# PONT BODFEL, PWLLHELI, GWYNEDD

## ASESU A GWERTHUSO ARCHEOLEGOL / ARCHAEOLOGICAL ASSESSMENT AND EVALUATION

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

# PONT BODFEL, PWLLHELI, GWYNEDD

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**Pont Bodfel o'r gogledd/Pont Bodfel from the north (G2644_044)**

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## CRYNHODEB ANHECHNEGOL

*Comisiynwyd Ymddiriedolaeth Archaeolegol Gwynedd gan Ymgynghoriaeth Gwynedd Consultancy i ymgymryd asesiad a gwerthusiad archaeolegol (arolwg geoffisegol) cyn gwneud gwaith adnewyddu pontydd ym Mhont Bodfel, Pwllheli, Gwynedd. Mae'r cynllun presennol yn cynnwys disodli'r bont bresennol sy'n dyddio i'r bedwaredd ganrif ar bymtheg cynnar a phont newydd ar aliniad tebyg. Roedd y bont bresennol yn rhan o ystâd Bodfel ac roedd yn elfen bwysig mewn cysylltiadau trafnidiaeth leol. Nododd yr asesiad ddwy nodwedd ôl-ganoloesol: hen bwll graen ac olwyn ddŵr, y ddau i'w weld fel gwrthgloddiau isel o fewn tir pori gwell; ni nodwyd unrhyw archaeoleg gynhanesyddol, Rufeinig na chanoloesol yn ystod yr asesiad desg na'r arolwg cerdded. Cyfyngwyd anghysondebau'r arolwg geoffisegol i ardal o greigwely claddedig magnetig cryf a oedd yn cyfateb a lleoliad yr hen chwarel, ardal o sŵn magnetig a ddehonglir fel daeareg a dau anghysondeb llinol ynysig a ddehonglir fel draeniau neu wasanaethau modern. Argymhellodd yr asesiad/gwerthusiad y dylid cynnal cofnod adeiladu archaeolegol cyn gwneud unrhyw waith atgyweirio ar barapet Pont Bodfel ac ddylid briff gwylio gael ei gynnal yn ystod yr gwaith adlinio sylfaen, yn enwedig yn ardaloedd o nodweddion ac anghysonderau a nodwyd. Yn ogystal, argymhellwyd y dylid cloddio ffos archaeolegol ar draws yr hen olwyn ddŵr, os yw am gael ei heffeithio, a'i fod yn cael cofnodi.*

## NON-TECHNICAL SUMMARY

*Gwynedd Archaeological Trust was commissioned by Ymgynghoriaeth Gwynedd Consultancy to undertake an archaeological assessment and evaluation (geophysical survey) in advance of bridge replacement works at Pont Bodfel, Pwllheli, Gwynedd. The current scheme involves replacing the existing early-nineteenth century bridge with a new bridge on a similar alignment. The existing bridge was part of the Bodfel estate and was an important element in local transport links. The assessment identified two post-medieval features: a former gravel pit and a mill race, both visible as low earthworks within improved pastureland; no prehistoric, Roman or medieval archaeology was identified during the desk-based assessment or walkover survey. The geophysical survey anomalies were limited to an area of strongly-magnetic buried bedrock that corresponded with the location of the former quarry, an area of magnetic noise interpreted as geology and two isolated linear anomalies interpreted as modern drains or services. The assessment/evaluation recommended that an archaeological building record be carried out in advance of any repair work to the damaged parapet of Pont Bodfel and that a watching brief is maintained during realignment groundworks, particularly in the areas of identified features and anomalies. In addition, it was also recommended that an archaeological trench be excavated across the former mill race, if it is to be affected, and a section drawn and recorded.*

# 1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by Ymgynghoriaeth Gwynedd Consultancy to undertake an archaeological assessment and evaluation in advance of bridge replacement works at Pont Bodfel, Pwllheli, Gwynedd (NGR SH34283660; postcode: LL53 6DN; Figure 01). The current scheme involves replacing the existing bridge with a new bridge on a similar alignment. There are two options currently considered: one downstream of the existing bridge and one upstream (Figures 02 and 03 respectively); for both options, a new road tie-in will be required. Currently, downstream is the preferred option, but both options have been considered for this report. A temporary bridge has already been constructed at the site of the replacement bridge. The construction schedule for the new bridge is to be confirmed, but is expected during 2020. A Heritage Impact Assessment has been completed separately by GAT (GAT Report 1547).

The archaeological assessment and evaluation comprised the following:

- an assessment of the proposed new roadway and bridge location;
- a geophysical survey (magnetometer) of the offline portion of the new roadway; and
- an auger survey to establish the depth and nature of deposits within the river bank in proximity to the current bridge and temporary bridge. *Due to current Covid-19 restrictions, the auger survey has not been completed. If the survey can proceed, an updated report with results will be submitted.*

The archaeological assessment and evaluation was 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); and
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015).
- *Standard and Guidance for Archaeological Field Evaluation* (Chartered Institute for Archaeologists, 2014); and

- *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014).

The archaeological assessment was monitored by the Gwynedd Archaeological Planning Service and was undertaken in accordance with an approved Written Scheme of Investigation (Appendix I). In line with the Gwynedd Historic Environment Record (HER) requirements, the HER was contacted at the onset of the project to ensure that any data arising was formatted in a manner suitable for accession to the HER under 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 was informed of the project start date, location including grid reference and estimated timescale for the work. The GAT HER enquiry number is GATHER1221 and the event primary reference number is 45787. A bilingual event summary has been prepared for submission to the HER in accordance with their guidance.

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).

# 2 METHODOLOGY

## 2.1 Introduction

The archaeological assessment/evaluation has been completed as a staged process and comprised the following:

- A desk-based assessment of the proposed new roadway and bridge;
- a geophysical survey (magnetometer) of the offline portion of the new roadway; and

## 2.2 Desk Based Assessment

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage….Significance is to be judged in a local, regional, national or international context as appropriate” (CIfA 2014, 4).

The desk-based assessment involved a study of the following resources:

1. The regional Historic Environment Register ((HER) Gwynedd Archaeological Trust, Craig Beuno, Ffordd y Garth, Bangor, Gwynedd LL57 2RT) was examined for information concerning the study area, defined as the new roadway and bridge location, and the immediate environs. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER. All identified features will be mapped, described and added to a gazetteer of sites and the relative importance of any sites defined;
2. The National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for sites additional to the HER;
3. Aerial photographs from the National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) were examined for potential features;

4. On-line catalogue search of the National Library of Wales (Penglais Rd, Aberystwyth SY23 3BU);
5. Archive data, including primary and secondary sources, historic maps and estate maps were examined at the regional archives (Gwasanaeth Archifau Gwynedd, Cyngor Gwynedd, Caernarfon LL55 1SH); and
6. Light Detection and Ranging (LiDAR) data was examined from the Lle Geo-Portal at http://lle.gov.wales/home for information on potential surface features using digital terrain modelling and digital surface modelling.

A walkover survey was undertaken within the assessment area. All known and new archaeological features on the ground were located and described on GAT pro-formas. The sites were then be added to the overall gazetteer and their relative importance defined (q.v. para. 3.4) and the potential for sub-surface archaeology was estimated. A photographic record was maintained using GAT pro-formas and images were taken in RAW format using a digital SLR set to maximum resolution. Photographic images were archived in TIFF format using archive numbering system G2644_001 to G2644_052 (Appendix IV).

## 2.3 Geophysical survey

### *2.3.1 Summary*

The geophysical survey was undertaken by GAT staff and incorporated the offline road improvement area for the downstream option, as identified in Figure 02, and with an estimated length of 580m. The survey was undertaken on the 6th May 2020 as a series of 20m grids, which were tied into the Ordnance Survey grid using a Trimble R8 high precision GPS system; the total survey area is estimated at 1.2ha. The survey was conducted using a Bartington Grad 601-2 dual fluxgate gradiometer with a 1.0m traverse interval and a 0.25m sample interval.

The geophysical survey was limited to the downstream option as the upstream option was not suitable for geophysical survey.

### *2.3.2 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.

### *2.3.3 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 1.0m 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.

### *2.3.4 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.

### *2.3.5 Aims*

The results (q.v. para. 3.2) includes a discussion of the grey scale plot and an interpretation of the any anomalies identified; these anomalies are 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 are included for the grey scale plot and for the anomaly interpretation (Figure 12 to 14). The results of the geophysical survey have been used to inform further recommendations for archaeological evaluation and/or mitigation.

## 2.4 Gazetteer

A gazetteer has been compiled for all existing and newly identified sites within the local area, based on information sourced from the desk based assessment and geophysical survey; the gazetteer (para. 3.4) has been prepared in the following format:

| | |
|---|---|
| **Feature Number** | |
| **Site name** | |
| **PRN number** | |
| **Grid reference** | |
| **Period** | |
| **Site type** | |
| **Assessment category** | |
| **Description** | |
| **Impact** | |
| **Recommendation for further assessment/evaluation** | |
| **Recommendation for mitigatory measures** | |

**The following categories have been used to define the assessment category of the archaeological asset:**

*Category A - Sites of National Importance*.
Scheduled Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both. Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

*Category B - Sites of regional or county importance.*
Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or

destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

*Category C - Sites of district or local importance.*
Sites which are not of sufficient importance to justify a recommendation for preservation if threatened. Category C sites nevertheless merit adequate recording in advance of damage or destruction.

*Category D - Minor and damaged sites.*
Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

*Category E - Sites needing further investigation.*
Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation.

**The impact of the proposed works on any asset has been identified using the following impact criteria:**

*None:*
There is no construction impact on this asset.
*Slight:*
This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the asset, *e.g.* part of a trackway or field bank.
*Unlikely:*
This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.
*Likely:*
Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.
*Significant:*

The partial removal of an asset affecting its overall integrity. Assets falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

*Considerable:*

The total removal of an asset or its partial removal which would effectively destroy the remainder of the site.

*Unknown:*

This is used when the location of the asset is unknown, but thought to be in the vicinity of the proposed works.

## 2.5 Archive and Dissemination

A full archive including plans, photographs, written material and any other material resulting from the project has been prepared and the following dissemination has been applied:

- A digital report has been prepared for *Ymgynghoriaeth Gwynedd Consultancy* and Gwynedd Archaeological Planning Service;
- A paper report plus a digital report has been prepared for the regional Historic Environment Record, Gwynedd Archaeological Trust along with relevant digital datasets, including a bilingual event summary, in accordance with *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1); and
- A digital report and archive data has been prepared for submission to the *Royal Commission on the Ancient and Historical Monuments of Wales*, in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. Digital information will include the photographic archive and associated metadata.

# 3 RESULTS

## 3.1 Desk based assessment

### *3.1.1 Location and geological summary*

Pont Bodfel, Pwllheli, Gwynedd (NGR: SH34283660; postcode: LL53 6DN; Figure 01), is situated on the current A497 road between Pwllheli and Nefyn. This study covers the length or the road and adjacent pastureland and woodland between NGR SH34053677 and NGR SH34573643.

The physical character of the landscape is predominantly low-lying, slightly undulating with few eminences. The area drops gently down from 140m OD at Llanaelhaearn in the north to 20m at Cors y Geirch. The exception is the isolated igneous intrusion at Moelypenmaen, rising to 150m. The area is crossed by numerous streams which drain from the mountains and higher ground in the north, feeding two larger rivers which enter the sea at Pwllheli. These rivers are the Erch, which forms; the eastern boundary of this character area, and the Rhyd-hir which meanders more or less centrally through the area. The area is wet and marshy in places and displays a mottling of the surface of the landscape where land crossed by former stream beds has been reclaimed. The relatively flat aspect is conducive to communication and two former turnpike roads run generally straight across this area. There are several important late eighteenth- and early nineteenth-century bridges such as Pont Bodfel and Pont Penprys which facilitate communication and contribute historic character to the area.

The landscape is predominantly agricultural, mostly pasture. Fields are irregular, often enlarged from earlier small enclosures and, in particular, but not exclusively, rectilinear. Rarely, sinuous curves and narrow fields indicate the former presence of unfenced quillets of arable fields.

### *3.1.2 Statutory and non-statutory designations*

Until the recent collapse, Pont Bodfel (Primary Reference Number (PRN) 11687) carried the A497 road between Nefyn and Pwllheli over the Afon Rhyd-Hir. The bridge is Grade II listed (Cadw ref. 4333) and was built in 1805, replacing an earlier bridge. An archaeological record of the bridge was completed by GAT in 2004 (GAT Report 521), which included a measured and drawn record of the south face of the bridge, in advance of proposed alterations. The report identified several repairs to the bridge, including the provision of supporting buttresses to the causeways on both the north and south faces and at each end of the bridge (*ibid.*: 10), as well as re-rendering and pointing, and masonry repairs. Information from GAT Report 521 will be used to support the archaeological assessment. A list of sites within 500m of Pont Bodfel is included in Appendix II.

A brief examination of the regional Historic Environment Record identifies several archaeological assets with the local area, including the following:

- Bodfel Bach Farmhouse (PRN 11940; NGR: SH34053675; cf. Figure 01), a 17th century farmhouse located at the western end of the revised road route and 270m from the bridge. The farmhouse is also Grade II listed (ref.: 4335);
- Bodfel Hall (PRN 11939; NGR: SH34143696; cf. Figure 01), a 17th century former gatehouse located outside the scheme, 369m to the northwest. The hall is also Grade II listed (ref.: 4216);
- Site of Melin Llannor corn mill (PRN 34292; NGR SH35053368; cf. Figure 01), located on the First to Third Edition 1-inch to 25-mile Ordnance Survey Map of the area (Sheet XL.3; 1889, 1901 and 1917 respectively; cf. Figures 05 to 07), 819m northeast of the bridge. The mill was fed by a mill race that was also used by Felin Rhyd-Hir to the south (PRN 34772; NGR SH34573578); the mill race is visible on the Ordnance Survey mapping (cf. Figures 05 to 07) and the former route is crossed by the offline road improvements proposed for the bridge replacement.

Pont Bodfel lies within the Llŷn and Bardsey Island *Landscape of Outstanding Historic Interest in Wales* (Cadw/ICOMOS 1998, 96-100), which is described as a '*large and topographically varied peninsula lying to the south west of Snowdonia, with composite, yet highly integrated and well-preserved evidence of land use, showing continuity and territorial unity possibly from prehistoric times. The area included: Mesolithic coastal sites, Neolithic chambered tombs and axe factory; upstanding and crop-mark Bronze Age funerary and ritual sites; large Iron Age hillforts; Early Christian sites and associations; Bardsey Island; medieval*

*churches; Nefyn and Pwllheli towns; small dispersed villages and settlements in a distinctive enclosed landscape of stone walls, banks and hedges; Parliamentary Enclosures; recent mineral quarries and associated settlements'* (Cadw/ICOMOS 1998, 100). It also lies within the Llŷn Area of Outstanding Natural Beauty (AONB). It lies within the Llannor and Boduan *Historic Landscape Characterisation Area* (HLC) 13, which is described as containing:

1) *An agricultural landscape, now mostly pasture, of dispersed farms, transacted by rivers and streams crossed by stone bridges.*
2) *A landscape of irregular fields defined by clawdd banks and, towards the rising ground, stone walls.*
3) *A landscape crossed by important late eighteenth and early nineteenth-century turnpike roads giving a spur to the development of roadside communities*
4) *Small villages with ancient Ecclesiastical origins.*
5) *An axis of ornamental landscape development from Boduan to Pwllheli (includes Bodfel).*

Landscape characteristics 1, 3 and 5 are particularly significant in respect of Pont Bodfel.

### *3.1.3 Environmental remains and soil morphology*

The area of the stream valley to the north and south of the study area is low lying and boggy. There is therefore a moderate potential for the survival of environmental remain of significance in these areas that could provide valuable information about past land use in the area.

To the east and west of this, the fields are much drier and have been subject to agricultural improvement within historic times. Whilst there is thought to be a moderate potential for the survival of archaeological remains, it is thought likely that the environmental remains will only be of significance in this area if found within a secure archaeological context associated with any prehistoric or medieval archaeology identified on the site.

### *3.1.4 Historical and archaeological background*

#### 3.1.4.1 Introduction

The area around Pont Bodfel forms part of an agricultural landscape, now mostly pasture, of dispersed farms, transacted by rivers and streams crossed by stone bridges. The wider landscape is rich in archaeological remains from prehistoric through to post-medieval times, and there are a number of important post-medieval houses in the vicinity of the study area, although not within it. In post-medieval to modern times the bridge formed an important river crossing on the route between Pwllheli and Nefyn, and was a significant part of the infrastructure associated with the local estates, particularly Bodfel Hall, and the local agricultural economy. The historical and archaeological background to the study area is given below.

### 3.1.4.2 Prehistoric and Roman Settlement

The nearest burial chamber of the Neolithic period has been recorded at Cromlech Farm south of Y Ffôr (Four Crosses) and another at Pont Pensarn at the north-east end of Pwllheli (PRNs 437, 438). A standing stone is known 500m to the south east of Carnguwch Church; another at Pencaenewydd on the Afon Erch north of Y Ffôr and a third at Y Ffôr itself (PRNs 1286, 1308, 1333). These are at some distance from Pont Bodfel however.

Three Bronze Age barrows are recorded within a radius of 25m near the house of Cefn Mine, 600m west of Pont Bodfel. A cremation cemetery of broadly the same period is known to the south of Cefn Mine at 300m from the barrows (PRNs 16620, 16621, 1167, 3650; SH 3373617). Three barrows are also noted near Bryn Bodfel, 830m south west of the bridge (PRNs 1167, 29,595 and 29,597; centred on NGR SH33533618).

A small embanked earthwork, Castell Gwgan, some 65m across may be a defended enclosure of the late Iron Age on a locally elevated position, 160m from the Afon Erch, near Pont Rhyd-goch (PRN 2256). Until 2006 very little was known of settlement in later prehistory in this area. However, in that year aerial reconnaissance, undertaken by RCAHMW, identified three cropmark enclosures indicative of small defended settlements at Y Ffôr, Efail Newydd and Pont Rhyd-hir. These discoveries were followed up with geophysical survey by Gwynedd Archaeological Trust. At Bwlch y Ffordd Isa, 700m north east of Y Ffôr, a circular enclosure, 40m across with asymmetric outer bank was identified on a low rise at 60m OD immediately above the west bank of the Afon Erch. At King George's field, Efailnewydd, on the south side of the village, a circular ditched enclosure, 35m across, was identified on low-lying flat ground at c.12m OD. At Pont Rhyd-hir a bivallate, sub-polygonal enclosure, 55m by 35m, stood on the east bank of the Rhyd-hir, 170m south of the bridge and causeway, at 10m OD.

Two further enclosures are recorded but have not been investigated. One shows as a curvilinear cropmark, at Traian, between Mathan Isaf and Cefn Mine at 50m OD (PRN 56,917; SH33793653). The other, rectilinear, is at Mela, near Moel y Penmaen, at 80m OD. Both enclosures may have been occupied during the later prehistoric or Romano-British periods.

Hut circle settlements have been recorded to the north and east of Yoke House, near Pwllheli on rocky rising ground on the margins of arable cultivation at between 60m and 80m OD. Three of these settlements are nucleated and the polygonal enclosures of at least two of

these groups of huts suggest occupation in the Romano-British period (PRNs 432, 433, 434, 435). A Roman cremation cemetery is also recorded by Hyde-Hall as having been discovered at the turn of the 19th century near Cefn Mine (PRN 3650; SH 338360), 960m south southwest of Pont Bodfel, giving further evidence of Romano-British settlement, although its exact location is not known (Hyde-Hall 1952, 278).

### 3.1.4.3 Medieval and later Settlement

Early medieval activity is represented by funerary and religious associations rather than direct evidence of settlement. Inscribed memorial stones of fifth-sixth-century date are known from Penprys and Llannor. At Llannor a monument to Figulinus (FIGULINI FILI LOCULITI HIC IACIT = Here lies the grave of Figulinus son of Loculitus) was recorded, in use as the jamb of a gate at the entrance to the churchyard in the mid-nineteenth century.

At Penprys two stone-lined graves were found in the early nineteenth century, in the process of pulling down a cottage called Beudy'r Mynydd, near Tir Gwyn. The graves lay between the two standing stones mentioned previously and one of the graves, at least, had been placed at a north-south alignment, on-line, no doubt with the two orthostats. One of the graves had re-used two inscribed stones as side slabs. The second grave re-used a third inscribed stone in an unspecified position. The original memorials were: VENDESETLI (the grave of VENDESETLUS = Gwynhoedl (possibly)) and IOVENALI FILI ETERNI HIC IACIT (the grave of Iovenalis, son of Eternus, here he lies). The second grave incorporated the re-used memorial of Devorus (DEVORI HIC IACET). It cannot be said with certainty that the fifth and sixth-century stones originally stood close to the location of the graves. It is, however, probable that they represent gentlemen of some status in the locality.

The church of Llannor was in existence by the late thirteenth century and is identified as a possession of Clynnog in the mid-fourteenth century. Clynnog had been a clas church and, as Llannor, was an ecclesiastical township with dependant hamlets, it is probable that Llannor had clas origins too. Abererch had also been a clas community. In 1308, in Abererch, there were 85 freeholding tenants of the Bishop of Bangor (the residue of the claswyr).

Bordering on Cors Geirch, lay two important secular townships, Boduan and Bodfel. Boduan in the fourteenth century was a bond township comprising demesne land of the former Prince in the commote of Dinllaen. Bodfel, lying adjacent, was a free township within the commote of Afloegion, with its own mill. In 1293, ten years after the conquest of Gwynedd, the townships were assessed as to the value of their moveable assets in order to raise a subsidy for the expense of Edward I's Scottish campaign. Twenty-one tenants were found in Bodfel, with moveable assets worth more than 15d, (the worth of two sheep or two or three crannocks of oats). In total, these twenty-one taxpayers owned 70 bulls, 117 cows and 24 horses. They also had sheep and 39 draught animals and milled oat and wheat flour and some barley.

The Bodfel family are first noticed in the 1530s in the person of John ap Madog ap Howell of Pennarth. John is described by Leland as living at Bodfel. His grandson, John Wyn ap Hugh, distinguished himself in the service of John Dudley, Earl of Warwick and was granted Bardsey and Cwrt, Aberdaron, in recognition. John Wyn's son, Hugh Gwyn, fell out of favour in the late sixteenth century when he opposed Robert Dudley, Earl of Leicester's attempt to sequester alleged encroached lands in the forest of Snowdon. Hugh's great grandson, Colonel John Bodfel, initially supported the Puritans at the beginning of the Civil War but soon went over to the Royalist cause. His wife was a staunch Puritan, however, and irreconcilable philosophical differences ultimately led to the sell-off of the Bodfel lands at the end of the seventeenth century. The origins earlier Pont Bodfel is likely to be linked to the Bodfel family in the 16th or 17th centuries. Bodfel Hall (PRN 11939; NGR: SH34143696; cf. Figure 01), is a 17th century former gatehouse style building with later modifications, of three stories and an attic located outside the scheme, 369m to the northwest (Haslam *et al.* 2009, 449; RCAHMW 1964, 76). The hall is also Grade II listed (ref.: 4216), and may have been intended as the gatehouse to a large mansion that was never built. The site of Melin Llannor corn mill (PRN 34292; NGR SH35053368), located on the First to Third Edition 1-inch to 25-mile Ordnance Survey Map of the area (Sheet XL.3; 1889, 1901 and 1917 respectively; cf. Figures 05 to 07), is 819m northeast of Pont Bodfel. The mill was fed by a mill race that was also used by Felin Rhyd-Hir to the south (PRN 34772; NGR SH34573578); the mill race is visible on the Ordnance Survey mapping (cf Figures 05 to 07) and the former route is crossed by the offline road improvements proposed for the bridge replacement. These mills are two of the 'two fulling mills and four corn mills' powered by the Afon Rhyd Hir described by Hyde Hall in his *Description of Caernarfonshire 1809-1881* (Cambrian Archaeological Association 1952, 277).

Another notable historic house nearby is Cefn Mine (PRN12034; LB II Ref: 4334; NGR SH 3377436170), which is a substantial double pile-house with its origins in the 17th century or earlier, which originally had a rear staircase projection (Haslam *et al,* 2009, 449; RCAHMW 1964, 74). It is located 670m south west of Pont Bodfel.

The contractors bond in respect of the construction of the new (ie. current) Pont Bodfel dated to 1805 (Gwynedd Archives X/Plans/B/183) stated that on the 15th August 1803 that the old bridge '*was and yet is ruinous in decay and out of repair and insufficient and without any parapet building erection or defence whatsoever on the sides thereof to prevent horses and other cattle, carts and carriages going returning passing and travelling upon, along and over*

*the said bridge from falling from thence into the said river so that the liege subjects of our said Lord the King could not* [travel safely] *over the said bridge without great danger of their lives and loss of their horses and other cattle, carts and carriages to the great damage and common nuisance*'. The route of the old bridge, when compared with the 1802 historic map (Figure 08) appears to follow a similar alignment.

### 3.1.4.4 Cartographic Evidence and History of Land Ownership

The land surrounding Pont Bodfel was part of the Bodfel Hall estate, and the first cartographic evidence for this is the estate map of 1802 (X/Vaynol/4212; Figure 08). This shows the location of the bridge in its pre 1805 reconstructed form. This can been seen to be more or less on the same line as the one that was subsequently rebuilt. The fields to the north of the bridge are shown in detail. Field 2, known as Cae'r Tŷ on the 1802 map and Bryn y Pandy on the tithe map of 1840 is shown as a mixture of arable and meadow land, a division of the field confirmed in the tithe apportionment (below). The fields to the west of the river, associated with the smithy and Rhyd Hir mill race (C1 and C2) are shown with fewer subdivisions than those seen on the tithe map (Fields 1286-1289, 1409-1410). The fields to the south of the bridge formed part of Cae'r Seller farm, the property of Colonel Edwards of Nanhoron at that time, so are therefore not shown in any detail on the map.

The Bodfel Estate was sold by William Harvey in 1832, and ownership passed to Thomas Assheton Smith of Vaynol, Bangor. The tithe map of 1840 (Figure 11) for the parish of Llannor shows a similar field system to that shown on the later 25 inch Ordnance Survey maps, and the details of the apportionment for the adjacent fields is given in the table below. The numbers are those fields shown on the tithe map:

| **Landowner** | **Occupier** | **Numbers referring to the plan** | **State and Description of Land and premeses** | **State of Cultivation** | **Quantities in Statute Measure A R P** |
|---|---|---|---|---|---|
| | | | **Gefail y Bont** | | |
| Thomas Ashton Smith Esq. | Thomas Jones | 1286 | Llain y Dwr | Meadow | - 3 - |
| | | 1288 | Llain y Dwr | Arable | 1 2 9 |
| | | 1289 | Llain y Dwr | Meadow | - 1 10 |
| | | 1409 | House, smithy and Garden | Homestead | - - 30 |
| | | 1410 | Llain y Dwr | Arable | 1 - 10 |
| | | | **Bodvel** | | |
| | John Roberts | 1285 | Bryn y Pandy | Meadow Arable | 1 - - 7 2 31 |

| | | | | | |
|---|---|---|---|---|---|
| Thomas Ashton Smith Esq. | David Evans | 1290 | Gors tan y lon | Pasture | 2 2 32 |
| | | 1291 | Waen bach | Pasture | - 2 22 |
| | | 1292 | Cae Peter Isa | Arable | 4 3 5 |
| | | 1405 | Cae Selen Ucha | Arable | 5 - 16 |
| | | 1407 | Werglodd Cae Selen | Meadow | 7 1 7 |
| | | 1408 | Cae twll gro | Arable | 2 1 20 |
| | | | **Bodvel Woods** | | |
| Thomas Ashton Smith Esq. | Himself | 1293 | Winllan Gors | Plantation | - 1 16 |
| | | 1406 | Winllan Cae Sela | Plantation | 6 - 26 |

The main point to note is that all the land in the study area was the property of the Asheton Smiths of Vaynol Hall by 1840. The mill race is also clearly shown (Feature 2). The estate also held the wooded land, presumably to ensure that profit from the timber went directly to the estate itself.

The first edition 25 inch County Series Ordnance Survey map of 1889, sheet XL.3 (Figure 05) shows a similar layout, although to a greater level of cartographical accuracy to that shown on the tithe map of 1840, with the addition of an 'old gravel pit' immediately east of the mill race (Feature 2) and south of the A497 road (Feature 1). Very few changes are noted on the 2nd edition County Series map of 1900 (Figure 06), with the exception of some additional building at Efail y Bont, and evidence for a new drainage channel between two fields to the west of Pont Bodfel at NGR SH34113660 (Cae Peter Isa [1292 on tithe map] and Cae Selen Ucha [1405 on tithe map]), which runs from the west into the Afon Rhyd Hir through Bodfel woods. On the 3rd edition map of 1918 there is evidence of additional small paddocks and enclosures immediately north and east of Efail y Bont, suggestive of improvements there (Figure 07). The old quarry pit appears to have expanded slightly in size, although it is not known if this is a reflection of reality as there is no evidence that the pit has been re-opened between the 2nd and third editions of the Ordnance Survey map, although it may well have been. A public footpath is also noted as running along the east side of the mill race from the south, which is not shown on the earlier maps. It is possible that this relates to access for workers to the re-opened gravel pit, but this interpretation is speculative. No other changes

within the landscape are noted from the Ordnance Survey maps, and the changes between the tithe map of 1840 and 1918 can be seen to be very limited.

### 3.1.4.5 Previous Archaeological work

A drawn survey of the south facing elevation of Pont Bodfel has been previously carried out by Gwynedd Archaeological Trust, along with some background work (Longley 2004). Archaeological work and recording has been carried out at Melin Rhyd Hir (Rees 2012), another water mill belonging to the Bodfel estate, and much relevant background information for this project has been obtained. The area around the bridge has been subject to various wider area surveys and historical research, such as Landscape characterisation, but apart from the drawn survey, no other direct archaeological work has been carried out over the survey area.

### *3.1.5 Artefact potential*

The wider region beyond the study area is rich in archaeological evidence from prehistoric through to medieval times. Whilst there is no specific evidence for buried archaeological sites within the study area, with the exception of an old gravel pit that has subsequently been filled in (PRN 9073), and the Melin Rhyd Hir mill race (PRN 9074), there remains a low to moderate potential for the recovery of artefacts from all periods.

Pont Bodfel was an important river crossing point on a busy travel route from post-medieval times onwards, linked to the Bodfel estate. There is therefore a moderate likelihood that post-medieval and modern artefacts could be uncovered. This is more likely in the lower lying boggier areas, where archaeological remains are more likely to be encountered and there is less evidence for later intensive agricultural disturbance of the ground. Historic reports suggest that animals and material have been lost over the dilapidated former bridge the bridge (X Plans B/183), and it is possible that some of this material could be uncovered, along with material associated with the former bridge.

The drier portions of study to the east and west have probably been used intensively for agriculture since medieval times, therefore it is likely that post-medieval and modern artefacts, possibly coming on to the site when the field has been manured, will be encountered.

### *3.1.6 Aerial photographs and LiDAR*

#### 3.1.6.1 Aerial Photographs

Four historic aerial photographs of Pont Bodfel were examined dating from the 1940s through to the 1980s, which are listed below:

- RAF 4535 106UK_664 Image 4179 taken on 14th August 1945 (Figure 09)
- RAF 4841 540_39 Image 5080 taken on 19th May 1948
- 7820 Lleyn BKS Prints Images 146 and 189 taken on 9th August 1977
- 8820 ADAS Llyn Prints Image 57 (Run 5) taken on 5th April 1988

The landscape and field boundaries could be shown to be essentially the same as those shown on the late 19th century 25 inch Ordnance Survey maps (Figures 05 to 07). The old gravel pit, south east of Pont Bodfel and adjacent to the former mill race, marked on the 1st edition Ordnance Survey map of 1889 (Figure 05), is shown on the 1945 image (Figure 09) as a small enclosure, suggesting that it has been filled in by that date. The areas of woodland appear to have changed little between 1889 and 1945. Efail y Bont and Bodfel Bach are clearly shown. The remains of a possible agricultural structure is also shown about 35m south east of Pont Bodfel and 60m north west of the old gravel pit, which would appear to have had a short lifespan. The fields can be seen to have been mainly improved pastureland, although the triangular enclosure south of the old gravel pit, known as Cae twll gro (Field no. 1408 on the tithe apportionment, where it was recorded as an arable field) appears to have been ploughed during the Second World War. The subsequent images show similar information, although there has been some development at the farmstead of Bodfel Bach and at Efail y Bont. The enclosure and overgrowth around the old gravel pit have also been removed and the area re-incorporated into the improved pasture field.

No clear sub surface archaeological features could be identified on the photographs.

#### 3.1.6.2 LiDAR

Lidar Composite 1m DTM data taken from the Welsh Government *LIe Portal* was obtained (Figure 10). This showed little additional information within the study area that had not been recorded by other sources, but clearly revealed how the Afon Rhyd Hir had eroded out and widened under the bridge. The gravel pit (Feature 1) and the mill race (Feature 2) could also be clearly seen, along with evidence of the river valley channels.

### *3.1.7 Walkover survey*

The walk-over survey was carried out on 12th March 2020 in sunny and dry conditions.

The rubble stone built bridge is set out on a broad curve over the wet valley bottom of the Afon Rhyd Hir, and comprises three segmental arches of shaped rubble voussoirs inset below flush spandrels and parapet (Plates 1, 4 and 10). The cutwaters on both sides are angled back to the base of the parapet, which continues as a parapet with stone copings to the causeway at both ends. The main bridge spans approximately 5.85m rising 2.5m above the river, affording a carriageway of 4.75m wide plus parapets of 60cm depth (Plate 11). The bridge can be seen to have had recent concrete repairs to the eastern cutwater at river level, and concrete supports have been placed at river-bed level (Plate 04). A 3m long section of damage, including both the parapet and the sides of the bridge itself was noted at the north east end of the parapet (Plate 10). The carriageway as it approaches the bridge over the low-lying ground is placed on a raised embankment revetted by parapet walls, which have had to be supported in recent times with buttresses (Plate 03). The new temporary bridge is situated to the south of Pont Bodfel (Plate 02).

It demonstrated that the fields to the south of the bridge were heavily improved pastureland (Plate 05), with the exception of Bodfel Wood, and bounded by regular enclosure era field boundaries (Plate 06). Low earthworks and a hollow in the ground provided evidence of the former gravel pit (Feature 1; Plate 13). This might otherwise have been have been interpreted as an earlier archaeological feature, but the evidence demonstrates that it is a post-medieval feature. The Felin Rhyd Hir mill race (Feature 2; Plate 12), could also be traced crossing the field.

North of the bridge the situation is different. South and west of the watercourse leading from Bodfel Hall there is undergrowth and scrub in very waterlogged ground, and disturbance caused by the recent emergency engineering works (Plate 07-08). To the north and east of this, associated with Bodfel (Bach) and Efail y Bont, small irregular fields predominate (Plates 9 and 12), although there are larger ones to the north-west associated with Bodfel Hall. East of Gefail y Bont more regular, later fields predominate.

## 3.2 Geophysical survey

### *3.2.1 Introduction*

The survey was carried out at standard resolution (1.0m traverse interval x 0.25m sample interval) in two 20m-wide strips, aligned as closely as possible, with the centre line of the scheme footprint. The western area (A) was 120m long and the eastern (B) 160m long These areas extended a few metres beyond the footprint thus providing a buffer and allowing meaningful interpretation. A small area at the eastern extremity of the scheme could not be surveyed because there was a crop in the field. The footprint of the bridge could not be surveyed because it was obscured by the embankment of the current temporary bridge and associated ground-works.

### *3.2.2 Results*

The survey produced good quality data, Figure 12 shows the raw data clipped to +/- 15 nT with no additional processing. An area of high responses was detected in area B and a trace plot is shown in order to display the magnitude of the responses (Figure 13). Several other anomalies were detected although none were definitely of archaeological origin. The anomalies were transcribed and are shown on Figure 14. The individual anomalies are listed in table 1.

### *3.2.3 Summary*

The results were dominated by a 55m wide area of very high responses on the east side of the river; Figure 13 shows the trace plot for the two areas and illustrates the magnitude of the anomaly. Typical responses in the area were 50nT with peaks of 3000 nT, the maximum detection range of the gradiometer. This can be compared to typical archaeological anomalies which are in the range of +/- 15 nT. This large anomaly is best interpreted as an area of strongly-magnetic buried bedrock. The abrupt variations in polarity and strength suggest that it is fairly close to the ground surface. Similar responses could be produced by areas of made-ground or infill containing strongly magnetic material but a geological origin is most likely. Areas of magnetic noise (4 and 5) just to the west of anomaly 1 are probably also the result of geology. It should be noted the magnitude of the geological anomaly (1) would tend to mask any coincident archaeological anomalies.

The rest of the survey was magnetically quiet apart from ferrous anomalies from fencing wire and steel gates (6). Two isolated linear anomalies (2 and 3) are best interpreted as modern drains or services although an archaeological origin cannot entirely be ruled out. A third linear anomaly (7) runs alongside the modern road and is best interpreted as a service trench or other disturbance associated with the road.

**Table 1 – List of geophysical anomalies**

| Number | Category | Description |
|---|---|---|
| 1 | Geological | A 50m-wide area of strong magnetic anomalies. Geology or made ground |
| 2 | Agricultural/Archaeological | Linear anomaly, probably a drain. Possibly archaeological |
| 3 | Agricultural/Archaeological | Linear anomaly, probably a drain. Possibly archaeological |
| 4 | Geological | Magnetic noise (i.e. random signals) probably geology |
| 5 | Geological | Magnetic noise (i.e. random signals) probably geology |
| 6 | Ferrous | Strong magnetic signals, fence, gate and animal pen |
| 7 | Non archaeological | Linear anomaly parallel with road, probably a service trench |

## 3.3 Gazetteer of features

All the features included in the gazetteer are shown on Figure 04. All recommendations are based on the current understanding of the scheme proposals and their impact on the features, and may have to be revised if information about the scheme impacts changes. In the event of alterations to the scheme, the recommendations might have to be revisited. A ‘C’ after the grid reference indicates the central point of a larger feature, and ‘A’ after the reference indicates the central point of a wider group of features. A list of mitigation terms is included in Appendix III.

| | |
|---|---|
| **Feature Number** | 1 |
| **Site name** | Old Gravel Pit east of Pont Bodfel |
| **PRN number** | 90073 |
| **Grid reference** | SH34343656 |
| **Period** | Post-Medieval |
| **Site type** | Industrial |
| **Assessment category** | C |
| **Description** | A large gravel pit shown on the 1st edition Ordnance Survey map of 1889 (Figure 05), where it covered an area of 50m by 40m. It had been filled in by 1945 (Figure 09). The feature also corresponds with the location and size of a large geophysical anomaly interpreted during the survey as a 50m-wide area of strong magnetic anomalies (geophysical anomaly 1). |
| **Impact** | Considerable |
| **Recommendation for further assessment/evaluation** | None |
| **Recommendation for mitigatory measures** | Location monitored and feature recorded as part of an archaeological watching brief. |

| | |
|---|---|
| **Feature Number** | 2 |
| **Site name** | Mill Race for Melin Rhyd Hir, east of Pont Bodfel |
| **PRN number** | 90074 |
| **Grid reference** | SH34333651 |
| **Period** | Post-Medieval |
| **Site type** | Industrial |
| **Assessment category** | B |
| **Description** | A very long mill race that extended for 1.63km from Melin Rhyd Hir (PRN3477) to the river in the north near Melin Llannor. It survives, albeit heavily overgrown, over its course and served both mills. |
| **Impact** | Slight |
| **Recommendation for further assessment/evaluation** | None |
| **Recommendation for mitigatory measures** | Avoidance. If this is not possible then ensure that a scaled section across the mill race is drawn. |

| | |
|---|---|
| **Feature Number** | 3 |
| **Site name** | Linear geophysical anomaly, probably a drain |
| **PRN number** | 90075 |
| **Grid reference** | SH34363654 |
| **Period** | Post-Medieval |
| **Site type** | Industrial |
| **Assessment category** | E |
| **Description** | Interpreted in the geophysical survey report as a modern drain or services, but may also be of archaeological origin. |
| **Impact** | Slight |
| **Recommendation for further assessment/evaluation** | None |
| **Recommendation for mitigatory measures** | Location monitored and feature recorded as part of an archaeological watching brief. |

| | |
|---|---|
| **Feature Number** | 4 |
| **Site name** | Linear geophysical anomaly, probably a drain |
| **PRN number** | 90076 |
| **Grid reference** | SH34373655 |
| **Period** | Post-Medieval |
| **Site type** | Agricultural |
| **Assessment category** | E |
| **Description** | Interpreted in the geophysical survey report as a modern drain or services, but may also be of archaeological origin. |
| **Impact** | Slight |
| **Recommendation for further assessment/evaluation** | None |
| **Recommendation for mitigatory measures** | Location monitored and feature recorded as part of an archaeological watching brief. |

| | |
|---|---|
| **Feature Number** | 5 |
| **Site name** | Efail y Bont |
| **PRN number** | 90467 |
| **Grid reference** | SH34393657 |
| **Period** | Post-Medieval |
| **Site type** | Domestic |
| **Assessment category** | C |
| **Description** | A 19th century cottage and former smithy, which formed part of the Bodfel estate. The site is shown on the 1802 estate map (Figure 08) as a simple rectangle adjacent to the road, but shows subsequent rebuilding and expansion by the time of the 1st edition 25 inch Ordnance Survey map of 1889 (Figure 05) slightly to the north-east of the original building'. This is the current structure, indicated by the maps to be of 19th century date. |
| **Impact** | Slight |
| **Recommendation for further assessment/evaluation** | None |
| **Recommendation for mitigatory measures** | Avoidance |

| | |
|---|---|
| **Feature Number** | 6 |
| **Site name** | Pont Bodfel |
| **PRN number** | 11687; Grade II LB Ref:4333 |
| **Grid reference** | SH34283660 |
| **Period** | Post-Medieval |
| **Site type** | Transport |
| **Assessment category** | B |
| **Description** | The rubble stone built bridge is set out on a broad curve over the wet valley bottom of the Afon Rhyd Hir, and comprises three segmental arches of shaped rubble voussoirs inset below flush spandrels and parapet (Plates 1, 4 and 10). The cutwaters on both sides are angled back to the base of the parapet, which continues as a parapet with stone copings to the causeway at both ends. The main bridge spans approximately 5.85m rising 2.5m above the river, affording a carriageway of 4.75m wide plus parapets of 60cm depth (Plate 11). The bridge can be seen to have had recent concrete repairs to the eastern cutwater at river level, and concrete supports have been placed at river-bed level (Plate 04). A 3m long section of damage, including both the parapet and the sides of the bridge itself was noted at the north east end of the parapet (Plate 10). The carriageway as it approaches the bridge over the low-lying ground is placed on a raised embankment revetted by parapet walls, which have had to be supported in recent times with buttresses (Plate 03). |
| **Impact** | Considerable |
| **Recommendation for further assessment/evaluation** | Archaeological Building Record, to include an elevation drawing of the north side of the bridge |
| **Recommendation for mitigatory measures** | Basic record after repair work |

# 4 CONCLUSIONS AND RECOMMENDATIONS

## 4.1 Conclusion

An archaeological assessment was carried out on the site of Pont Bodfel, Efailnewydd, Pwllheli. The bridge has been damaged and it has now been bypassed by a temporary bridge to the south and is closed to traffic. The bridge was noted to have been constructed in 1805, replacing a bridge that had become dangerous. The Bodvel estate survey and maps of 1802 (X/Vaynol/4212) demonstrate that the bridge was built on the same line as the previous one that it replaced. The bridge and its predecessor were noted to be a significant element of the transport links in the area since post-medieval or possibly earlier times. The fields to the south of the bridge were noted to be mainly improved pastureland, although there is an area of unimproved woodland to the southwest of the bridge. Two post-medieval features, a former gravel pit (Feature 1) and the mill race for Melin Rhyd Hir (Feature 2) were noted to survive as visible low earthworks in the improved pastureland, and the mill race was also noted to the north of the bridge. It also ran in a channel under the embanked approach to Pont Bodfel. To the north, and between the bridge and the river channels a former area of wood and scrub is now somewhat disturbed by construction activity, and beyond these smaller fields predominate. No prehistoric, Roman or medieval archaeology was identified during the desk-based assessment or walkover survey.

The geophysical survey results were dominated by a wide area of very high responses on the east side of the river, downstream of the current bridge, which were interpreted as an area of strongly-magnetic buried bedrock (Anomaly 1); the location of this anomaly matched that of the former quarry site identified on historic mapping (PRN 90073). The survey report highlighted that the magnitude of Anomaly 1 would tend to mask any coincident archaeological anomalies and this likely includes the quarry. Areas of magnetic noise (Anomalies 4 and 5) just to the west of Anomaly 1 were also interpreted as geology. Two isolated linear anomalies (Anomalies 2 and 3; PRNs 90075 and 90076 respectively) were interpreted as modern drains or services although the survey suggested an archaeological origin cannot entirely be ruled out. A third linear anomaly (Anomaly 7), running alongside the modern road, was interpreted as a service trench or other disturbance associated with the road.

It is recommended that an archaeological drawn and photographic building record be carried out in advance of any repair work to the damaged parapet of Pont Bodfel, as it is a listed building of some importance (English Heritage 2006). The south side of the bridge was

recorded in 2004 (Longley 2004), however this work should be completed with an elevation drawing of the north side of the bridge. In addition to the further specific site recommendations noted in Section 3.3 and below, it is felt that there is generally insufficient evidence for the presence of archaeological features to justify carrying out a full programme of archaeological evaluation trenching along the route of the proposed new road alignment and bridge. However a 20m long and 2m wide trench should be dug in advance of ground operations across the former mill race (Feature 2), and a profile across its section drawn and recorded archaeologically; this could be carried out either before or during the carrying out of site groundworks. A comprehensive archaeological watching brief should be carried out however during sensitive groundworks across the rest of the site, with time allowed for the recording of any archaeological features identified; this would allow for sufficient recording of the quarry pit (Feature 1).

## 4.2 Table of sites and recommendations

| Feature No | Primary Reference Number | Site Name | Period | NGR | Recommendations for Further Assessment (subject to archaeological curator approval) | Mitigation Recommendations (subject to archaeological curator approval) |
|---|---|---|---|---|---|---|
| 01 | 90073 | Old Gravel Pit east of Pont Bodfel | Post-medieval | SH3434365 6 | None | Location monitored and feature recorded as part of an archaeological watching brief |
| 02 | 90074 | Mill Race for Melin Rhyn Hir east of Pont Bodfel | Post-medieval | SH3232365 4 | None | Avoidance. If this is not possible then ensure that a scaled section across the mill race is drawn. |
| 03 | 90075 | Linear geophysical anomaly, probably a drain | Post-medieval | SH3436365 4 | None | Location monitored and feature recorded as part of an archaeological watching brief |
| 04 | 90076 | Linear geophysical anomaly, probably a drain | Post-medieval | SH3437365 5 | None | Location monitored and feature recorded as part of an archaeological watching brief |
| 05 | 90465 | Efail y Bont | Post-medieval | SH3439365 7 | None | Avoidance |
| 06 | 11687 | Pont Bodfel | Post-medieval | SH3428366 0 | Building Record and elevation drawing of the north side of the bridge | Basic record after repair work |

# 5 BIBLIOGRAPHY

## 5.1 Primary Sources


Aerial Photographs and Lidar

RAF 4535 106UK_664 Image 4179 taken on 14th August 1945

RAF 4841 540_39 Image 5080 taken on 19th May 1948

7820 Lleyn BKS Prints Images 146 and 189 taken on 9th August 1977

8820 ADAS Llyn Prints Image 57 (Run 5) taken on 5th April 1988

Lidar Composite 1m DTM data taken from the Welsh Government *Lle Portal*

Gwynedd Archives, Caernarfon

X Plans B/183 *Contractors Bond in Respect of Bodvel Bridge* (1800 and 1805)

X/Vaynol/4212 *Survey, Plans and Reference of the Bodfal Estates belonging to William Hervey in the Counties of Caernarfon and Anglesey, surveyed by W. Jones and R. Williams* (1802)

X/Vaynol/4214 *Valuation of the Bodvel Estate in the Occupation of Mr. Evan Roberts in the Parishes of Llannor, Pistyll, Carngywch and Llanarmon* (1833)

X/Vaynol/4215 *Valuation of the Bodvel Estate* (not dated, but c. 1800)


## 5.2 Secondary Sources


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Rees, C. 2012 *Results of Archaeological Works at Felin Rhyd Hir, Efailnewydd, near Pwllheli.* Unpublished CR Archaeological Report No. **CR03-2012**

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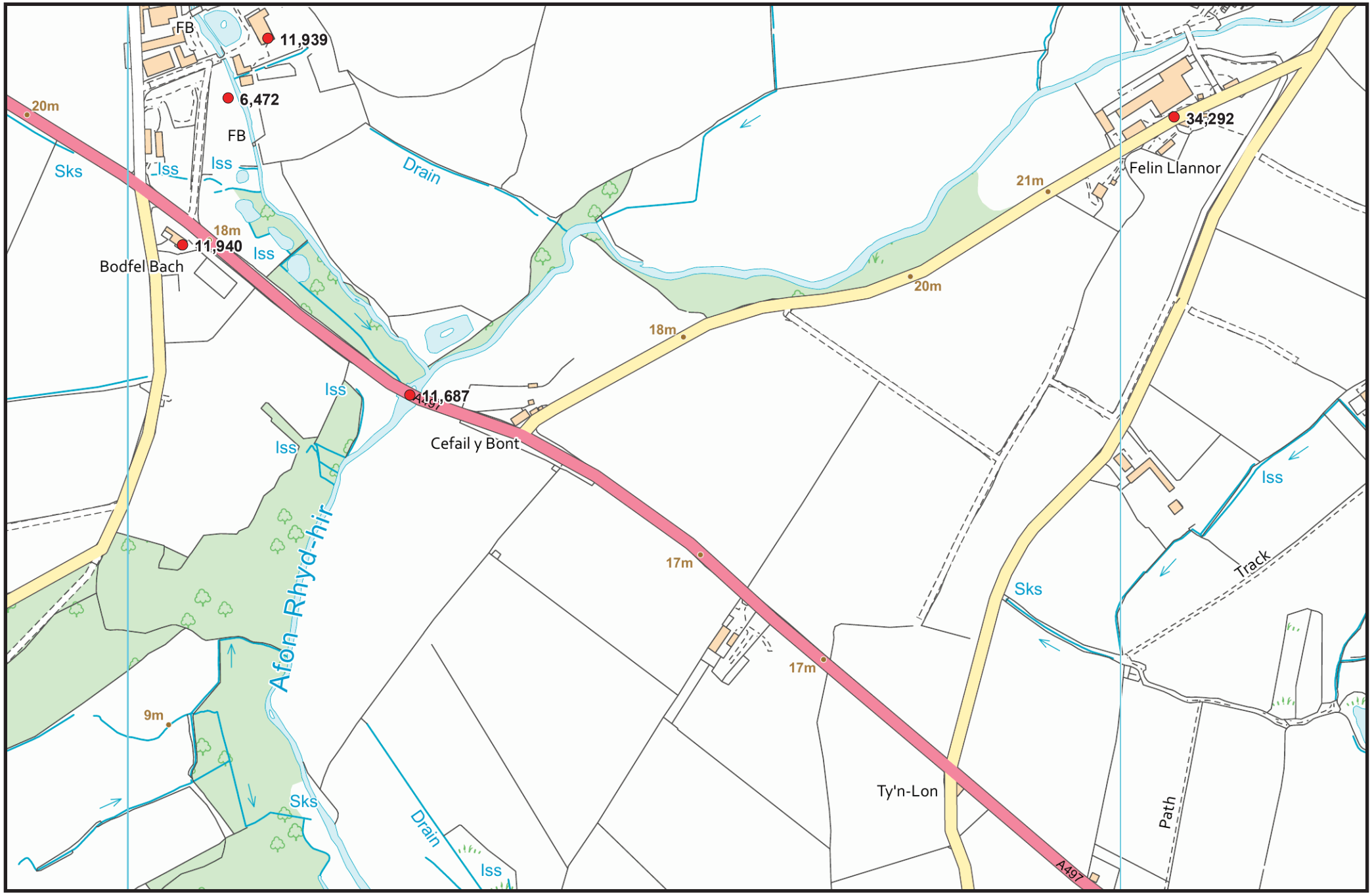



FIGURE 01 Location Plan, based on Ordnance Survey County Series 1:10000 map sheet SH33NW. Scale 1:5000@A4 © Crown Copyright. All Rights Reserved. License Number AI100020895

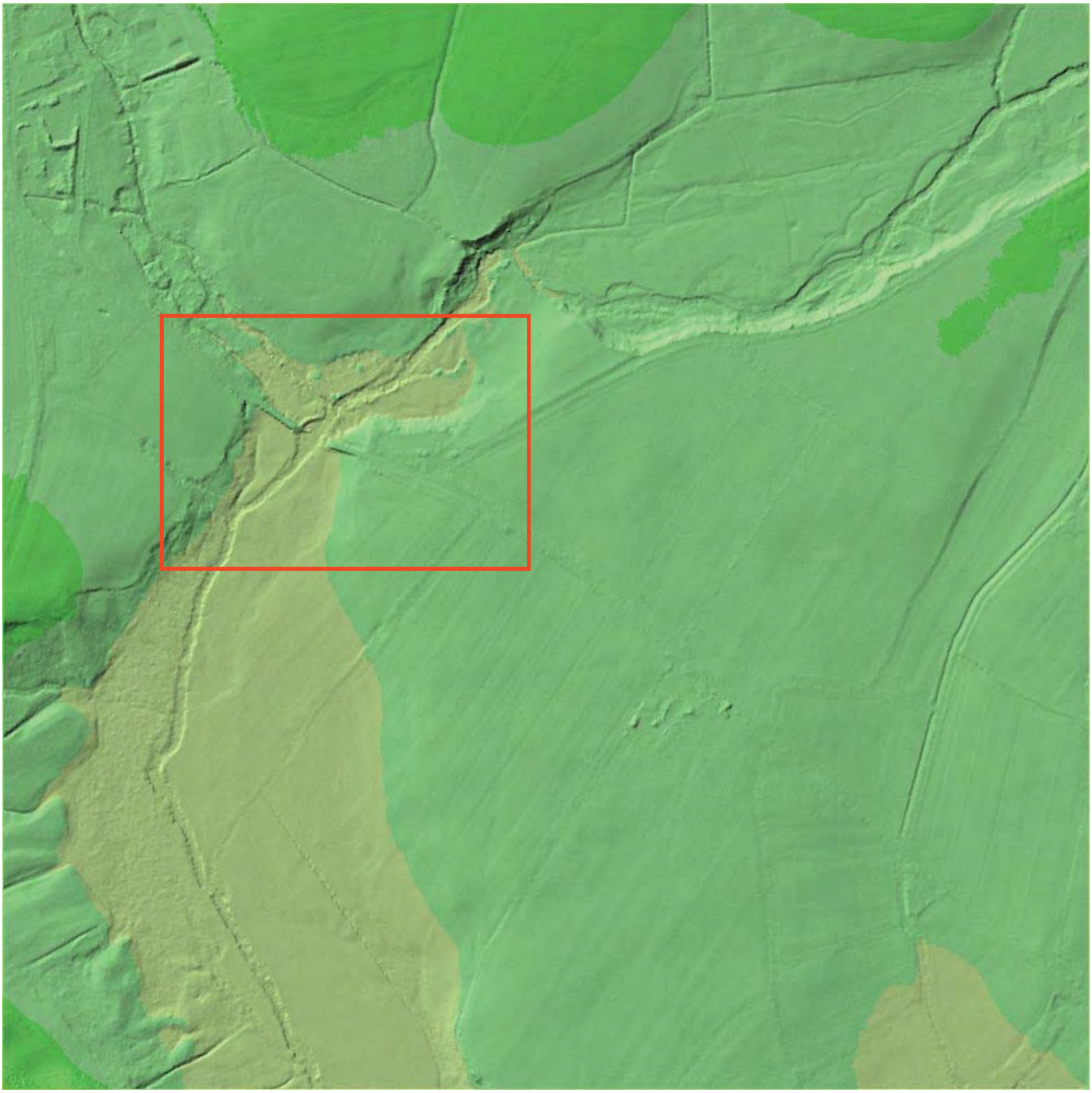
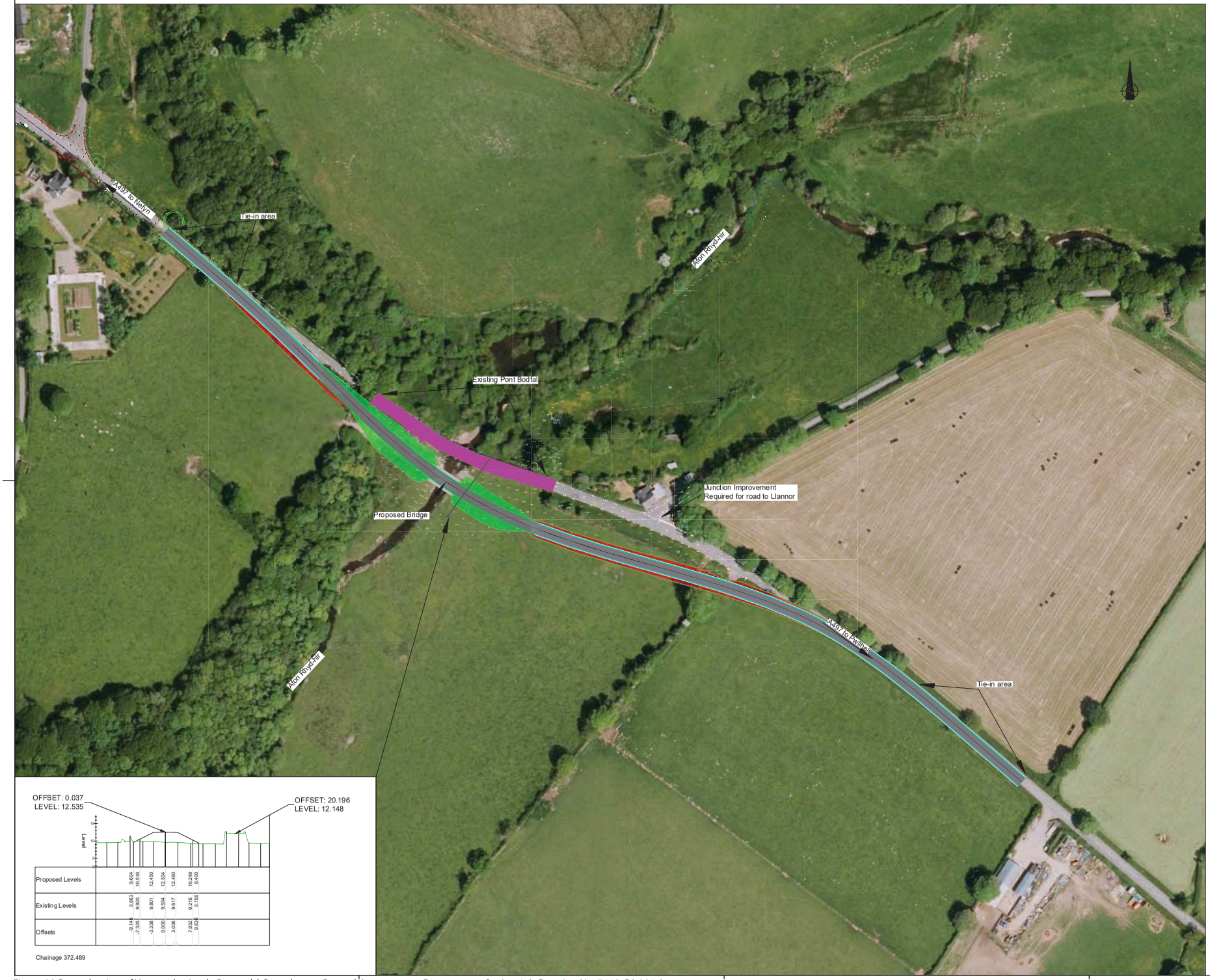


Figure 10: LiDAR dtm 1m data taken from the Welsh Government *Lle Portal* from OS Grid SH3436. The study area is outlined in red. Not to scale

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## NODIADAU/NOTES

**Shown Highway Alignment Designed to:**

Design Speed: 85kph (50mph)

Horizontal Curvature:

FROM Efailnewydd approach to area near end of Existing Bridge side curvature is at:

Two Step below desirable minimum radius with superelevation of 7%

Tie-In Nefyn (North of River) at:

Minimum Radius with superelevation of 3.5%.

Vertical Curvature:

Crest Value - One Step Below desirable minimum
Sag Value - Desirable minimum

Stopping Sight Distance:

One Step below desirable minimum

| RHIF NO. | NEWIDIADAU MODIFICATIONS | GAN DRAWN | DYDDIAD DATE | GWIRIWYD CHECKED |
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CYNLLUN / SCHEME :

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TEITL LLUNIAD / DRAWING TITLE :

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| GWIRIWYD GAN : CHECKED BY : [redacted] | DYDDIAD GWIRIWYD : DATE CHECKED : [redacted] |
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Drawing No. [redacted]

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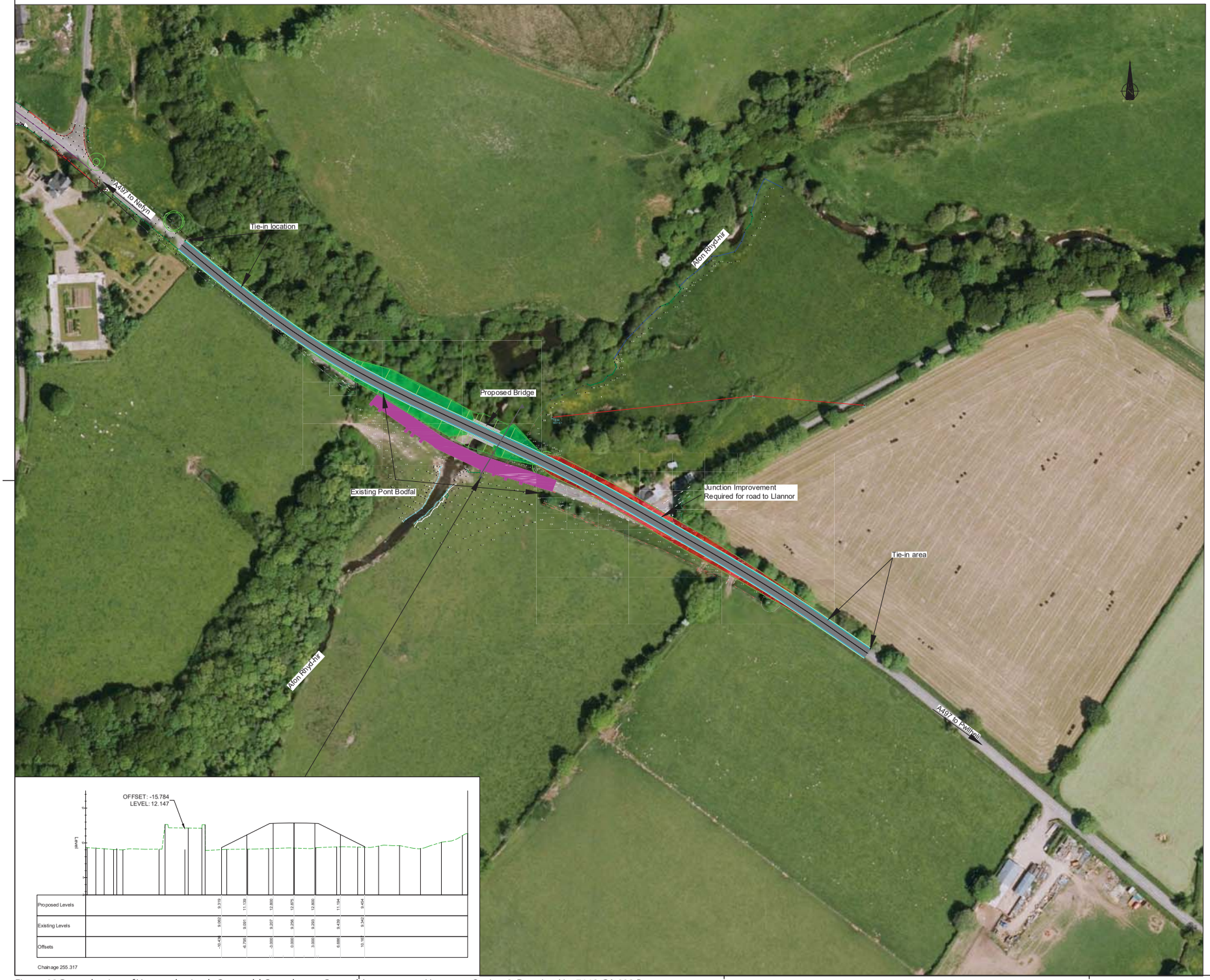
Figure 02 Reproduction of Ymgynghoriaeth Gwynedd Consultancy General Arrangement Downstream Option 1 A; Drawing No. 7118 GA 001 A




CLEIENT/CLIENT :

NODIADAU/NOTES

**Shown Highway Alignment Designed to:**

Design Speed: 100kph (60mph)

Horizontal Curvature:

FROM Efailnewydd approach up Proposed Bridge section. - Desirable minimum R (superelevation of 5%) - 720m Radius

FROM End of Proposed Bridge to tie-in location Nefyn side- 450m Radius at One step below Desirable Minimum (Superelevation of 7%)

Vertical Curvature:

Crest Value - One Step Below desirable minimum
Sag Value - Desirable minimum

Stopping Sight Distance:

One Step below desirable minimum

| RHIF NO. | NEWIDIADAU MODIFICATIONS | GAN / BY | DYDDIAD / DATE | CYMERADWYO / APPROVED |
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Figure 03 Reproduction of Ymgynghoriaeth Gwynedd Consultancy General Arrangement Upstream Option 2; Drawing No. 7118 GA 002 B

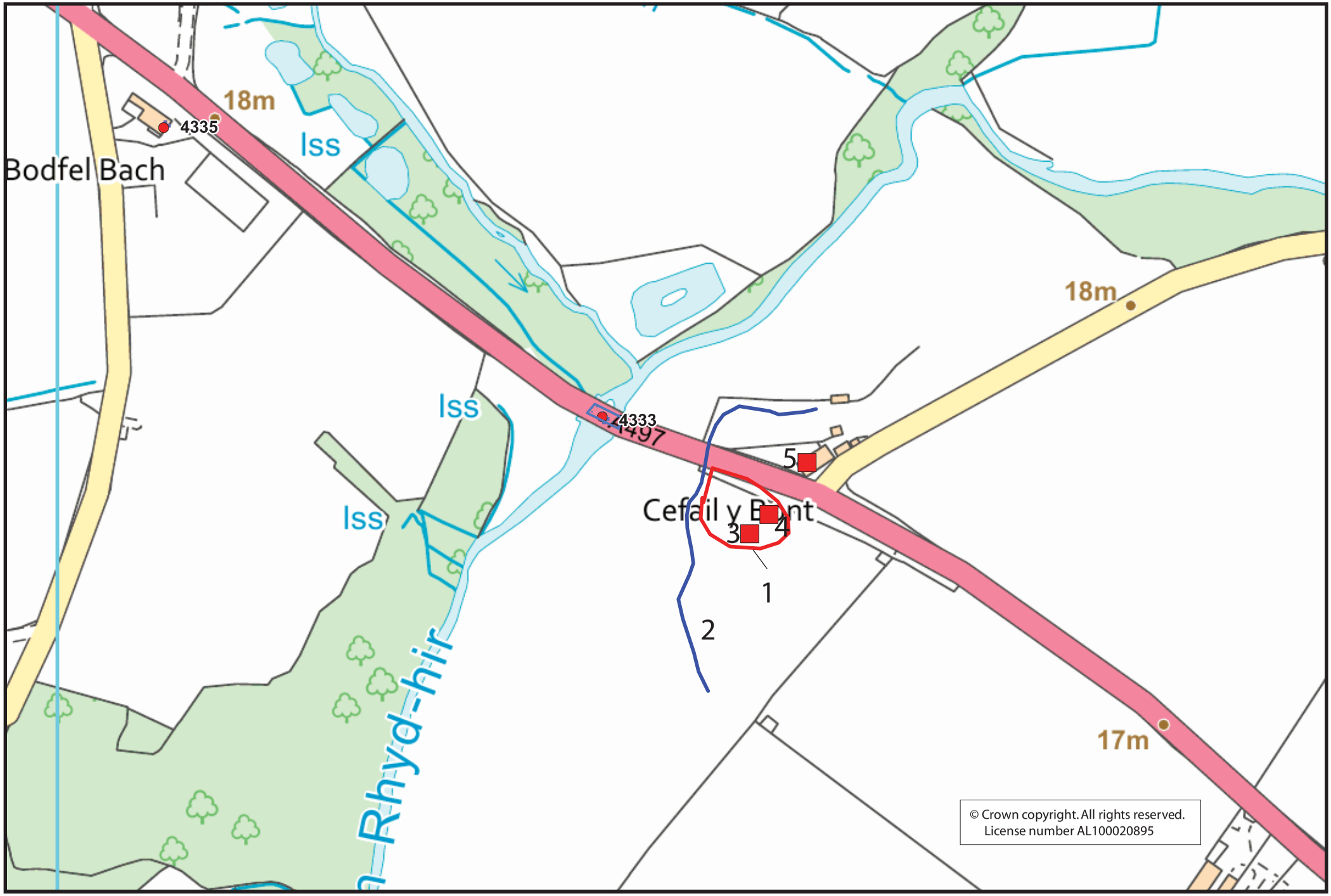


Figure 04: Location of Features listed in the gazeteer. The old quarry pit (Feature) 1 is outlined in red, and the former mill race (Feature 2) is shown in blue. Sites on the Gwynedd HER are shown as red dots and are numbered. The base map is taken from OS 1:10 000 sheet SH3436. Scale 1:2500@A4

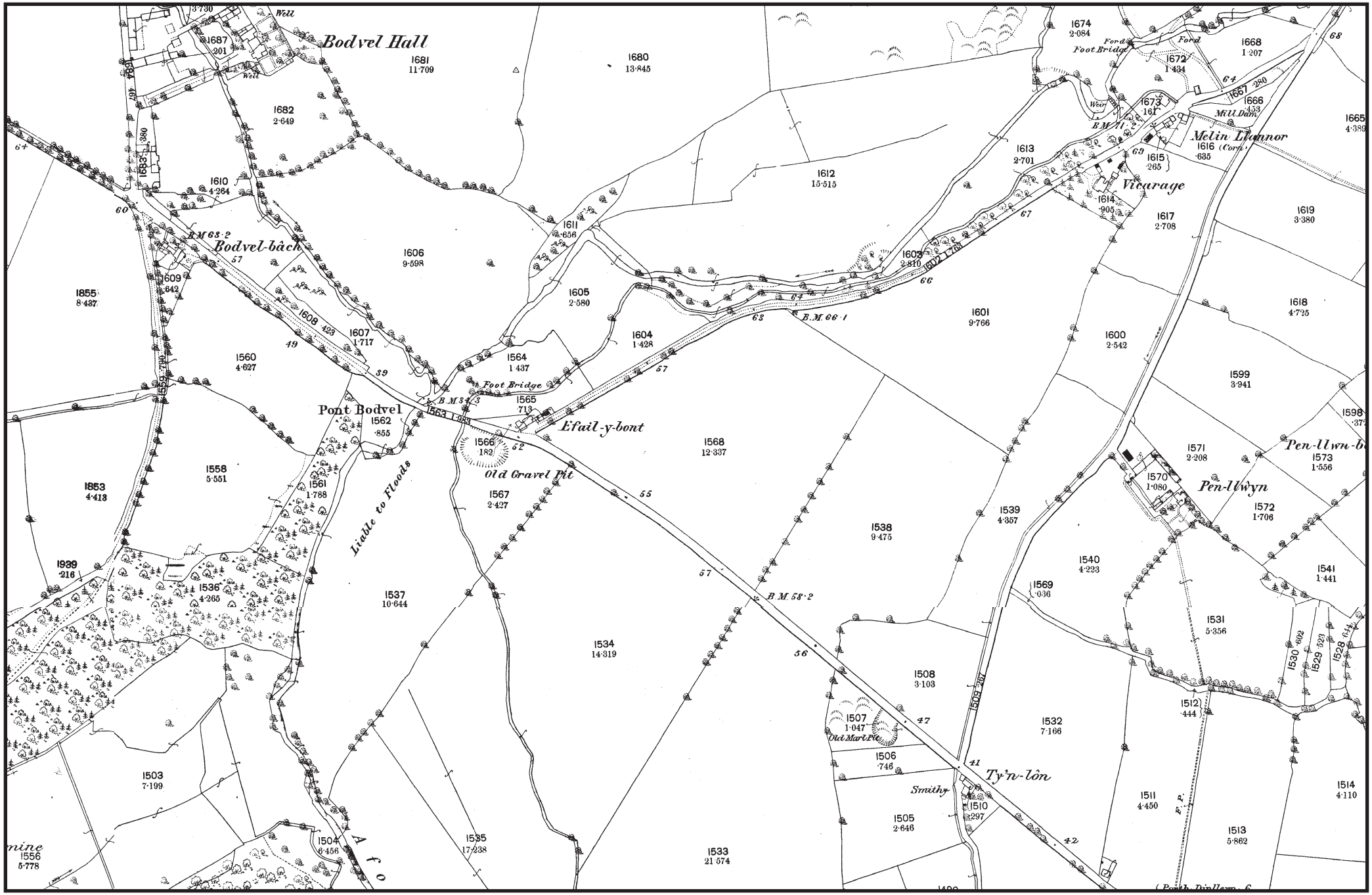


FIGURE 05 Reproduction of Ordnance Survey County Series Map 1-inch to 25-mile (Sheets XL.2, XL.3, XL.6 and XL.7) First Edition published 1889. Scale 1:5000@A4

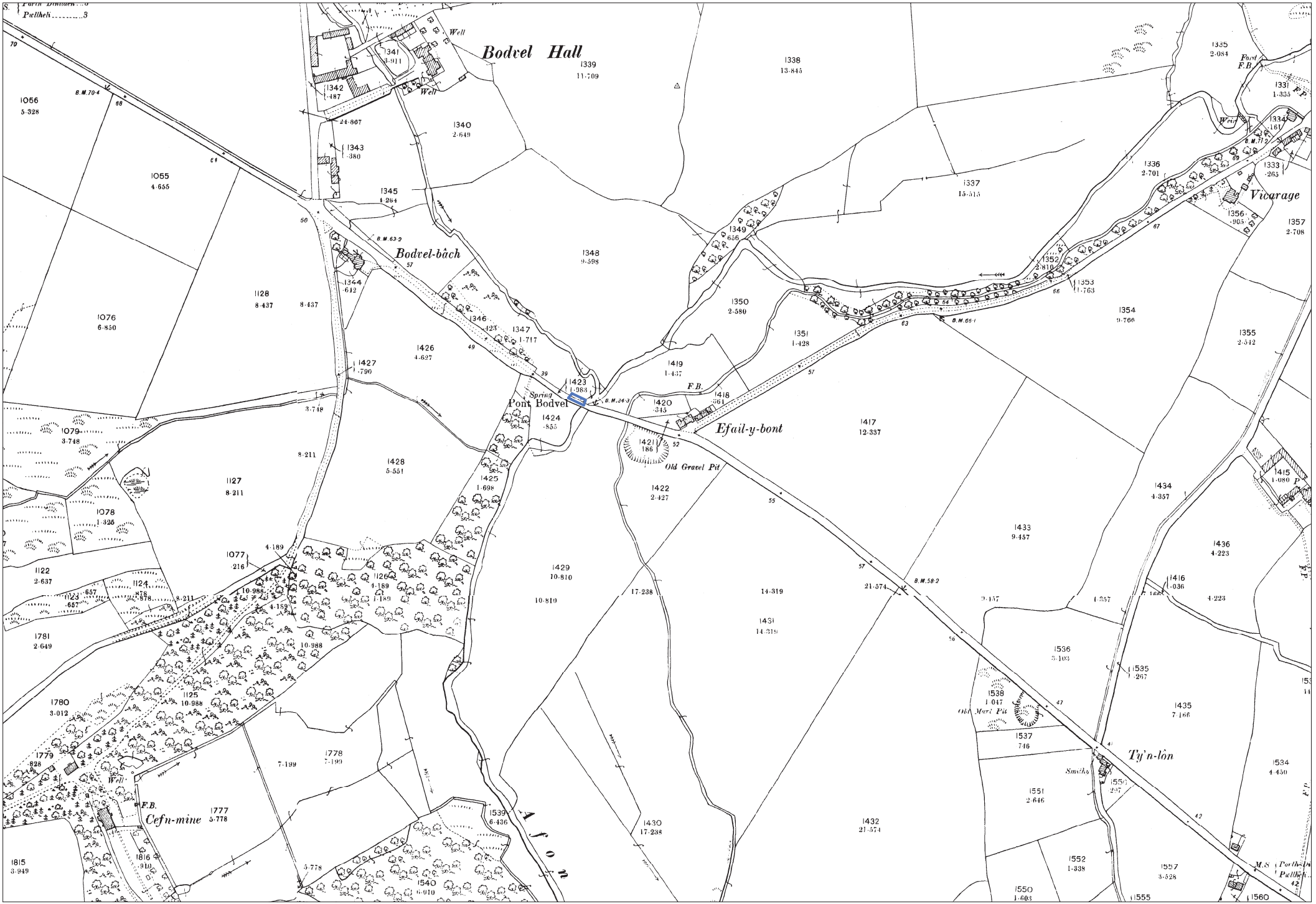


Figure 06: Reproduction of Ordnance Survey County Series 25 inch map, (sheets XL.2, XL3, XL.6 and XL.7). Second Edition published 1900. Scale 1:5000@A4.

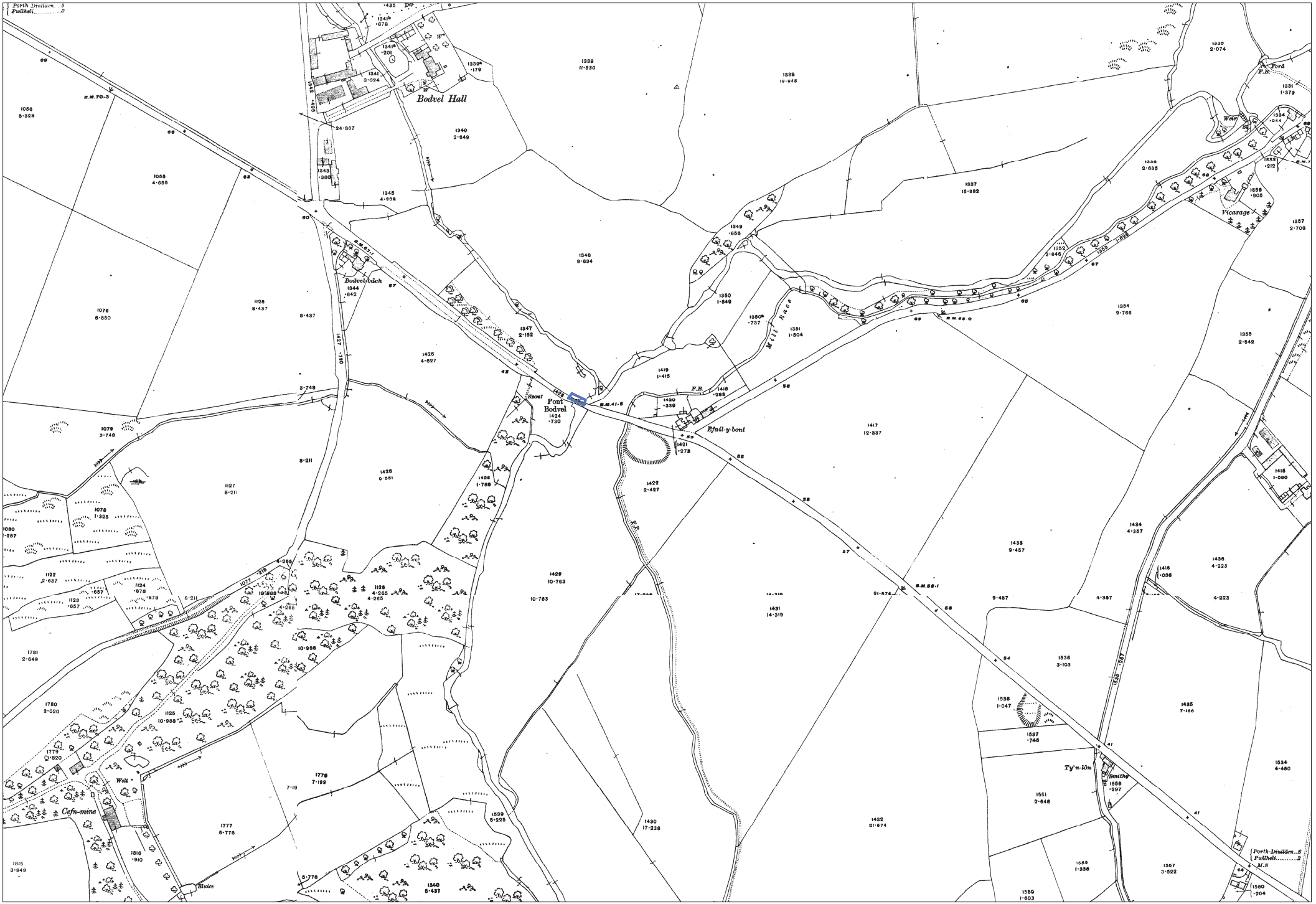


Figure 07: Reproduction of Ordnance Survey County Series 25 inch map, (sheets XL.2, XL3, XL.6 and XL.7). Third edition published 1918. Scale 1:5000@A4


Figure 08: Plan of Bodfal Demesme, from a Survey, Plans and Reference of the Bodfal Estates belonging to William Hervey dated to 1802 showing Bodfel Bridge (Gwynedd Archives, X/Vaynol/4212). Not to Scale

Figure 09: Detail from aerial photograph RAF 4535 106UK_664 Image 4179, taken on 14th August 1945, showing Pont Bodfel (outlined in red). Not to Scale.

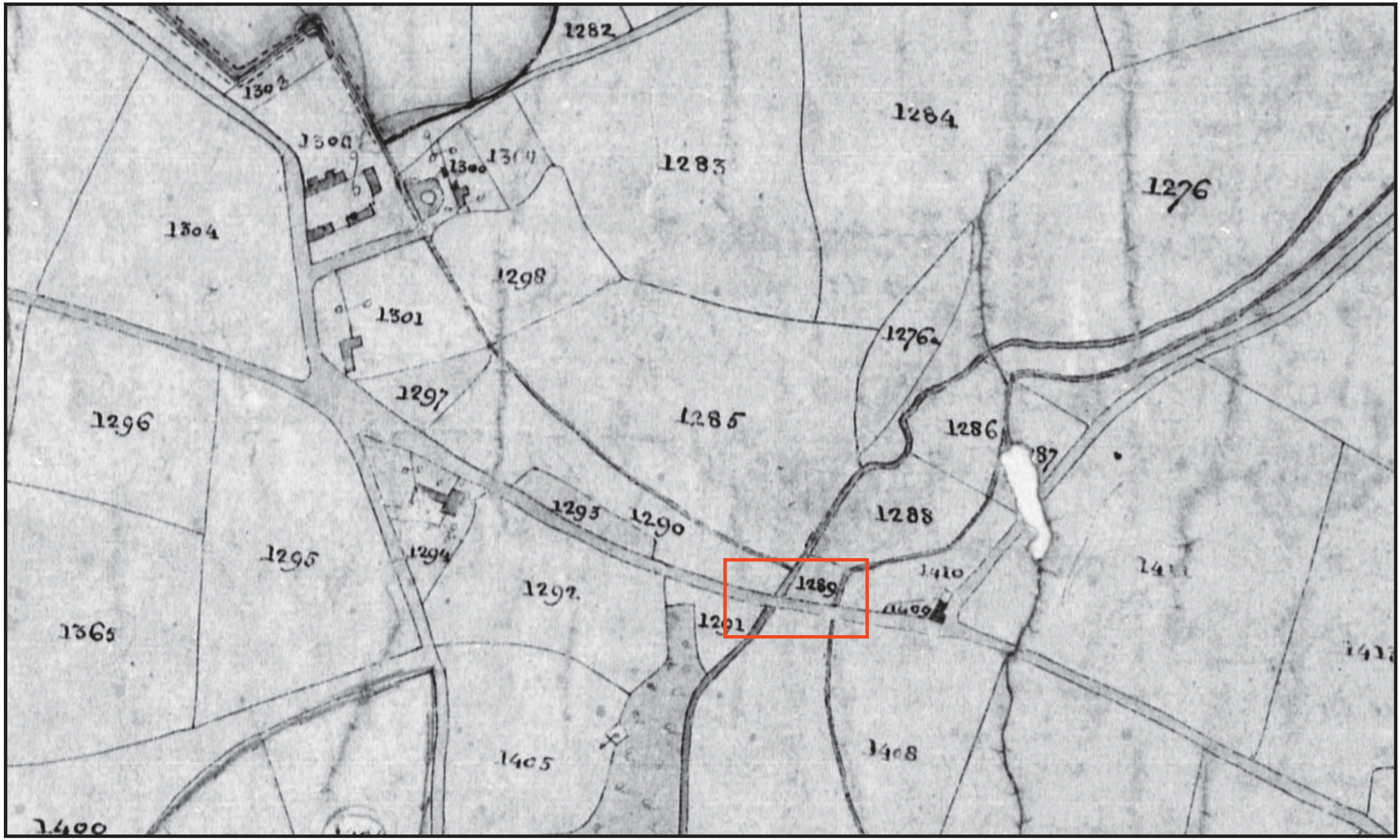


Figure 11: Detail from the Tthe map of the parish of Llannor of 1840 showing Pont Bodfel (outlined in red) (National Library of Wales). Not to scale

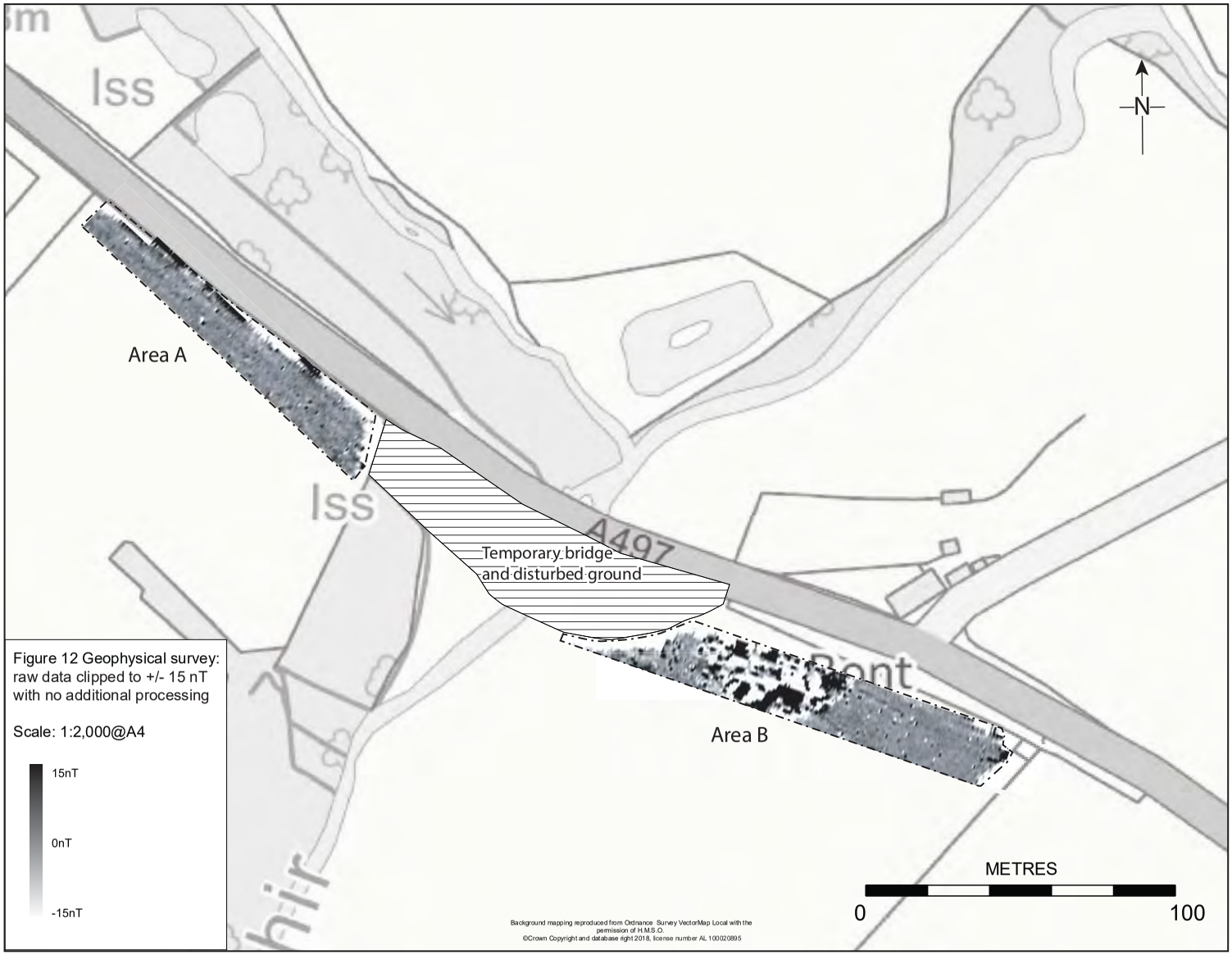


Figure 12 Geophysical survey: raw data clipped to +/- 15 nT with no additional processing

Scale: 1:2,000@A4

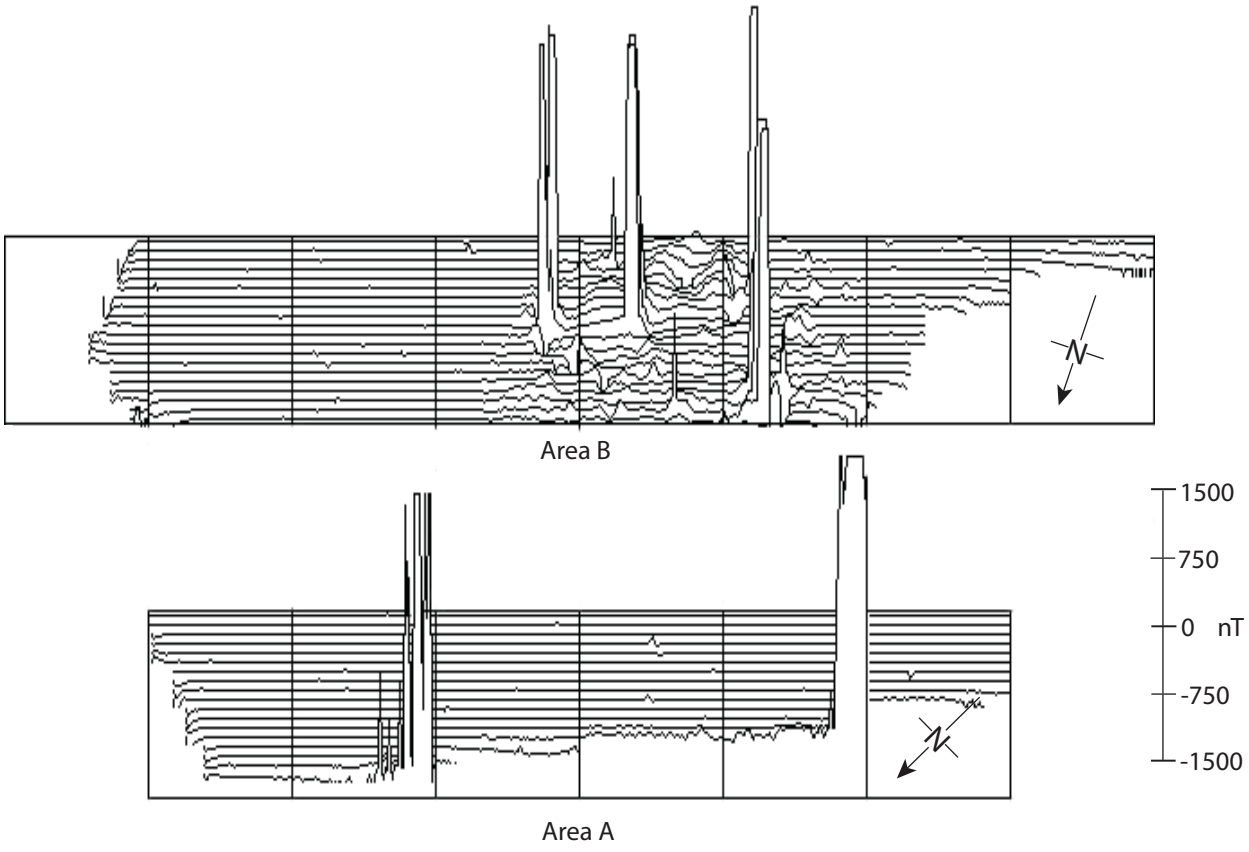


Figure 13 Geophysical Survey: trace plot displaying the magnitude of the responses

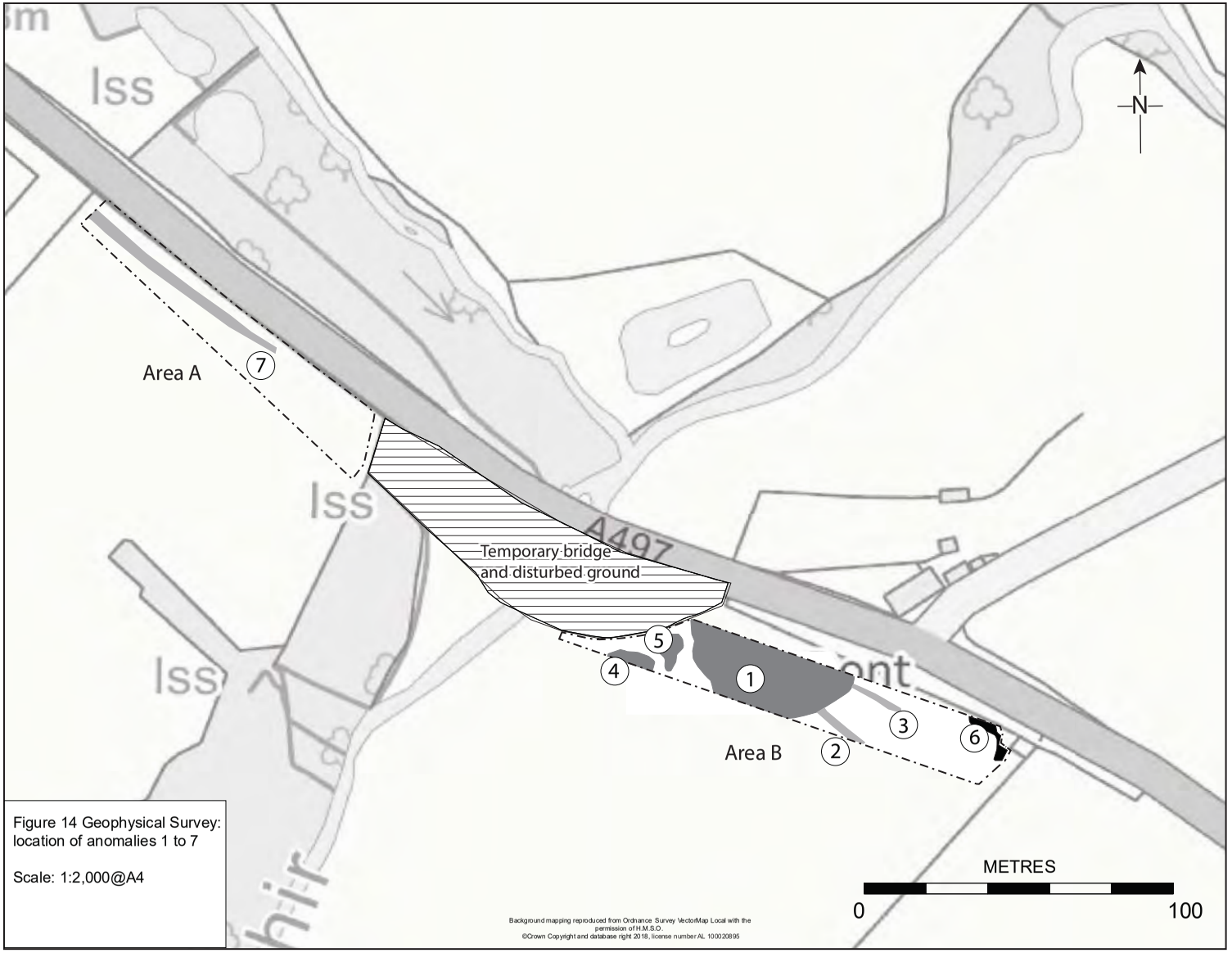


Figure 14 Geophysical Survey: location of anomalies 1 to 7

Scale: 1:2,000@A4

**Plate 1: G2644_Pont_Bodfel; scale SW; view of south side of Pont Bodfel showing concrete repair to the base of SE bridge cutwater (archive reference: G2644_027).**

**Plate 2: G2644_Pont_Bodfel; scale NE; view of the temporary bridge (archive reference: G2644_024).**

**Plate 3: G2644_Pont_Bodfel; scale SE; view of modern buttressing on the south side of bridge approach (archive reference: G2644_025).**

**Plate 4: G2644_Pont_Bodfel; scale W; Angled view of bridge cutwaters on the south side, showing recent repair (archive reference: G2644_028).**

**Plate 5: G2644_Pont_Bodfel; scale W; View along the eastern end of the proposed southern route (archive reference: G2644_017).**

**Plate 6: G2644_Pont_Bodfel; scale S; view of modern clawdd at point where southern route likely to divert from the current road (archive reference: G2644_018).**

**Plate 7: G2644_Pont_Bodfel; scale ESE; view of the wet/wooded area to the NW of the bridge (archive reference: G2644_020).**

**Plate 8: G2644_Pont_Bodfel; scale E; General view of the north side of the bridge (archive reference: G2644_021).**

**Plate 9: G2644_Pont_Bodfel; scale NW; view of the field to the NE of the bridge taken from the bridge (archive reference: G2644_022).**

**Plate 10: G2644_Pont_Bodfel; scale NNW; view of north side of Pont Bodfel (in better light conditions) (archive reference: G2644_044).**

**Plate 11: G2644_Pont_Bodfel; scale ESE; General view along the old Pont Bodfel carriageway (archive reference: G2644_038).**

**Plate 12: G2644_Pont_Bodfel; scale SSW; Line of former mill race (archive reference: G2644_043).**

**Plate 13: G2644_Pont_Bodfel; scale N; Detail showing the former gravel pit location (archive reference: G2644_047).**

**Plate 14: G2644_Pont_Bodfel; scale SE; General view of the site from the SE (archive reference: G2644_052).**

# APPENDIX I

## Gwynedd Archaeological Trust written scheme of investigation

# PONT BODFEL, PWLLHELI, GWYNEDD
# (G2644)

# WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL ASSESSMENT & EVALUATION

*Prepared for*

*Ymgynghoriaeth Gwynedd Consultancy*

***January 2020***

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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 |
| --- | --- | --- |

**PONT BODFEL, PWLLHELI, GWYNEDD (G2644)**

**WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL ASSESSMENT AND EVALUATION**

Prepared for *Ymgynghoriaeth Gwynedd Consultancy*, January 2020

# 1 INTRODUCTION

Gwynedd Archaeological Trust has been commissioned by Ymgynghoriaeth Gwynedd Consultancy to undertake archaeological assessment and evaluation in advance of bridge replacement works at Pont Bodfel, Pwllheli, Gwynedd (NGR: SH34283660; postcode: LL53 6DN; Figure 01). The current scheme involves replacing the existing bridge with a new bridge, with options being considered upstream and downstream. The current downstream option will be on a similar alignment to the existing bridge and will be located to the immediate southwest (cf. Figure 02). The downstream option will be accessed by a new roadway, which will tie-in to the existing A497 road at NGR SH34053677 and NGR SH34573643, respectively. The total length will be 620m and will include online improvements and offline construction. The upstream option has yet to be confirmed.
A temporary bridge is currently in use to maintain traffic flow.

The construction schedule is to be confirmed, but is expected within the first half of 2020.

The archaeological assessment and evaluation will comprise the following:

- an assessment of the proposed new roadway and bridge location;
- a geophysical survey (magnetometer) of the offline portion of the new roadway; and
- an auger survey to establish the depth and nature of deposits within the river bank in proximity to the current bridge and temporary bridge.

Based on the results of the assessment and evaluation, further archaeological works may be recommended, which could include targeted trial trenching. Additional works at the current stage may also include a Heritage Impact Assessment and an archaeological watching brief during geotechnical investigations. Any additional or further archaeological works will be defined in separate written schemes of investigation.

The archaeological assessment and evaluation 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); and
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015).
- *Standard and Guidance for Archaeological Field Evaluation* (Chartered Institute for Archaeologists, 2014); and
- *Standard and Guidance for Historic Environment Desk-Based Assessment* (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).

## 1.1 Monitoring Arrangements

The archaeological assessment and 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.

## 1.2 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 GATHER1221 and the Event PRN is 45787. The GAT HER will also be responsible for supplying Primary Reference Numbers (PRN) for new assets identified and recorded.

# 2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Until the recent collapse, Pont Bodfel (Primary Reference Number (PRN) 11687) carried the A497 road between Nefyn and Pwllheli over the Afon Rhyd-Hir. The bridge is Grade II listed (Cadw ref. 4333) and was built in 1805, replacing an earlier bridge. An archaeological record of the bridge was completed by GAT in 2004 (GAT Report 521), which included a measured and drawn record of the south face of the bridge, in advance of proposed alterations. The report identified several repairs to the bridge, including the provision of supporting buttresses to the causeways on both the north and south faces and at each end of the bridge (*ibid.*: 10), as well as re-rendering and pointing, and masonry repairs. Information from GAT Report 521 will be used to support the archaeological assessment.

A brief examination of the regional Historic Environment Record identifies several archaeological assets with the local area, including the following:

- Bodfel Bach Farmhouse (PRN 11940; NGR: SH34053675; cf. Figure 01), a 17th century farmhouse located at the western end of the revised road route and 270m from the bridge. The farmhouse is also Grade II listed (ref.: 4335);
- Bodfel Hall (PRN 11939; NGR: SH34143696; cf. Figure 01), a 17th century former gatehouse located outside the scheme, 369m to the northwest. The hall is also Grade II listed (ref.: 4216);
- Site of Melin Llannor corn mill (PRN 34292; NGR SH35053368; cf. Figure 01), located on the First to Third Edition 1-inch to 25-mile Ordnance Survey Map of the area (Sheet XL.3; 1889, 1901 and 1917 respectively; cf. Figure 03), 819m northeast of the bridge. The mill was fed by a mill race that was also used by Felin Rhyd-Hir to the south (PRN 34772; NGR SH34573578); the mill race is visible on the Ordnance Survey mapping (cf. Figure 03) and the former route is crossed by the offline road improvements proposed for the bridge replacement.

# 3 METHODOLOGY

## 3.1 Introduction

The archaeological assessment/evaluation will be completed as a staged process and will comprise the following:

- A desk-based assessment of the proposed new roadway and bridge;
- a geophysical survey (magnetometer) of the offline portion of the new roadway; and
- an auger survey to establish the depth and nature of deposits within the river bank south of the current bridge and temporary bridge.

The desk based assessment and geophysical survey will be undertaken by GAT personnel and the auger survey will be undertaken by Oxford Archaeology North (OAN) on behalf of GAT. OAN will produce a specialist survey report and the results from this report and the desk based assessment/geophysical survey will be synthesised into a single GAT report currently scheduled for March 2020.

## 3.2 Assessment of the proposed new roadway and bridge location & Geophysical survey (magnetometer) of the offline portion of the new roadway

### *3.2.1 Desk Based Assessment*

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage….Significance is to be judged in a local, regional, national or international context as appropriate” (CIfA 2014, 4).

The desk-based assessment will involve a study of the following resources:

1. The regional Historic Environment Register ((HER) Gwynedd Archaeological Trust, Craig Beuno, Ffordd y Garth, Bangor, Gwynedd LL57 2RT) will be examined for information concerning the study area, defined as the highlighted plot in Figure 01 and the immediate environs. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER. All identified features will be mapped, described and added to a gazetteer of sites and the relative importance of any sites defined;
2. The National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be checked for sites additional to the HER;
3. Aerial photographs from the National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be examined for potential features;
4. On-line catalogue search of the National Library of Wales (Penglais Rd, Aberystwyth SY23 3BU);
5. Archive data, including primary and secondary sources, historic maps and estate maps will be examined at the regional archives (Gwasanaeth Archifau Gwynedd, Cyngor Gwynedd, Caernarfon LL55 1SH). The examination of the archive data will include historic mapping including the local tithe map and schedule;

6. Light Detection and Ranging (LiDAR) data will be examined from the Lle Geo-Portal at http://lle.gov.wales/home for information on potential surface features using digital terrain modelling and digital surface modelling;

A walkover survey will be undertaken that will incorporate the assessment area, currently defined as the downstream option incorporating the revised roadway route in Figure 02 and the immediate environs (if accessible). All known and new archaeological features on the ground will be located and described them on GAT pro-formas (Appendix I). The sites will then be added to the overall gazetteer and their relative importance defined. The potential for sub-surface archaeology will be estimated and defined.

A photographic record will be maintained using GAT pro-forms (Appendix II) and images will be taken in RAW format using a digital SLR set to maximum resolution. Photographic images will be archived in TIFF format; the archive numbering system will start from G2644_001; a photographic metadata table will be completed and included in the report. A handheld GPS unit will also be used during the walkover survey

### *3.2.2 Geophysical survey*

#### 3.2.2.1 Summary

The geophysical survey will be undertaken by GAT staff and will incorporate the offline road improvement area for the downstream option, as identified in Figure 02, and with an estimated length of 580m. The survey will be undertaken as a series of 20m grids, which will be tied into the Ordnance Survey grid using a Trimble R8 high precision GPS system; the total survey area is estimated at 1.2ha. 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.

#### 3.2.2.2 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.

#### 3.2.2.3 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.

#### 3.2.2.4 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.

#### 3.2.2.5 Aims

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 evaluation and/or mitigation (if relevant).

### *3.2.3 Fieldwork Archiving*

Following the completion of the respective assessment/evaluation stages, fieldwork archiving will be completed 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. Geophysical survey data: downloaded using a Computer Aided Design package;

All data will be processed and a report will be produced which will detail and synthesise the results.

### *3.2.4 Gazetteer*

A gazetteer will be compiled for any existing and newly identified sites within the local area, based on information sourced from the desk based assessment and geophysical surve ; the gazetteer will be prepared in the following format and will include:

| | |
|---|---|
| **Feature Number** | |
| **Site name** | |
| **PRN number** | |
| **Grid reference** | |
| **Period** | |
| **Site type** | |
| **Assessment category** | |
| **Description** | |
| **Impact** | |
| **Recommendation for further assessment/evaluation** | |
| **Recommendation for mitigatory measures** | |

**The following categories will be used to define the assessment category of the archaeological asset:**

*Category A - Sites of National Importance*.
Scheduled Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both. Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

*Category B - Sites of regional or county importance.*
Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or

destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

*Category C - Sites of district or local importance.*
Sites which are not of sufficient importance to justify a recommendation for preservation if threatened. Category C sites nevertheless merit adequate recording in advance of damage or destruction.

*Category D - Minor and damaged sites.*
Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

*Category E - Sites needing further investigation.*
Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation.

**The impact of the proposed works on any asset will be identified using the following impact criteria, defined either as *none, slight, unlikely, likely, significant, considerable or unknown* as follows:**

*None:*
There is no construction impact on this asset.
*Slight:*
This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the asset, *e.g.* part of a trackway or field bank.
*Unlikely:*
This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.
*Likely:*
Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.
*Significant:*

The partial removal of an asset affecting its overall integrity. Assets falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

*Considerable:*

The total removal of an asset or its partial removal which would effectively destroy the remainder of the site.

*Unknown:*

This is used when the location of the asset is unknown, but thought to be in the vicinity of the proposed works.

### *3.2.5 Auger Survey*

The objective of the auger survey is to establish the nature and depth of deposits on the riverbank either side of the proposed bridge location. This will indicate whether the deposits are likely to be of archaeological value and, if so, to collect the deposits using a Russian-type auger.

As there is a temporary bridge already installed, the survey will be located within an area as close as practical to the proposed new bridge location.

The survey will be completed by Oxford Archaeology North (OAN) on behalf of GAT, using the following methodology:

- Using a gouge auger, place boreholes at approximately 10m apart along either side of the riverbank adjacent to the proposed bridge location. Survey locate these using a GPS unit;
- Use these data to gauge the depth and nature of the deposits that are possible to penetrate using hand-held equipment;
- If evidence for potential archaeological interest is encountered, to further refine the borehole data to target the potential interest (for example, the occurrence of organic rich or peaty deposits). This may result in further boreholes to be taken at closer intervals across an area of potential interest;
- To fully describe the sediment history as recorded from each borehole location; and
- If required, and if present at the site, to extract sediments that may be of archaeological potential. This could be achieved using a Russian-type auger; up to 5m of sediment could be collected using this method.

OAN will produce a subsequent report, the results of which will be summarised in the GAT assessment/evaluation report and a copy included as an appendix.

# 4 REPORTING

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. Desk-based assessment;
    ii. Geophysical survey;
    iii. Auger survey;
7. Results;
    a. Desk based assessment;
        i. Location and geological summary;
        ii. Statutory and non-statutory designations;
        iii. Environmental remains and soil morphology;
        iv. Historical and archaeological background;
        v. Cartographic evidence;
        vi. Artefact potential;
        vii. Aerial photographs and LiDAR;
        viii. Walkover survey;
    b. Geophysical survey
    c. Gazetteer of features;
    d. Auger survey
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);
13. Appendix II (Sites listed on GAT Historic Environment Record);
14. Appendix III (Definition of mitigation terms);
15. Appendix IV (Photographic metadata - walkover survey);
16. Appendix V (Oxford Archaeology North auger survey report).

    Back cover.

Illustrations will include plans of the location of the study area and archaeological sites. 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 assessment/evaluation outlined in this written scheme of investigation will be submitted in draft format in March 2020; a final report will be submitted to the Historic Environment within six months of submitting the draft report (March 2020).

The following dissemination will apply:

- A digital report(s) will be provided to the client 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..

# 6 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section with undertaken by a team of GAT Project Archaeologists. The Project Archaeologists will be responsible for the following:

- All duties on site, including mobilisation and access arrangements;
- Client liaison;
- GAPS liaison, with regular updates;
- specialist liaison (auger survey);
- completing all on site pro-formas and the fieldwork archive itemised in para. 3.5;
- sourcing Primary Reference Numbers (PRN) from the GAT HER for any new features identified;
- completing an event summary and creating or updating PRN data, dependent on results; and
- for submitting a draft final report (or interim report) for project manager review and approval, to then be submitted as per the arrangements defined in para. 5.

# 7 HEALTH AND SAFETY

Any risks and hazards will be indicated prior to the start of work via a submitted risk assessment. Any GAT staff attending site for the walkover survey and/or geophysical survey will be issued with required personal safety equipment, including high visibility jacket and safety boots. All work will be undertaken in accordance with the GAT Health and Safety Policy.

# 8 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.

# 9 INSURANCE

## 9.1 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 21/06/2020

## 9.2 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 21/06/2020

## 9.3 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 22/07/2020

# 10 SOURCES CONSULTED


1. A Research Framework for the Archaeology of Wales Version 03, Final Refresh Document March 2017
2. Brunning, R and Watson, J 2010, *Waterlogged Wood: Guidelines on the Recording,*
3. Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Archaeological Evaluation*
4. Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Standard and Guidance for Historic Environment Desk-Based Assessment*
5. Chartered Institute for Archaeologists, 2014, *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*
6. English Heritage, 1991, *Management of Archaeological Projects (MAP2)*
7. Historic England, 2015, *Management of Research Projects in the Historic Environment (MoRPHE)*
8. Longley D, 2004. Pont Bodfel, Llannor. Gwynedd Archaeological Trust Report 521.
9. Royal Commission on Ancient and Historical Monuments of Wales, 2015, *Guidelines for digital archives*
10. The Welsh Archaeological Trusts, 2018, *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)*

**FIGURE 01**

**Location Plan, based on Ordnance Survey County Series 1:10000 map sheet SH33NW. Scale 1:5000@A4 © Crown Copyright. All Rights Reserved. License Number AI100020895**

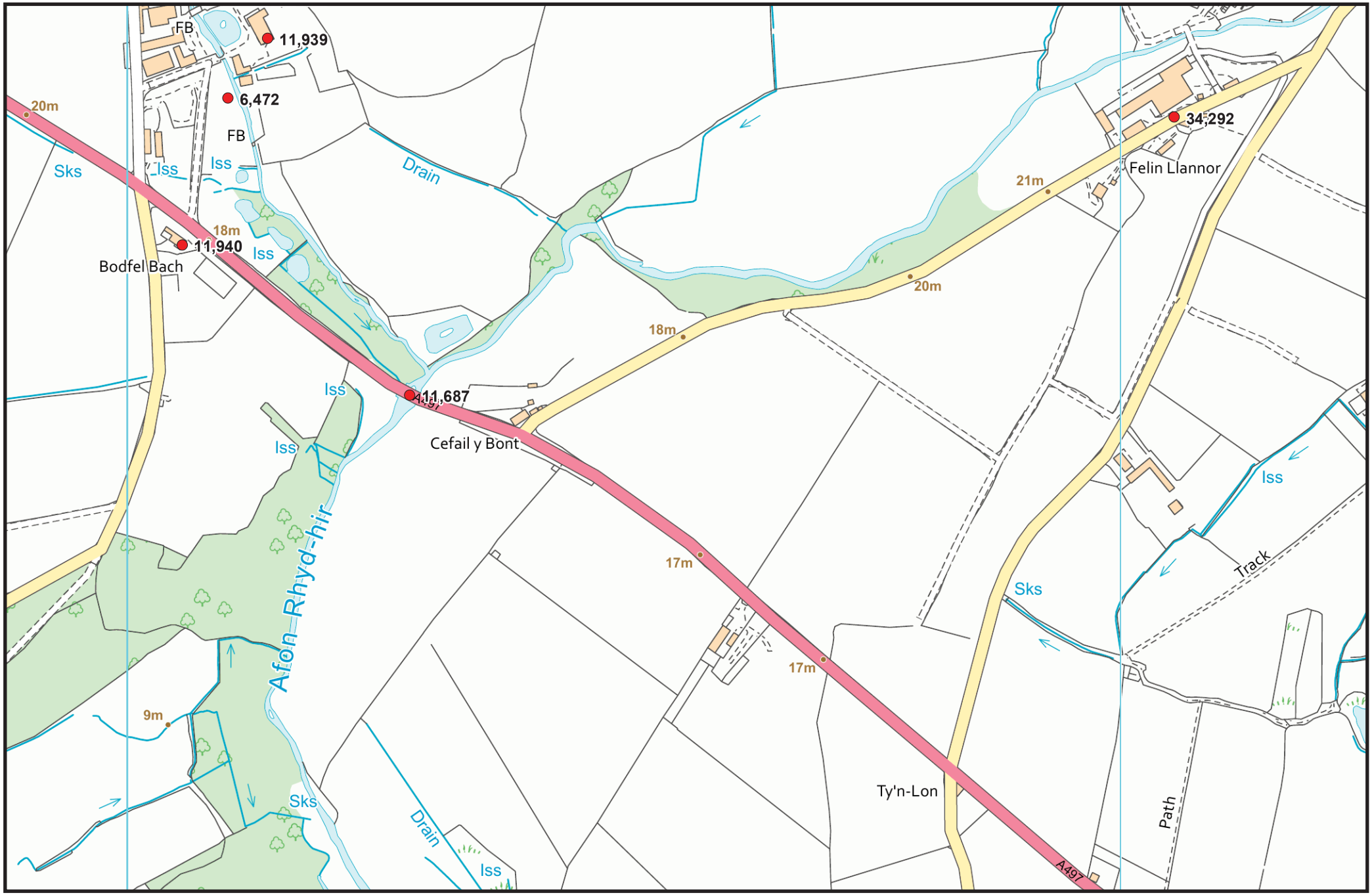


FIGURE 01 Location Plan, based on Ordnance Survey County Series 1:10000 map sheet SH33NW. Scale 1:5000@A4 © Crown Copyright. All Rights Reserved. License Number AI100020895

## FIGURE 02

**Reproduction of Ymgynghoriaeth Gwynedd Consultancy Drawing No. 6695/GA/300**


Typical Cross Sections
Scale - 1:250










CLEIENT/CLIENT :

NODIADAU/NOTES
Shown Highway Alignment Designed to:

Design Speed: 85kph
Horizontal Curvature: 720m Radius

| RHIF NO. | NEWIDIADAU MODIFICATIONS | GAN BY | DYDDIAD DATE | GWIRIWYD CHECKED |
|---|---|---|---|---|

YGC

CYNGOR GWYNEDD COUNCIL

CYNLLUN / SCHEME :

A497
PONT BODFAL

TEITL LLUNIAD / DRAWING TITLE :

GENERAL ARRANGMENT
DOWNSTREAM
OPTION 1

| | | | |
|---|---|---|---|
| DARLUNWYD GAN : DRAWN BY : | RW | DYDDIAD DARLUNWYD : DATE DRAWN : | 23.07.19 |
| GWIRIWYD GAN : CHECKED BY : | RMO | DYDDIAD GWIRIWYD : DATE CHECKED : | 23.07.19 |
| Taflen Sheet | 1 of 1 | GRADDFEYDD : SCALES : | 1: 1000 @ A1 |

Rhif Lluniad
Drawing No. 6695/GA/300

CYW REV

**FIGURE 03**

**Reproduction of Ordnance Survey County Series Map 1-inch to 25-mile (Sheets XL.2, XL.3, XL.6 and XL.7) First Edition published 1889. Scale 1:5000@A4**

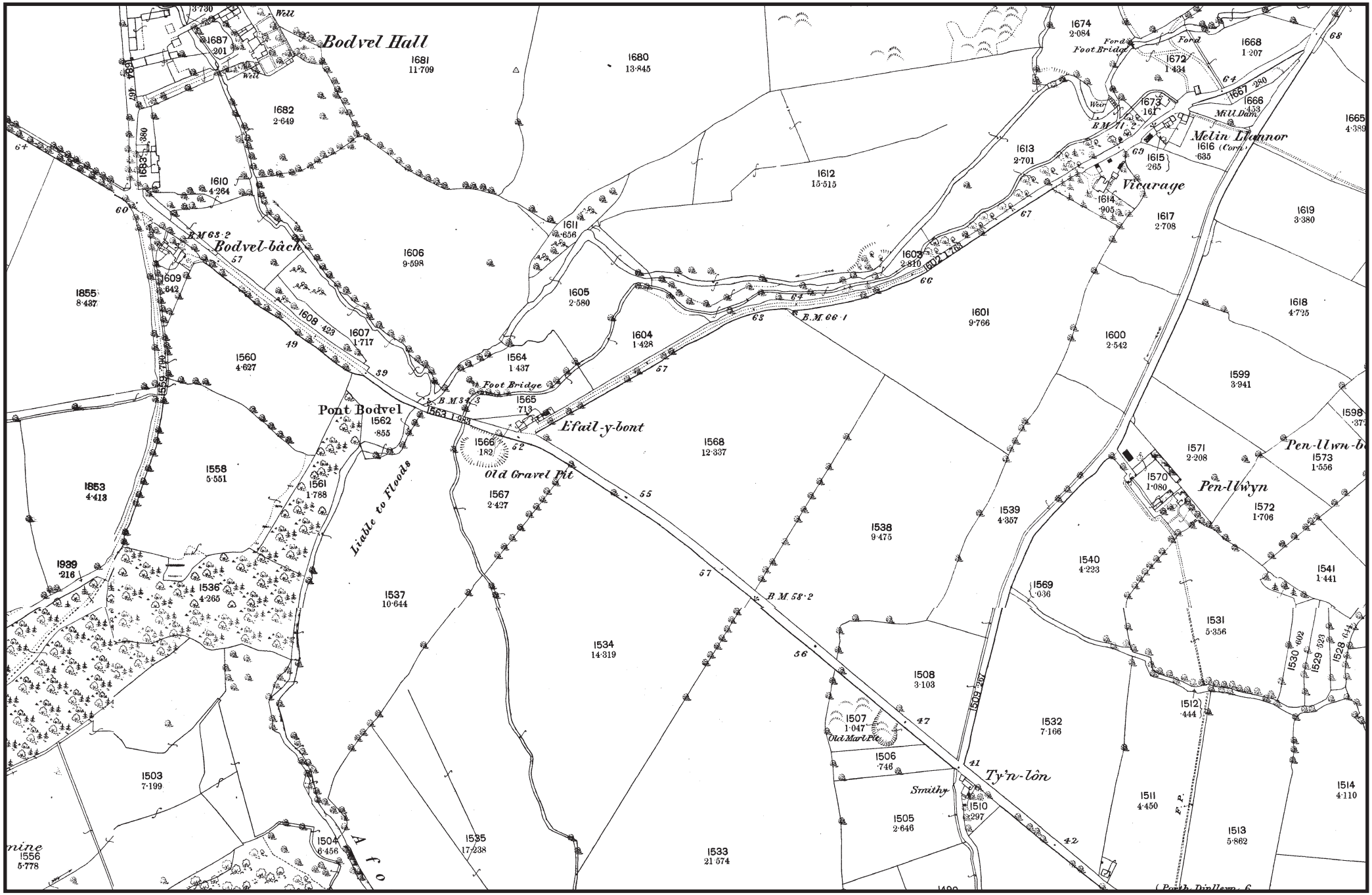


FIGURE 03 Reproduction of Ordnance Survey County Series Map 1-inch to 25-mile (Sheets XL.2, XL.3, XL.6 and XL.7) First Edition published 1889. Scale 1:5000@A4

# APPENDIX I

## Gwynedd Archaeological Trust basic recording pro-forma

| YMDDIRIEDOLAETH ARCHAEOLEGOL GWYNEDD ARCHAEOLOGICAL TRUST | | |
|---|---|---|
| BASIC RECORDING FORM | *Project name* | *Project number* |
| *Feature name* | | *Feature Number* |
| *NGR* | | |
| *Description* | | |
| *Recommendations for further assessment* | | |
| *Photographic record numbers* | | |
| *Digital* | | |
| | *Visit date* | *Visit by* |

# APPENDIX II

## Gwynedd Archaeological Trust photographic metadata pro-forma

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

# Digital Photographic Record

Include main context numbers for each shot, drawing numbers for sections and any other relevant numbers for cross referencing.
Delete any unwanted photos **immediately** from the camera. Regularly upload photographs to computer.

| Project Name: | | | Project Number: | | | | |
|---|---|---|---|---|---|---|---|
| **Photo No.** | **Sub - Division** | **Description** | **Contexts** | **Scales** | **View From** | **Initials** | **Date** |
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## APPENDIX II

**Sites listed on Gwynedd Archaeological Trust Historic Environment Record**

| Sites Listed on the Gwynedd HER within 500m of Pont Bodfel | | | | | | |
|---|---|---|---|---|---|---|
| **PRN** | **SITE NAME** | **PERIOD** | **STATUS** | **GRADE** | **REFERENCE** | **NGR** |
| 11940 | Bodfel Bach Farmhouse, Boduan | POST MEDIEVAL | Listed Building | II | 4335 | SH3405436752 |
| 11939 | Bodfel Hall, Boduan | POST MEDIEVAL | Listed Building | II* | 4216 | SH3414036960 |
| 6472 | Bodfel Township, Llannor | MEDIEVAL | | | | SH341369 |
| 56917 | Curvilinear Wall, SW of Bodfel Bach | POST MEDIEVAL | | | | SH3379936535 |
| 11687 | Pont Bodfel, Llannor | POST MEDIEVAL | Listed Building | II | 4333 | SH3428336601 |

## APPENDIX III

### Definition of mitigation terms

**Definition of field evaluation techniques**

Field evaluation is necessary to fully understand and assess most class E sites and to allow the evaluation of areas of land where there are no visible features but for which there is potential for sites to exist. Two principal techniques can be used for carrying out the evaluation: geophysical survey and trial trenching. Topographic survey may also be employed where sites are thought to survive as earthworks.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

**Definition of Mitigatory Recommendations**

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

*None:*
No impact so no requirement for mitigatory measures.

*Detailed recording:*

This requires a full photographic record and measured survey prior to commencement of works.

Archaeological excavation may also be required depending on the particular feature and the extent and effect of the impact.

*Basic recording:*
Requiring a photographic record and full description prior to commencement of works.

*Strip, Map and Sample:*
The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such as manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

*Watching brief:*
This is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

*Avoidance:*
Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

*Reinstatement:*
The feature should be re-instated with archaeological advice and supervision.

# APPENDIX IV

## Photographic metadata - walkover survey

| PRN | PHOTO RECORD NUMBER | PROJECT NAME | DESCRIPTION | VIEW FROM | SCALE(S) | CREATOR OF DIGITAL PHOTO | DATE OF CREATION OF DIGITAL PHOTO | PLATES |
|---|---|---|---|---|---|---|---|---|
| 11687 | G2644_001 | G2644_Pont_Bodfel | General view of the south side of Pont Bodfel showing the temporary bridge | ENE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_002 | G2644_Pont_Bodfel | General view of the south side of the temporary carriageway | SSE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_003 | G2644_Pont_Bodfel | General view of the new temporary bridge on the south side of Pont Bodfel | SSW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_004 | G2644_Pont_Bodfel | General view across the Afon Rhyd Hir showing improved pastureland on the east side of the river | WSW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_005 | G2644_Pont_Bodfel | General view of the south side of Pont Bodfel showing the temporary bridge | SSW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_006 | G2644_Pont_Bodfel | General view of improved pasture to the west showing southern route of proposed carriageway | SE | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_007 | G2644_Pont_Bodfel | General view along the proposed southern route through western pasture fields. | NW | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_008 | G2644_Pont_Bodfel | Angled view of hedgerow on south side of the road liable to be breached by the southern scheme | W | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_009 | G2644_Pont_Bodfel | Detail of hedgerow on the south side of the road | NW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_010 | G2644_Pont_Bodfel | general view of the southern side of Pont Bodfel temporary bridge | E | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_011 | G2644_Pont_Bodfel | General view along the proposed southern route through western pasture fields. | E | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_012 | G2644_Pont_Bodfel | General view along the proposed southern route through the field on the east bank of the river showing the break of slope | E | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_013 | G2644_Pont_Bodfel | View upslope from the river of the proposed southern route | W | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_014 | G2644_Pont_Bodfel | View of undulations in field along the proposed southern route | NE | 1 x 1m | Robert Evans | 12/03/2020 | |

| PRN | PHOTO RECORD NUMBER | PROJECT NAME | DESCRIPTION | VIEW FROM | SCALE(S) | CREATOR OF DIGITAL PHOTO | DATE OF CREATION OF DIGITAL PHOTO | PLATES |
|---|---|---|---|---|---|---|---|---|
| 11687 | G2644_015 | G2644_Pont_Bodfel | General view of modern roadside boundary/clawdd walling | S | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_016 | G2644_Pont_Bodfel | View of modern clawdd likely to be breached by the southern route | NE | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_017 | G2644_Pont_Bodfel | View along the eastern end of the proposed southern route | W | not used | Robert Evans | 12/03/2020 | 05 |
| 11687 | G2644_018 | G2644_Pont_Bodfel | View of modern clawdd at point where southern route likely to divert from the current road | S | 1 x 1m | Robert Evans | 12/03/2020 | 06 |
| 11687 | G2644_019 | G2644_Pont_Bodfel | View of modern clawdd at point where southern route likely to divert from the current road (angled shot) | SE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_020 | G2644_Pont_Bodfel | View of the wet/wooded area to the NW of the bridge | ESE | 1 x 1m | Robert Evans | 12/03/2020 | 07 |
| 11687 | G2644_021 | G2644_Pont_Bodfel | General view of the north side of the bridge | E | not used | Robert Evans | 12/03/2020 | 08 |
| 11687 | G2644_022 | G2644_Pont_Bodfel | View of the field to the NE of the bridge taken from the bridge | NW | not used | Robert Evans | 12/03/2020 | 09 |
| 11687 | G2644_023 | G2644_Pont_Bodfel | General view of Pont Bodfel on the south side, showing cutwaters, three arches | S | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_024 | G2644_Pont_Bodfel | View of the temporary bridge | NE | 1 x 1m | Robert Evans | 12/03/2020 | 02 |
| 11687 | G2644_025 | G2644_Pont_Bodfel | View of modern buttressing on the south side of bridge approach | SE | 1 x 1m | Robert Evans | 12/03/2020 | 03 |
| 11687 | G2644_026 | G2644_Pont_Bodfel | View of modern buttressing on the south west side of bridge approach | SSE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_027 | G2644_Pont_Bodfel | View of south side of Pont Bodfel showing concrete repair to the base of SE bridge cutwater | SW | 1 x 1m | Robert Evans | 12/03/2020 | 01 |
| 11687 | G2644_028 | G2644_Pont_Bodfel | Angled view of bridge cutwaters on the south side, showing recent repair | W | not used | Robert Evans | 12/03/2020 | 04 |

| PRN | PHOTO RECORD NUMBER | PROJECT NAME | DESCRIPTION | VIEW FROM | SCALE(S) | CREATOR OF DIGITAL PHOTO | DATE OF CREATION OF DIGITAL PHOTO | PLATES |
|---|---|---|---|---|---|---|---|---|
| 11687 | G2644_029 | G2644_Pont_Bodfel | General view of wooded area to the north of Pont Bodfel | W | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_030 | G2644_Pont_Bodfel | General view along the Afon Rhyd Hir showing woodland and scrub | WNW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_031 | G2644_Pont_Bodfel | Modern drainage channel cut through woodland to join with Afon Rhyd Hir | SE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_032 | G2644_Pont_Bodfel | General view of north side of Pont Bodfel showing area of collapse (image obscured by Jewson's bags and low sunlight) | N | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_033 | G2644_Pont_Bodfel | Angled view on the north side of Pont Bodfel | NNW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_034 | G2644_Pont_Bodfel | Detailed view showing area of parapet and bridge collapse on the north face | NNW | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_035 | G2644_Pont_Bodfel | Detailed view showing area of parapet and bridge collapse on the north face | N | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_036 | G2644_Pont_Bodfel | Detail of cutwater, voussoirs, string course and arch of bridge from the north side | NNW | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_037 | G2644_Pont_Bodfel | General view along the old Pont Bodfel carriageway | NW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_038 | G2644_Pont_Bodfel | General view along the old Pont Bodfel carriageway | ESE | 1 x 1m | Robert Evans | 12/03/2020 | 11 |
| 11687 | G2644_039 | G2644_Pont_Bodfel | Detail of damage to bridge and parapet from the carriageway | ESE | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_040 | G2644_Pont_Bodfel | View of rubble collapse from the bridge now stored on the bridge carriageway | NW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_041 | G2644_Pont_Bodfel | General view across undulating fields north and east of Gefail y Bont | ENE | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_042 | G2644_Pont_Bodfel | View of mill race and adjacent Afon Rhyd Hir | E | not used | Robert Evans | 12/03/2020 | |

| PRN | PHOTO RECORD NUMBER | PROJECT NAME | DESCRIPTION | VIEW FROM | SCALE(S) | CREATOR OF DIGITAL PHOTO | DATE OF CREATION OF DIGITAL PHOTO | PLATES |
|---|---|---|---|---|---|---|---|---|
| 11687 | G2644_043 | G2644_Pont_Bodfel | Line of former mill race | SSW | not used | Robert Evans | 12/03/2020 | 12 |
| 11687 | G2644_044 | G2644_Pont_Bodfel | View of north side of Pont Bodfel (in better light conditions) | NNW | 1 x 1m | Robert Evans | 12/03/2020 | 10 |
| 11687 | G2644_045 | G2644_Pont_Bodfel | General view of the north side of Pont Bodfel and the immediate area to the north | NNW | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_046 | G2644_Pont_Bodfel | General view of the location of 'the old gravel pit' from the bridge | NW | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_047 | G2644_Pont_Bodfel | Detail showing the former gravel pit location | N | 1 x 1m | Robert Evans | 12/03/2020 | 13 |
| 11687 | G2644_048 | G2644_Pont_Bodfel | General view showing both Pont Bodfel and the temporary bridge | S | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_049 | G2644_Pont_Bodfel | View of the route of the old mill race across the field to the south of the bridge | N | 1 x 1m | Robert Evans | 12/03/2020 | |
| 11687 | G2644_050 | G2644_Pont_Bodfel | General view showing the river division north of Pont Bodfel | SW | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_051 | G2644_Pont_Bodfel | General view of the temporary bridge S of Pont Bodfel | N | not used | Robert Evans | 12/03/2020 | |
| 11687 | G2644_052 | G2644_Pont_Bodfel | General view of the site from the SE | SE | not used | Robert Evans | 12/03/2020 | 14 |

Gwynedd Archaeological Trust
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