settlement structures, however they may also represent areas of disturbance or result from natural variation.

Former field boundaries

The remains of former field boundaries corroborated with those depicted on historic maps have been recorded. The first (5), depicted on the 1889 1st edition Ordnance Survey map, runs from southwest to northeast from field 2 into field 3. It is indicated by a discontinuous linear arrangement of weakly negative responses suggestive of a former bank, however it is predominately represented by a series of dipolar responses along its former course. These are most likely the result of small ferrous metal objects accumulating against the boundary when it was in use. Another anomaly, defined by two approximately 13m long parallel linear moderately high positive responses is located in the southern corner of field 2 (6). It runs parallel with (5) to the north and corresponds to a field boundary depicted on the Eglwys Rhos Tithe map of 1846.

Agricultural activity – ploughing

A series of parallel linear anomalies (7) in the northern corner of field 2 are likely to be cultivation ridges resulting from historic agricultural activity. Their alignment suggests they most likely predate the post-medieval and modern field systems shown on historic mapping.

Water pipes

Two identified anomalies most likely represent the remains of ferrous water pipes. A strong positive linear anomoly (8) runs north-south across the western corner of field 1, terminating against the field boundary which separates it from field 2. It seems that it is most likely a supply pipe for a former water trough located on the boundary. Its origin corresponds with the location of the former Yr-efail farmstead (PRN 67,440), now demolished and replaced by an electricity substation and modern housing.

Another strong linear anomaly with an associated strong negative response (9) runs for about 44m southwest-northeast along the valley in the northern corner of field 3. Its origin lies outside of the survey area, however it clearly heads straight towards a substantial drainage ditch in the field to the west. A length of ferrous metal pipe is clearly visible within this ditch.

Magnetic debris

A number of dipolar responses (a single positive anomoly with an associated negative response) (not individually marked on Figure 05) are distributed across the survey area and are a result of ferrous metal debris in the topsoil.

Numerous moderately strong dipolar responses were identified against the southern boundary of field 3. These most likely represents a spread of thermoremanent material such as brick or ash in southern part of the field, material possibly originating from the construction of the housing to the south.

Magnetic disturbance

The edges of the fields showed high amplitude bipolar disturbance from modern ferrous metal objects in the form of the post and wire fencing enclosing and separating the fields, a gate at north east corner of field 1, and an electricity substation on the other side of the boundary in the southern corner of field 1.

Impact on borehole locations

The proposed exploratory locations for the GI works are shown on Figure 06. None of the proposed locations impact directly on any of the probable or possible archaeological features identified during the survey. The magnetic responses for both the pits in field 1 (1) and the pits / postholes in field 2 (2) were weak. It is possible that other associated archaeological features not identified during the survey may survive in proximity to the identified features and be impacted by nearby trial pit locations.

5 CONCLUSIONS AND RECOMMENDATIONS

The magnetometer survey of the development area identified three discreet areas of probable archaeology. These consisted of two groups of pits and / or postholes (1, 2) and the corner of a field enclosure (3). Two sub circular anomalies that may be of archaeological origin were also identified (4). Less archaeologically significant cultivation ridges (7) were identified along with the remains of field boundaries depicted on historic maps (5, 6). The remaining anomalies were the remains of water supply (8) and drainage pipes (9), thermoremanent material, small ferrous objects and ferrous enclosure fencing around the fields.

It should be noted that apparently archaeologically blank areas in the survey area are not necessarily archaeologically sterile, and a lack of geophysical anomalies cannot be taken to imply a lack of archaeological features. Magnetometer survey will not detect wall footings directly unless they are constructed of magnetised thermoremanent material such as brick. Also, the site appears to be covered by a considerable depth of windblown sand, and it is possible that this may mask archaeological anomalies, particularly if the depth of sand deposits exceeds one metre.

Given the identification of probable and possible archaeological remains during the survey, it is recommended that a further programme of archaeological evaluation is implemented for anomalies 1, 2, 3 and 4 prior to the commencement of construction phase groundworks at the site to verify their existence and determine their character, function and date.

Though none of the proposed exploratory locations for the GI works impact directly on identified probable or possible archaeological features, the weak signal that these anomalies produced means that there are potentially associated archaeological features in their vicinity not identified during the survey. For this reason it is recommended that the proposed trial pit to the east of pit group 1 and the proposed trial pit to the north-west of posthole / pit group 2 are both re-located to avoid the need for archaeological mitigation before or during the GI works.

6 SOURCES CONSULTED

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FIGURES

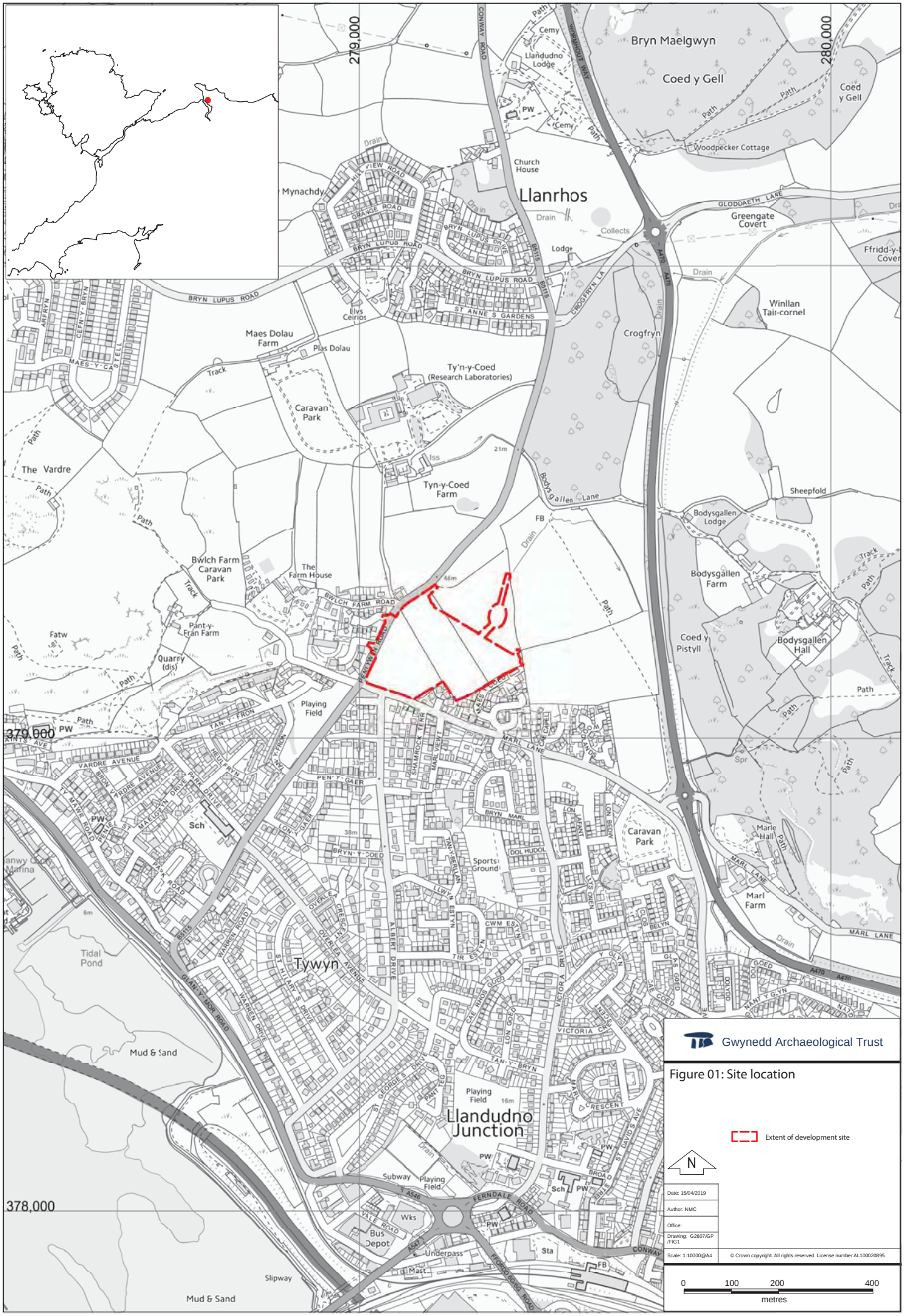

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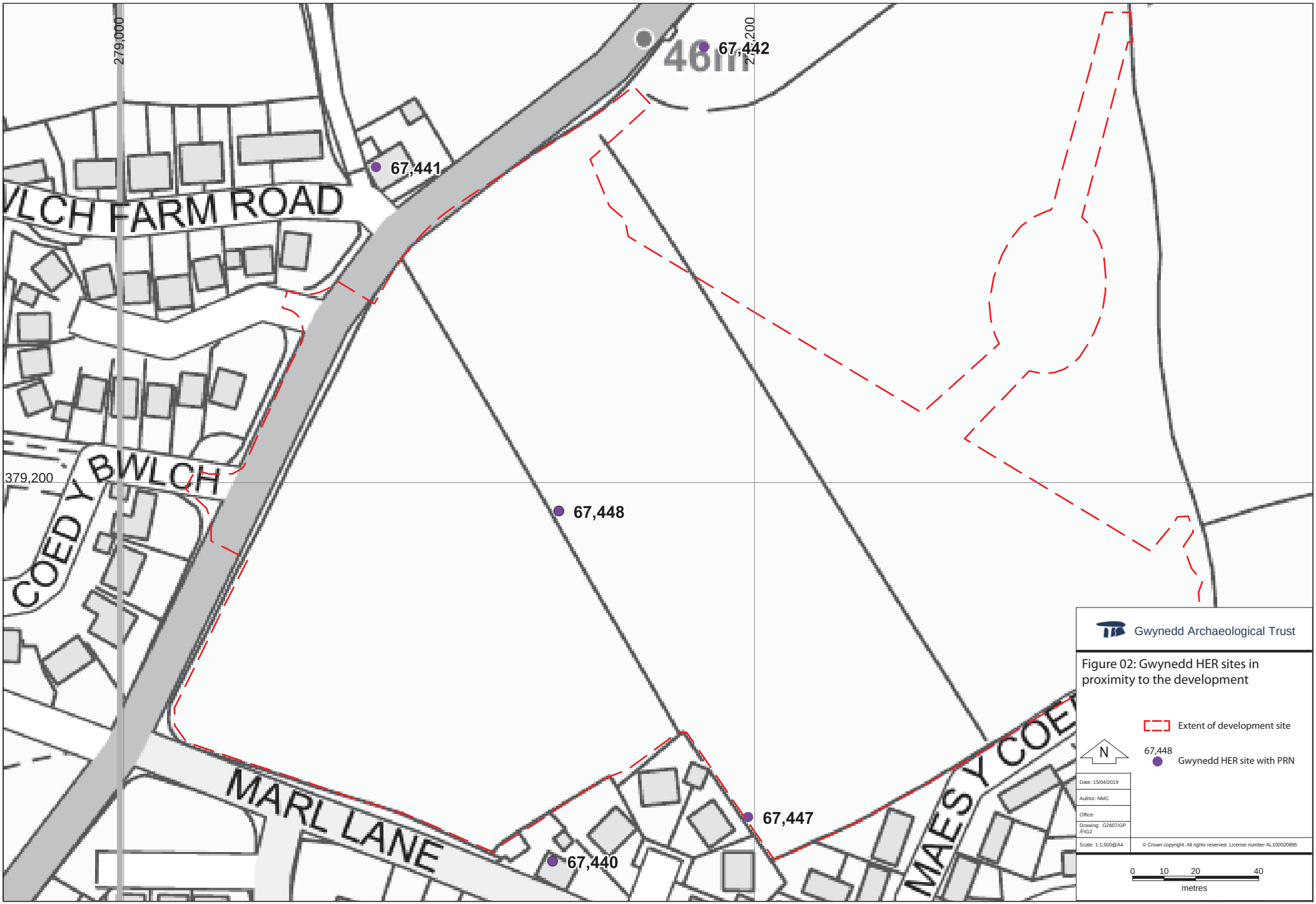
Figure 01: Site location

Extent of development site

N

Date: 15/04/2019	
Author: NMC	
Office:	
Drawing: G2607/GP/FIG1	
Scale: 1:10000@A4	© Crown copyright. All rights reserved. License number AL100020895

0 100 200 400
metres


279,000
279,200
379,200
67,442
67,441
67,448
67,447
67,440
VLCH FARM ROAD
COED Y BWLCH
MARL LANE
MAES Y COE
Gwynedd Archaeological Trust
Figure 02: Gwynedd HER sites in proximity to the development
Extent of development site
N
67,448
Gwynedd HER site with PRN
Date: 15/04/2019
Author: NMC
Office:
Drawing: G2607/GP/FIG2
Scale: 1:1,500@A4
© Crown copyright. All rights reserved. License number AL100020895
0 10 20 40
metres

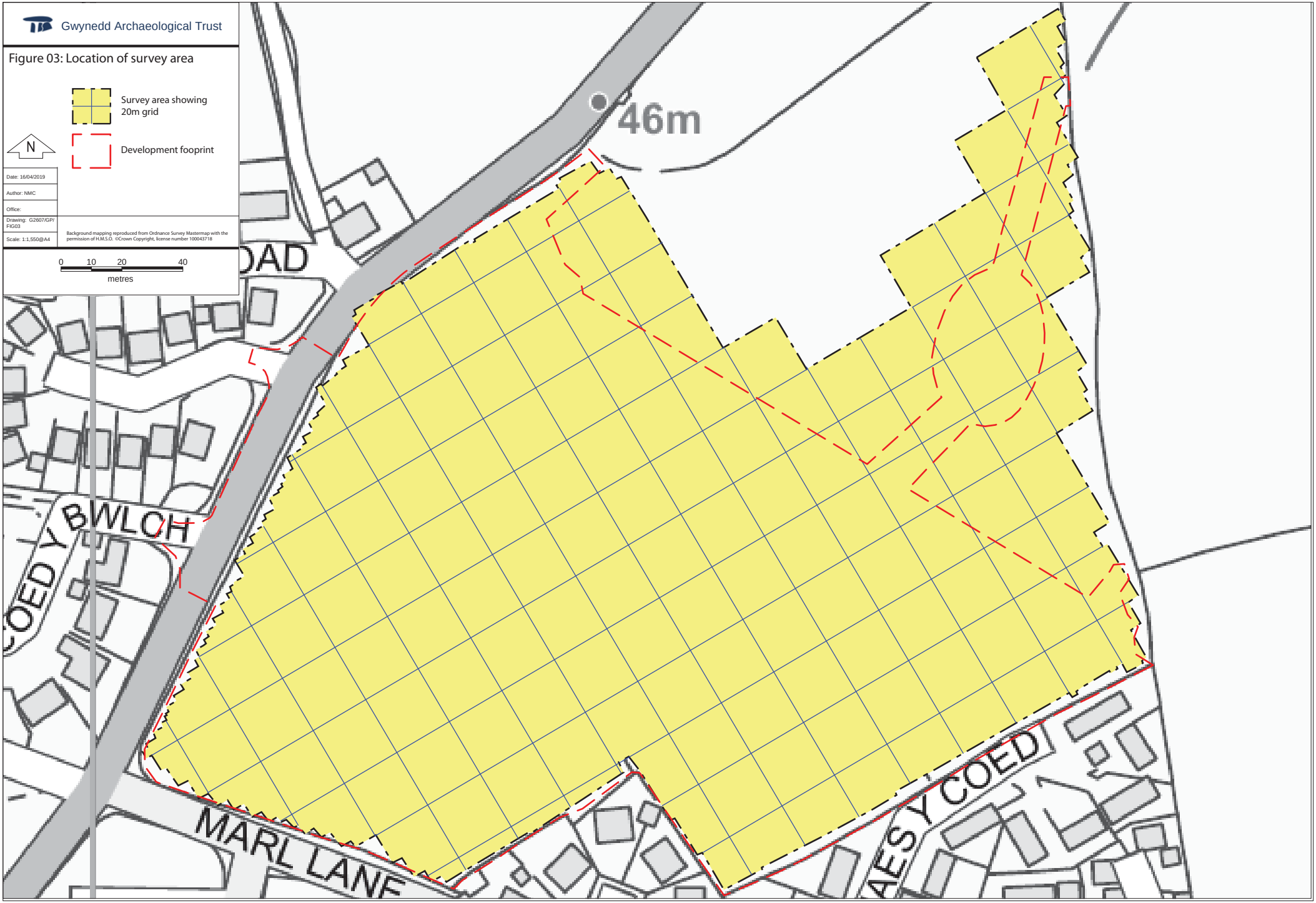

Gwynedd Archaeological Trust
Figure 03: Location of survey area
Survey area showing 20m grid
Development fooprint
N
Date: 16/04/2019
Author: NMC
Office:
Drawing: G2607/GP/FIG03
Scale: 1:1,550@A4
Background mapping reproduced from Ordnance Survey Mastermap with the permission of H.M.S.O. ©Crown Copyright, license number 100043718
0 10 20 40
metres
46m
OAD
BWLCH
COED Y
MARL LANE
AES Y COED

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Figure 04: Geophysical survey greyscale plot (raw data clipped to +/- 15 nT and de-striped)

15 nT

0 nT

-15 nT

N

Date: 16/04/2019	
Author: NMC	
Office:	
Drawing: G2607/GPI GS01	Background mapping reproduced from Ordnance Survey Mastermap with the permission of H.M.S.O. ©Crown Copyright, license number 100043718
Scale: 1:1100@A3	

0 7.5 15 30

metres

279,000
279,100
279,200
279,300
279,400
379,300
379,200
379,100
46m
LCH FARM ROAD
COED YBWLCH
MARL LANE
MAES Y COED
1
2
3
4
5
6
7
8
9

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Figure 05: Geophysical survey interpretative plan

2 Anomaly number
Magnetic debris
Magnetic disturbance
Survey area
Development fooprint

N

Date: 16/04/2019
Author: NMC
Office:
Drawing: G2607/GPI INTERP01
Scale: 1:1100@A3

0 7.5 15 30
metres

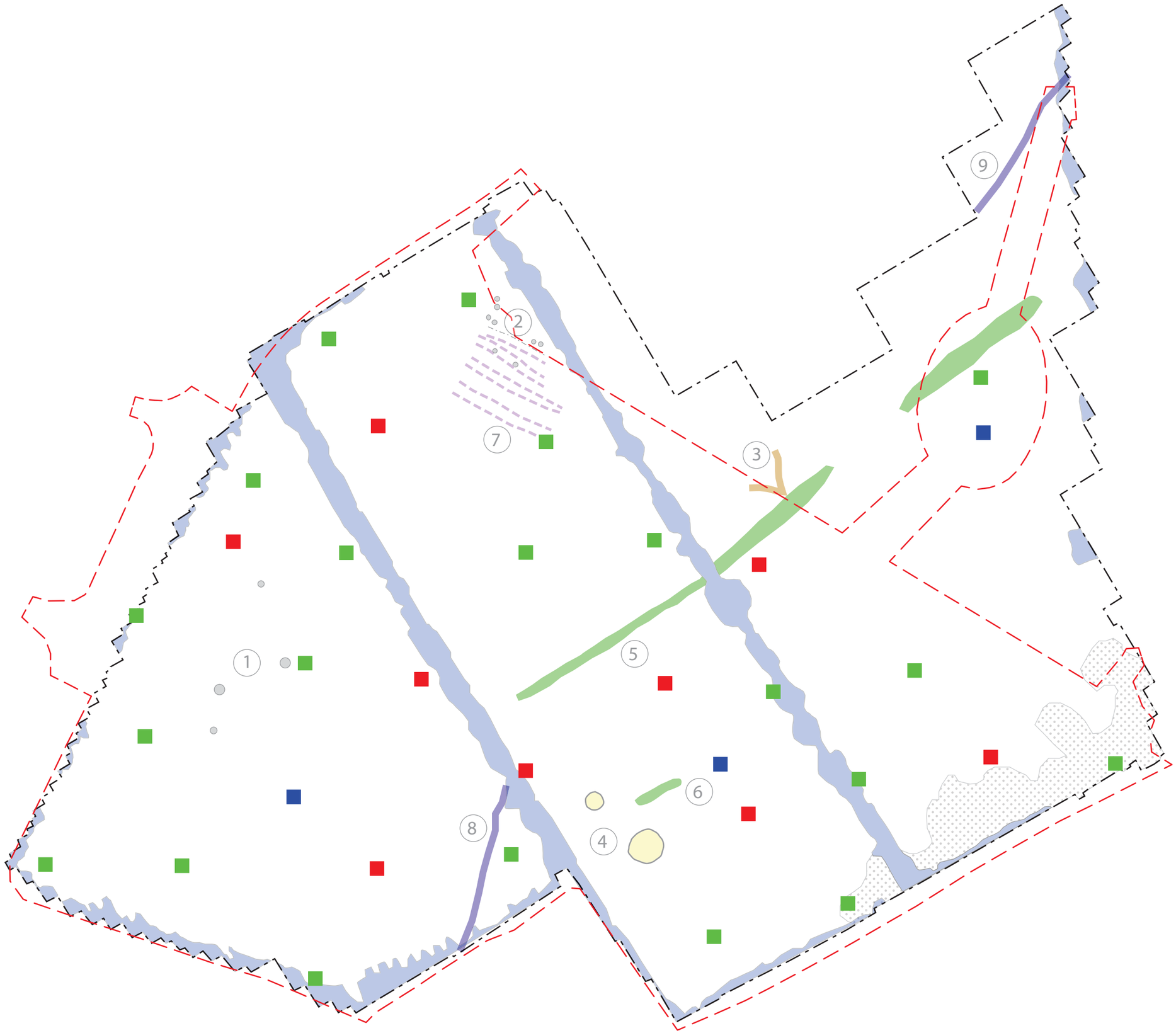

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Figure 06: GI works exploratory locations

Trial pit location (approx)

Indicative soakaway location (approx)

Trial pit location with CBR (approx)

Survey area

Development footprint

N

Date: 16/04/2019

Author: NMC

Office:

Drawing: G2607/GPI GI01

Scale: 1:1100@A3

0 7.5 15 30

metres

APPENDIX I – GAPS approved Project Design

LAND AT THE CORNER OF PENTYWYN ROAD AND MARL LANE, DEGANWY
(G2607)

Historic Environment Record Event Primary Reference Number: 45403

PROJECT DESIGN FOR ARCHAEOLOGICAL MITIGATION

(GEOPHYSICAL SURVEY)

Prepared for

Beech Developments Ltd

March 2019

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	**Printed Name**	**Signature**	**Date**
Originated by	Document Author	STUART REILLY	Stuart Reilly	26/03/19
Reviewed by	Document Reviewer	JOHN ROBERTS		26/03/19
Approved by	Principal Archaeologist	JOHN ROBERTS		26/03/19

Revision History			
Rev No.	**Summary of Changes**	**Ref Section**	**Purpose of Issue**
01	Inclusion of planning application number & how this WSI covers geophysical survey as part of staged archaeological mitigation. Addition of Aims & Objectives to outline archaeological mitigation Update of report compilation PPE appropriate to geophysical survey	1.0 1.1 3.2 5.0	Approval by GAPS

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

LAND AT THE CORNER OF PENTYWYN ROAD AND MARL LANE, DEGANWY (G2607)

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CONTENTS

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Beech Developments Ltd* to prepare a written scheme of investigation (WSI) for an archaeological mitigation of groundworks for a new housing development on land at the corner of Pentywyn Road and Marl Lane, Deganwy, Conwy (centred on NGR SH 79081 79157; Figure 01) as per condition 3 of the planning consent for planning application *0/43059*. The development plot covers an area of approximately 4.56h within three fields of improved grassland and will include the erection of 110 residential dwelling units with associated access, parking and landscaping (Figure 02).

The groundworks for the housing development are due to commence in October/November 2019. The archaeological mitigation will be a stage process undertaken in advance of the groundworks, the first stage of which will be a geophysical survey of the entirety of the housing development.

The geophysical survey and will be completed in accordance with the following guidance:

- *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); and
- *Standard and Guidance for Archaeological Geophysical Survey* (Chartered Institute for Archaeologists, 2014).

Gwynedd Archaeological Trust 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).

The project will be monitored by the Gwynedd Archaeological Planning Service on behalf of the Local Planning Authority.

1.1 Aims and Objectives

The key aims and objectives are to:

- Undertake a geophysical survey to establish the extent to which archaeological remains survive within the boundary of the housing development;
- if previously unknown archaeological features are identified through the geophysical survey then they will need to be evaluated with trial trenches to confirm the results;
- the trial trenches should be excavated in advance of any groundworks undertaken by the site owner. If this is not viable then the location of trial pits/boreholes for a ground investigation survey will be co-ordinated with *Beech Developments Ltd* and GAPS to avoid where practicable areas of interest identified on the geophysical survey;
- if the trenches confirm the presence of archaeology and dependent on the nature of the archaeology, this may require preservation by record, i.e. further investigation, or preservation in-situ; and
- each stage of the archaeological mitigation will be covered by separate WSIs.

1.2 Monitoring Arrangements

The archaeological mitigation will be monitored by the Gwynedd archaeological Planning Service (GAPS). GAPS have stated that the evaluation must include some limited research to place the survey results in context and inform their interpretation. The content of this WSI and all subsequent reporting by GAT must be approved by GAPS prior to final issue.

The contact details are: **01248 370926**

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 GATHER1075 and the Event PRN is 45403. The GAT HER will also be responsible for sourcing the Primary Reference Numbers (PRN) for any new identified and recorded assets.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The housing development is located on the northern fringe of the town of Deganwy, and is located to the northeast of the junction between Pentywyn Road to the west and Marl Lane to the south. The site covers an area of approximately 4.56h within three fields of improved grassland. It is bounded on three sides by modern housing developments; the land to the north east is improved pasture land. The development is located in a landscape rich in archaeological and historical significance and has been the subject of two previous GAT reports (1348 and 1349). It is located within 1km of the Scheduled Monument (CN016) Deganwy Castle (PRN 30,301), with an associated settlement (PRN 30308) and field systems (PRN 30311). To the immediate east of the development, located on a prominent position on top of a rocky hill is Bodysgallen Hall (PRN 2830) and Estate (PRN 4404).

The closest prehistoric activity to the development is located approximately 1km to the north and was uncovered during an archaeological evaluation to the south and east of Llanrhos church in 2001 in advance of a proposed extension to the cemetery. The evaluation identified a bank which survived as a slight earthwork bank, four shallow gullies and a possible posthole, along with charcoal, burnt daub, some wattle impressions and a flint core and flake material (PRN 12994). The wattle impressions suggested the presence of nearby structures. These were interpreted as being evidence for a possible prehistoric occupation area.

Prehistoric activity is also represented by chance finds of artefacts. A broken polished axe made of sedimentary rock of Ordovican origin (PRN 5182; SH 78207930) was found on the surface of a field leading to Deganwy Castle. Another axe (PRN 4581; SH 78508010) came from Plas Mariandir approximately 1km north west of the development area. A third axe (PRN 2831; SH 78527952) was found near Cae'r Dail on the Vardre. This axe is complete and was made of a stone other than Graig Lwyd.

Evidence for Roman (43 AD – 450 AD) and Early Medieval (450 AD – 1066 AD) activity in the immediate area of the development are concentrated on or between the hills of Deganwy. Evidence for Roman settlement was predominantly found during excavations carried out in Deganwy by Leslie Alcock in the 1960s (Alcock 1967). He found sherds of pottery dated to the 3rd and 4th centuries AD, and a series of coins from Gallienus (260-8) to Valens (364-78). Alcock suggests that the occupation probably took the form of a stronghold (Alcock 1967, 198).

The excavations conducted at Deganwy Castle by Alcock in the 1960s also produced evidence for a 6th century site of some status. He reports 'about a dozen sherds of east Mediterranean amphorae of Tintagel Class B' (Alcock 1967, 198), although there was only a single sherd of class Bi type closely datable to the late 5th to mid-6th century (Edwards and Lane 1988, 51). Bi amphorae were produced in the Argolid region of the Peleponnese, and possibly on Chios and Kos in Greece (Campbell 2007, 19). The B ware amphorae sherds are important evidence linking North Wales through trade with the Mediterranean in the 6th century. One of the most productive sites of this and other imported ware in Britain is Tintagel, which may have acted as a centre for the redistribution of these wares around the Severn Sea and further afield, including up the coast of Wales finally to Deganwy (Barrowman et al 2007). The number of sherds is very small, probably mainly due to the small area excavated, and much relies on the single diagnostic sherd.

Alcock found traces of a drystone wall, at least 1.75m wide, around the eastern side of the west hill. He could not date this feature, which might have encircled the hill, and places it anywhere from Robert of Rhuddlan's 11th century castle to the Iron Age (Alcock 1967, 198), but other authors (Edwards and Lane 1988, 51; Dark 1994, 100) have linked this feature with the 6th century activity. The combined historical and archaeological evidence does suggest a 6th century fortified site of high status on the western hill. Alcock (1990) noted that many early medieval high status sites in Britain have features in common, including a location on pronounced rocky outcrops, with fluvial or marine connections, and the presence of a safe harbour. Imported wares have also been found on many of them, thought to represent not only foreign trade but the function of these sites as local centres of trade and redistribution. Deganwy is typical of this type of site, with its location on the rocky hills and the presence of a sheltered harbour in the mouth of the river close to the foot of the hills.

During the Medieval period (1066 AD – 1547 AD) the site of Deganwy Castle (PRN 30301; CN016) commanded the crossing to the Conwy River and was repeatedly fought over by the Welsh and the Anglo-Normans (RCAHMW 1956, cxix). The castle now has few upstanding walls surviving, is located at SH 78227945 and occupies two low hills overlooking the eastern bank of the Afon Conwy close to the river mouth.

The castle was composed of a principle tower, or donjon, on the west hill, a smaller tower, Mansel's Tower, on the east hill, and the two were linked by a defended bailey. The donjon was begun in 1247 and not completed before 1249 (Brown et al 1963, 625). The tower on the eastern hill was completed by 1249 (Alcock 1967, 193), and they were initially linked by palisades. In 1249 and 1250 the king issued orders for the bailey to be fortified in stone, with two stone gateways. (Brown et al 1963, 625). The construction of a horse mill was also

ordered in 1250 and a mill stone found just outside the south gate of the bailey probably came from this (RCAHMW 1956, 154).

The castle was finally destroyed further to a siege by Llywelyn ap Gruffydd in 1263. Alcock's excavations showed that the demolition involved mines dug under walls and then fired to cause their collapse. This technique was used on the southern gateway, curtain wall of the donjon and the buildings inside the donjon (Alcock 1967, 192).

In addition, approximately 1km to the north of the development church of St. Mary at Llanrhos, known previously as Eglwys Rhos (PRN 6932). The church is medieval in origin, as it is documented in the Norwich taxation of 1254 and was granted to the Cistercian monks of Aberconwy by Edward III in exchange for their grange of Ffriwlwyd, and tradition claims the church was rebuilt at that time (c. 1350) and rededicated to St. Mary. The church was heavily restored in 1820 and again in 1865 (Clarke 1961, 29; Davidson 2000, 2), and although some of the walls may be medieval, all the windows and doors were renewed in the 19th century.

Post-medieval activity in the immediate area of the development includes the former site of a Calvinistic Methodist Llanrhos Chapel (NPRN 97146) located on the opposite side of Pentywyn Road at the northern corner of the site.

Bodysgallen Hall (Cadw LB 3334). The hall is a and is associated with a number of Grade II Listed outbuildings. They are all located within the designated Bodysgallen Historic Park and Garden (GD7).

The development also lies 600m to the west of Bodysgallen Hall a large country house, constructed in 1620 by Robert Wynne. It passed by marriage to the Mostyn family of Gloddaeth Hall in 1776, from which point its primary use was as a dower house for extended members of the Mostyn family whose main house remained at Gloddaeth. The house is built with 3 storeys and an attic, is predominately square in plan and built around a 5 storey central tower. Bodysgallen Hall is a Grade I Listed Building, listed as an exceptionally well-preserved 17th century gentry house with successive additions to the early 20th century which make a coherent architectural whole of remarkable character and consistency. The Hall is now a National Trust owned property and has been used as a hotel since 1981.

Bodysgallen is located within a Grade I Registered Historic Park and Garden (Historic Landscape Asset 170) on the western slopes of Bryn Pydew. The Hall is situated centrally within the park and garden and a number of other Grade II Listed Historic Buildings are clustered around it.

2.1 Geology

The underlying geology of the Proposed Development comprises undifferentiated mudstone, siltstone and sandstone, overlain by superficial deposits of Devensian till.

2.2 Previous Work

In 2016 GAT undertook an archaeological assessment (GAT Report 1348) and Assessment of the Impact of Development on the Historic Landscape (ASIDOHL2) (GAT Report 1349) of the site and environs on the behalf of Beech Developments Ltd. During the walkover of the site for the archaeological assessment the grassed over remnants of a straight linear stone field boundary wall (PRN 67,448) was identified running northwest-southeast across the approximate centre of the housing development. It appears to be of drystone construction with shaped face stones and a rubble core. The wall is 0.75m wide and between 0.2-0.3m high and approximately 225m long. A straight linear boundary is shown in this location on both the 1846 Tithe map and the 1st Edition Ordnance Survey map of 1899 (Figure 03). The wall is likely to be Post-medieval in date.

The desk-based assessment of GAT Report 1348 identified a structure (PRN 67,447) located 55m to the east of the location of a range of buildings at Yr-efail, at the edge of the central southern part of the housing development. It is depicted as a rectangular roofed structure on the 1st Edition Ordnance Survey map of 1889. Based on the map, the structure measured 6 x 3.5m and had a small rectangular enclosure attached at its north-west end, and is most likely a field barn. It is aligned north-west south-east, parallel with the field boundary which separates it from Yr-efail to the west. No visible traces of the building survive within the field.

3 METHODOLOGY

3.1 Geophysical Survey

3.1.1 Summary

The geophysical survey will be undertaken by GAT staff and will incorporate the housing development area and balancing pond, as defined in Figure 02. The survey will be carried out in a series of 20m grids that will include the balancing pond as well as the associated corridors to access/egress it, which will be tied into the Ordnance Survey grid using a Trimble R8 high precision GPS system. The survey will be conducted using a Bartington Grad 601-2 dual fluxgate gradiometer with a 1.0m traverse interval and a 0.25m sample interval.

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 is presented with a minimum of processing although corrections are made to compensate for instrument drift and other data collection inconsistencies. High readings caused by stray pieces of iron, fences, etc. are usually modified on the grey scale plot as they have a tendency to compress the rest of the data. The data is however carefully

examined before this procedure is carried out as kilns and other burnt features can produce similar readings. The data on some ‘noisy’ or very complex sites can benefit from ‘smoothing’. Grey-scale plots are always somewhat pixellated due to the resolution of the survey. This at times makes it difficult to see less obvious anomalies. The readings in the plots can therefore be interpolated thus producing more but smaller pixels and a small amount of smoothing based on a low pass filter can be applied. This reduces the perceived effects of background noise thus making anomalies easier to see. Any further processing is noted in relation to the individual plot.

3.2 Report compilation

Following completion of the stages outlined above, a report (***see below**) 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;
8. Conclusions and recommendations;
    a. Conclusion and recommendations;
9. Acknowledgements;
10. Bibliography;
    a. Primary sources;
    b. Secondary sources;
11. Figures; inc.:
    - location plan;
    - grey scale plot;
    - anomaly identification and interpretation;
12. Appendix I (approved written scheme of investigation);
13. Appendix II (Sites listed on GAT Historic Environment Record);
14. Appendix III (Definition of mitigation terms);
15. Back cover.

(*_The report will include a discussion of the grey scale plot and an interpretation of the any anomalies identified; these anomalies will be presented as either positive or negative, suggesting whether they could be cut features (ditches, pits etc.), or built sub-surface features (e.g., banks). Figures will be included for the grey scale plot and for the anomaly interpretation. The results of the geophysical survey will be used to inform further recommendations for archaeological mitigation (if relevant_)**)**.

Illustrations will include plans of the location of the study area; historical maps, when appropriate and if copyright permissions allow, will be included.

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. The archaeological mitigation outlined in this written scheme of investigation will be submitted in draft format in April 2019; a final report will be submitted to the Historic Environment within six months of submitting the draft report (October 2019).

The following dissemination will apply:

- A digital report(s) will be provided to Beech Developments Ltd and GAPS (draft report then final report);
- A paper report plus a digital report will be provided to the regional Historic Environment Record, Gwynedd Archaeological Trust; this will be submitted within six months of project completion (final report only), along with any relevant, digital information such as the project database and photographs. All digital datasets submitted will conform to 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 archive (including photographic and drawn) data 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*. Digital information will include the photographic archive and associated metadata.

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section with attendances on-site undertaken by a GAT Project Archaeologist. The Project Archaeologist will be responsible for the archaeological mitigation on site, including all field management duties, e.g., GAPS/client/consultant liaison, osteologist or palaeo-environmentalist liaison (if relevant). The Project Archaeologist will be responsible for completing all on site pro-formas and the fieldwork archive itemised in Sec. 3.2. The Project Archaeologist will also be responsible for submitting a draft final report (or interim report) for project manager review and approval. The report will then be submitted as per the arrangements defined in Sec. 5.

5 HEALTH AND SAFETY

The GAT Project Archaeologist(s) will be CSCS certified. Copies of the site specific risk assessment will be supplied to the client and sub-contractor prior to the start of fieldwork. Any risks and hazards will be indicated prior to the start of work via a submitted risk assessment. All GAT staff will wear PPE and equipment appropriate for a geophysical survey. All GAT fieldwork is undertaken in accordance with the Trust's Health and Safety Manual, Policy and Handbook which were prepared by Ellis Whittam.

6 SOCIAL MEDIA

One of the key aims in the GAT mission statement is to improve the understanding, conservation and promotion of the historic environment in our area and inform and educate the wider public. To help achieve this, GAT maintains an active social media presence and seeks all opportunities to promote our projects and results. With permission, GAT would like the opportunity to promote our work on this scheme through our social media platforms. This could include social media postings during our attendance on site as well as any postings to highlight results. In all instances, approval will be sought from client prior to any postings.

7 INSURANCE

7.1 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 21/06/2019

7.2 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 21/06/2019

7.3 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 9446015

EXPIRY DATE 22/07/2019

8 SOURCES CONSULTED

1. *Alcock, L., 1967. 'Excavations at Deganwy Castle, Caernarvonshire, 1961-6', Archaeological Journal 124, 191-201;*

2. Alcock, L. and Alcock, E.A., 1990. 'Reconnaissance excavations of Early Historic fortifications and other royal sites in Scotland, 1974-84. 4: Excavations at Alt Clut, Clyde Rock, Strathclyde, 1974-75', *Proc. Soc. Antiquaries Scot*. vol 120, 95-149;

3. Barrowman, R.C., Batey, C.E. and Morris, C.D., 2007. *Excavations at Tintagel Castle, Cornwall 1990-1999*, Society of Antiquaries of London;

4. Brown, R.A., Clovin, H.M. and Taylor, A.J. (eds), 1963. *The History of the King's Works, volume II: The Middle Ages*, HMSO, London;

5. Campbell, E., 2007. *Continental and Mediterranean Imports to Atlantic Britain and Ireland, AD 400-800*, CBA Research Report 157, CBA, York;

6. Chartered Institute for Archaeologists, 2014, *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*;

7. Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Geophysical Survey;*

8. Clarke M. L 1961 'Church Building and Church Restoration in Caernarfonshire during the 19th Century', *Trans. Caerns. Hist. Soc. Vol 22,* 20-31;

9. Dark, K.R., 1994. *Discovery by Design: the identification of secular elite settlements in western Britain AD 400-700*. BAR British series 237, Tempus Reparatum, Oxford;

10. Davidson, A. 2000 *Welsh Historic Churches project, Gazeteer of Churches, Diocese of St. Asaph, Conwy Valley.* Unpublished GAT Report no. 390;

11. Edwards, N and Lane, A (eds), 1988. *Early Medieval Settlement in Wales AD 400-1100;*

12. English Heritage, 1991, *Management of Archaeological Projects (MAP2);*

13. English Heritage, 2011, *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation;*

14. Gwynedd Archaeological Trust, 2014, *Historic Environment Record (HER) Guidelines for Archaeological Contractors* (Version 1.3; draft);

15. Historic England, 2015, *Management of Research Projects in the Historic Environment (MoRPHE);*

16. Ordnance Survey First Edition 1-inch to 25-mile County Series maps Caernarvonshire sheet V.5 & IV.8, 1889;

17. Royal Commission on Ancient and Historic Monuments of Wales, 2015, *Guidelines for digital archives.*

FIGURE 01

Location of archaeological features (red dots) in relation to development site (red outline). Scale 1:10,000 @ A4.

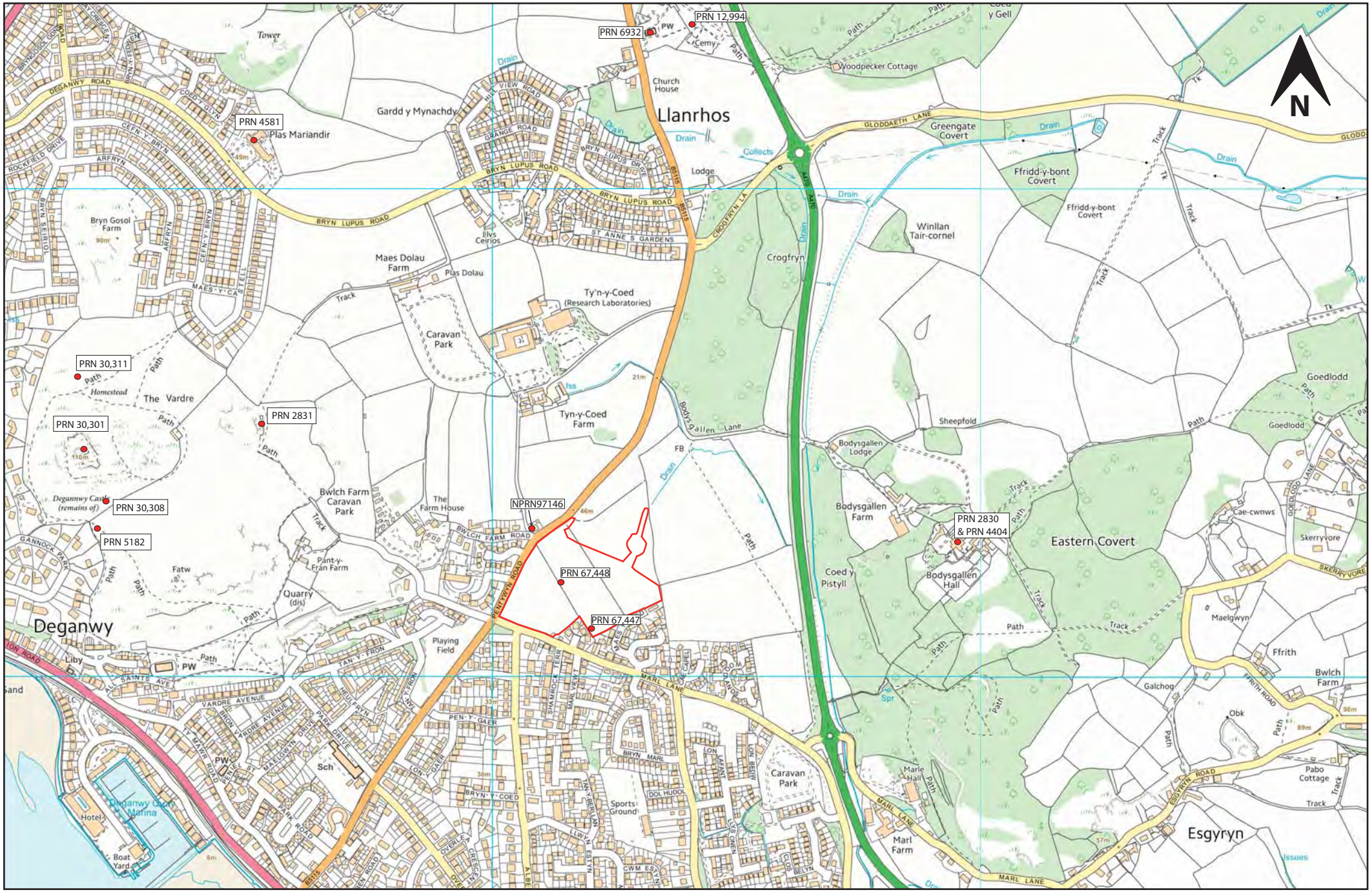


Figure 01: Location of archaeological features (red dots) in relation to development site (red outline). Scale 1:10,000 @ A4.

FIGURE 02

Reproduction of client drawing BD/HP/PL1 Planning Layout

JOB TITLE	CORNER OF PENTYWYN ROAD & MARL LANE DEGANWY
DWG TITLE	PLANNING LAYOUT
DWG NO	BD / HP / PL1
SCALE	1:500@A1 / 1:1000@A3
DATE	31/05/2016
REV	D

beechdevelopments

REV A - 22/07/16 - CCBC COMMENTS ADDED
REV B - 22/08/16 - ROOT PROTECTION AREAS ADDED
REV C - 05/04/17 - CCBC HIGHWAY COMMENTS ADDED
REV D - 20/07/17 - CCBC HIGHWAY COMMENTS ADDED

CORNER OF PENTYWYN ROAD & MARL LANE
SITE CONCEPT PLAN

DQ3 TOWNHOUSE	10 NO
G3 TOWNHOUSE	12 NO
B2 BUNGALOW	12 NO
E4 DETACHED HOUSE	5 NO
A3 TOWNHOUSE	14 NO
F2 TOWNHOUSE	9 NO
F3 TOWNHOUSE	6 NO
P3 DETACHED HOUSE	16 NO
D2H APARTMENTS	4 NO
H3 DETACHED HOUSE	11 NO
A4 DETACHED HOUSE	11 NO
TOTAL :110 PLOTS	

Proposed 6m galvanised tubular steel column with a post top mounted Urbis Saphire 1 lantern with CTG bowl and 45 or 60 watt cosmopolis lamp. (For adoption under section 38 agreement)

Proposed 6m galvanised tubular steel column with a post top mounted Urbis Saphire 1 lantern with CTG bowl and 45 or 60 watt cosmopolis lamp.

Section 38 Works to LA adoptable standards

KEY FOR PROPOSED STRUCTURAL PLANTING

PROPOSED LANDSCAPING, SPECIES TO BE AGREED.

FINAL HARD AND SOFT LANDSCAPING TO BE AGREED WITH LPA

KEY:

Trees to be retained and protection

Denotes Screen Fence.

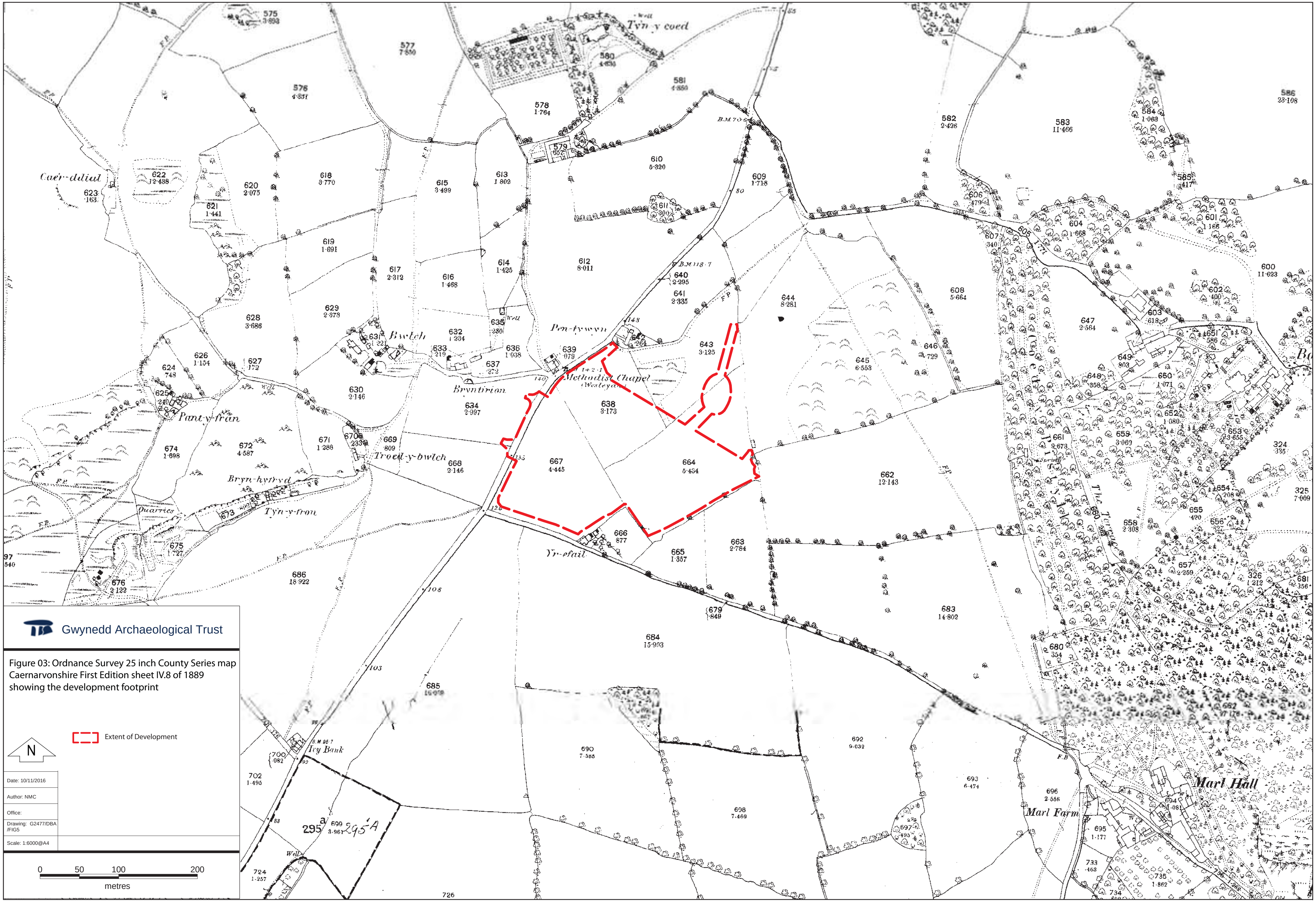
Visibility splays of junctions

parking bays 2.5m x 5m min

beechdevelopments

FIGURE 03

Ordnance Survey 25 inch County Series map Caernarvonshire First Edition sheet IV.8 of 1889 showing the development footprint.



Gwynedd Archaeological Trust

Figure 03: Ordnance Survey 25 inch County Series map Caernarvonshire First Edition sheet IV.8 of 1889 showing the development footprint

Date: 10/11/2016

Author: NMC

Office:

Drawing: G2477/DBA /FIG5

Scale: 1:6000@A4

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