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# **Afon Gennog Hydro Scheme, Nant Peris, Gwynedd.**

**June 2014**

**V 1.2**



Archaeological Assessment

Project Code: A0039.1

Report no. 0040

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# **Afon Gennog Hydro Scheme, Nant Peris, Gwynedd. June 2014**

Report no. 0040 v1.2

Archaeological Assessment  
Aeon Archaeology  
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Project Code: A0039.1

Date: 23/06/2014

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# Figures

**Figure 01:** Location of proposed hydro-electric pipe route, monument points from the Gwynedd HER, and new sites from the Gwynedd HER. Scale 1:14,000 at A4.

**Figure 02:** Location of proposed hydro-electric pipe route, monument points from the National Monuments Record, Listed Buildings, and Roman Road. Scale 1:14,000 at A4.

**Figure 03:** Location of proposed hydro-electric pipe route and Historic Landscape Character Areas (HLCAs). Scale 1:14,000 at A4.

**Figure 04:** First edition 25" County Series Ordnance Survey map of 1889.

**Figure 05:** First Edition 6" County Series Ordnance Survey map of 1891.

**Figure 06:** Second edition 25" County Series Ordnance Survey map of 1900.

**Figure 07:** Third edition 25" County Series Ordnance Survey map of 1914.

**Figure 08:** Location of archaeological sites identified during the site visit and the location/orientation of photographs. Scale 1:2,000 at A4.

# Plates

**Plate01:** Bryn Goleu (feature 1), from the northeast. Scale 1.0m.

**Plate 02:** Bryn Goleu (feature 1), from the east. Scale 1.0m.

**Plate 03:** Bryn Goleu (feature 1) showing fireplace, from the east. Scale 1.0m.

**Plate 04:** Bryn Goleu (feature 1), from the north. Scale 1.0m.

**Plate 05:** Bryn Goleu (feature 1) showing sheepfolds, from the northeast. Scale 1.0m.

**Plate 06:** Trackway (feature 2), from the west. Scale 1.0m.

**Plate 07:** Footbridge (feature 3), from the west. Scale 1.0m.

**Plate 08:** Wall/ sheepfold (feature 4), from the northwest. Scale 1.0m.

**Plate 09:** Field wall (feature 5), from the northwest. Scale 1.0m.

**Plate 10:** Ruined field wall (feature 6), from the north. Scale 1.0m.

**Plate 11:** Sheepfold (feature 7), from the west. Scale 1.0m.

**Plate 12:** Ruined field wall (feature 8), from the northeast. Scale 1.0m.

**Plate 13:** Field wall (feature 9), from the northeast. Scale 1.0m.



1.0 NON-TECHNICAL SUMMARY .....	1
2.0 INTRODUCTION, AIMS AND PROJECT DESIGN .....	2
3.0 METHODS AND TECHNIQUES .....	4
3.1 Archival research .....	4
3.2 Site walkover .....	4
3.3 Assessment report .....	4
3.4 Project archive .....	4
4.0 ARCHAEOLOGICAL AND TOPOGRAPHICAL BACKGROUND .....	6
4.1 Topographic Description .....	6
4.2 Statutory and non-statutory designations.....	6
4.2.1 Non-designated monument points from the Gwynedd Historic Environment Record (figure 1).....	6
4.2.2 Scheduled Ancient Monuments .....	6
4.2.3 Listed Buildings (figure 2) .....	7
4.2.4 National Monuments Record (figure 2) .....	7
4.2.5 Historic Landscape Character Areas (HLCAs) (figure 3).....	7
4.2.6 Historic Parks and Gardens .....	8
4.2.7 Events .....	8
5.0 THE HISTORICAL CONTEXT .....	9
5.1 Prehistoric and Roman Period .....	9
5.2 Early Medieval, Medieval and Post-Medieval Periods.....	9
5.3 Aerial Photographs .....	10
6.0 ASSESSMENT OF HISTORICAL ASSETS .....	11
6.1 Definitions .....	11
7.0 SITE GAZETTEER – PHYSICAL IMPACTS .....	14
8.0 IMPACT AND RECOMMENDATIONS.....	26
8.1 Direct physical impact .....	26
8.2 Indirect physical and non-physical (visual) impact .....	26
8.3 Historic Landscapes.....	26
8.4 Site Specific Recommendations .....	26
8.5 General recommendations .....	27
9.0 SOURCES .....	28
APPENDIX 1: SCHEDULED AND NON-SCHEDULED SITES WITHIN 1.0KM.....	29
APPENDIX 2: DEFINITIONS OF FURTHER ASSESSMENT AND MITIGATORY MEASURES.....	32

## 1.0 NON-TECHNICAL SUMMARY

Aeon Archaeology was commissioned by Greenearth Hydro Ltd to undertake an archaeological assessment of a proposed new hydro-electric scheme with turbine house, buried penstock (pipeline), fallout pipe and electrical cable connection. The proposed scheme intake is to be located on the western bank of the Afon Gennog, a tributary of the Afon Nant Peris and approximately 2.3km southeast of the village of Nant Peris, Gwynedd and within the Snowdonia National Park Authority (SNPA)

The archaeological desk-based assessment identified nine archaeological sites within the 40.0m wide assessment corridor centred on the pipe route. The proposed development scheme is expected to have a *low adverse direct physical* impact upon four sites of archaeological importance (features 2, 5, 6 and 8) during the construction phase. All of these features, with the exception of the trackway (feature 2), are field boundary walls and are all considered to be of *unknown (local)* importance, thus resulting in an overall *neutral or slight adverse* significance of effect.

In addition, the ruins of Bryn-Goleu (feature 1) will be rebuilt to accommodate the new turbine. It is expected that there will be a *low adverse direct physical* impact on the building through the removal of the upstanding room partitions and it has been recommended that a photographic survey and measured plan is taken of the building prior to the commencement of works. The overall impact of the scheme of Bryn-Goleu is expected to be *medium beneficial direct physical* during the construction phase through the reinstatement of the building using fallen stone and sympathetic building materials and form. This will ultimately ensure the survival of the building. Bryn-Goleu is of *local* importance and the overall significance of effect is expected to be *slight beneficial*. The report has identified the potential for earlier remains of occupation beneath the upstanding remains of Bryn-Goleu and as such it has been recommended that a watching brief be maintained during the excavation of the pipe trench into the structure and during any ground disturbance within 10.0m.

It has also been recommended that a basic photographic and descriptive record be taken of all the features to be impacted upon prior to the commencement of works. However, the record presented for each site within this report is considered to be commensurate with a basic record level. In addition, it has been recommended that a watching brief be maintained during the breaching of the field walls (features 5, 6, and 8) and that a photographic record and section drawing be taken of the cross-section of each wall once breached.

The potential for buried archaeological remains to be encountered during the works is considered to be *low*, and as such no further general assessment or mitigatory measures are proposed.



## 2.0 INTRODUCTION, AIMS AND PROJECT DESIGN

Aeon Archaeology was asked by Greenerth Hydro Ltd to carry out an archaeological assessment and field visit of a proposed hydro-electric scheme with turbine house, buried penstock (pipeline), and electrical cable connection. The proposed scheme intake is to be located on the western bank of the Afon Gennog, a tributary of the Afon Nant Peris and approximately 2.3km southeast of the village of Nant Peris, Gwynedd and within the Snowdonia National Park Authority (SNPA) (figure 1).

The proposed scheme will consist of an intake weir located at **NGR SH 62109 56648** and a c.375.0m long buried penstock running northwards to a turbine house located at **NGR SH 62171 56942** and which will be installed within the ruined remains of Bryn Goleu. The hydro scheme will then empty back into the Afon Gennog via a c94.0m long buried outfall pipe running east from the turbine. In addition a buried new power cable will run northwest from the turbine house for approximately 27.0m to a new transformer that will be installed on the existing pole. The existing trackway and bridge from the A4086 will be used to transport materials to site and construction access between the intake site and turbine house will be along the penstock route, which will be temporarily cleared of boulders that will be reinstated upon the completion of works.

A mitigation brief was not prepared for this scheme by the SNPA Archaeologist, but full planning permission has been granted with the following archaeological condition:

*Prior to any work commencing (including any ground disturbance works or ground clearance) pursuant to this permission the applicant/developer shall submit to and receive written approval from the Local Planning Authority for an archaeological specification for a programme of works which must meet all relevant archaeological standards. The development shall subsequently be carried out in strict accordance with the approved programme of works unless otherwise agreed to in writing by the Local Planning Authority (condition 6, planning application NP3/15/216).*

The reason for this condition is:

*To ensure the implementation of an appropriate programme of archaeological mitigation in accordance with the requirements of Planning Policy Wales 2010 and Welsh Office Circular 60/96 Planning and the Historic Environment: Archaeology.*

This archaeological assessment is for the proposed development area, which includes the water intake point, the penstock route, the turbine house, the water outflow, the power cable route, and a 40.0m wide assessment corridor centred on the proposed pipeline route.

As part of the archaeological assessment a 1.0km search area centred on the proposed route was utilised for a search of the Gwynedd Historic Environment Record (HER). This provided a background historical narrative of the area and included source material from the Gwynedd Archives and Record Office, Dolgellau. Information on Scheduled Ancient Monuments and Listed Buildings was obtained from Cadw.

The following report conforms to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 2007).

The archaeological desk-based assessment considered the following:

- (i) The history of the site;
- (ii) The significance of any remains in their context both regionally and nationally;

- (iii) The potential impact of the proposed development on known sites of archaeological importance including their setting.

The archaeological desk-based assessment was undertaken in four stages:

- (i) Archival research
- (ii) Field visit/site walkover of all accessible areas
- (iii) Written report
- (iv) Project archive



## **3.0 METHODS AND TECHNIQUES**

### **3.1 Archival research**

The archaeological assessment involved the study of the following records:

- The regional Historic Environment Record (Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, LL57 2RT) was examined for information concerning the study area. This included an examination of the core HER, and secondary information held within the record which included unpublished reports, the 1:2500 County Series Ordnance Survey maps, and the National Archaeological Record index cards and aerial photography.
- The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth, SY23 1NJ) was checked for sites additional to the HER.
- Information about Listed Buildings and Scheduled Ancient Monuments from Cadw were examined in the regional HER. The Register of Outstanding and Special Historic Landscapes and the Register of Parks and Gardens was checked, and also the location of World Heritage Sites.
- Secondary sources were examined, including the Inventories of the Royal Commission on Ancient and Historical Monuments for Wales, and works held within the regional libraries.
- Evidence from aerial photographs was collated. Vertical and oblique collections held by the NMR, CCW and Welsh Government were examined.
- Results from previous archaeological work within the area was also reviewed.

### **3.2 Site walkover**

The site walkover was carried out on 26<sup>th</sup> May 2014 by Richard Cooke BA MA MIFA, archaeological contractor and consultant at Aeon Archaeology. The weather conditions were ideal for the field search being both bright and clear. All archaeological sites and view points were photographed using a digital SLR (Canon 550D) set to maximum resolution (72 dpi).

### **3.3 Assessment report**

All features identified from the archival research and site walkover were assessed and allocated to categories of international, national, regional/county, local and none/unknown importance as listed in section 6.0. These are intended to place the archaeological feature within a geographical context of importance and thus help inform the most suitable level of mitigatory response. The criteria used for allocating features to categories of importance are based on existing statutory designations and, for non-designated assets, the Secretary of State's non-statutory criteria for Scheduling Ancient Monuments; these are set out in National Planning Policy Framework (NPPF) and Welsh Office Circular 60/96.

### **3.4 Project archive**

A full archive including plans, photographs and written material was prepared. All plans, photographs and written descriptions were labelled and cross-referenced using Aeon

Archaeology pro-formas. A draft copy of the report was sent to the client and upon written approval from them paper and digital copies of the report will be sent to the regional HER (x1) (Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, LL57 2RT), the Snowdonia National Park Authority (SNPA) Archaeologist (x3), and the Royal Commission on the Ancient and Historic Monuments in Wales (RCAHMW) (x1). Copies of all notes, plans, and photographs from the assessment are stored at Aeon Archaeology under the project code **A0039.1** with the originals being lodged in a suitable repository to be agreed with the archaeological curator.

Any artefacts arising from future phases of fieldwork will be lodged with the Gwynedd Museum and Art Gallery, Bangor, Gwynedd.



## **4.0 ARCHAEOLOGICAL AND TOPOGRAPHICAL BACKGROUND**

### **4.1 Topographic Description**

The proposed hydro-electric scheme intake is located on the western bank of the Afon Gennog, approximately 2.3km southeast of the village of Nant Peris, Gwynedd and within the Snowdonia National Park Authority (SNPA). The proposed scheme will consist of an intake weir located at NGR SH 62109 56648 and a c.375.0m long buried penstock running northwards to a turbine house located at NGR SH 62171 56942 and which will be installed within the ruined remains of Bryn Goleu. The hydro scheme will then empty back into the Afon Gennog via a c94.0m long buried outfall pipe running east from the turbine. In addition a buried new power cable will run northwest from the turbine house for approximately 27.0m to a new transformer that will be installed on the existing pole.

The site lies within the parish of Llanberis Community, within the historic county of Caernarfonshire and unitary authority of Gwynedd. Mostly given over to rough pasture, the farmland is dominated by acid grassland within which there are cushions of gorse. The site is mostly enclosed by dry-stone walls although wooden post and wire fence has also been utilised in places. The land is primarily given over to hill sheep farming, although some cattle farming also takes place within the localised landscape, generally on the lower slopes.

The assessment area slopes from approximately 264m OD at the proposed hydro intake with the proposed turbine house lying at approximately 178m OD.

The bedrock geology is of the Lower Rhyolitic Tuff Formation, an igneous bedrock that formed approximately 451 to 461 million years ago in the Ordovician Period within an environment previously dominated by explosive eruptions of silica rich magma. The superficial deposits are of Alluvial Fan Deposits, a sand and gravel that formed up to 3 million years ago in the Quaternary Period when the local environment was dominated by rivers (British Geological Survey).

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

#### **4.2.1 Non-designated monument points from the Gwynedd Historic Environment Record (figure 1)**

The Gwynedd Historic Environment Record (HER) maintains a register of non-designated archaeological sites represented as single point data or as polygons. These are identified through their Primary Reference Number (PRN). These include sites which are of archaeological/historical interest, artefact find spots, documentary evidence, and locations of past events such as archaeological projects.

There are 5 non-designated monuments within 1.0km of the proposed pipeline route (see appendix I) but none lie within the 40.0m wide assessment corridor centred on the penstock route or within 100.0m. In addition there are 16 new monument sites within 1.0km of the proposed scheme, these are monument points that have been identified during past fieldwork but are not fully recorded within the Gwynedd HER. No new monument sites lie within the 40.0m wide assessment corridor centred on the penstock route or within 100.0m.

#### **4.2.2 Scheduled Ancient Monuments**

Scheduled monuments are those considered to be monuments of national importance. The Ancient Monuments and Archaeological Areas Act 1979 supports a formal system of Scheduled Monument Consent (SMC) for any work to a designated monument. Any works



within a Scheduled area will require SMC; this includes non-invasive techniques such as geophysics or field-walking.

There are no Scheduled Ancient Monuments within 1.0km of the proposed pipeline route (see appendix I).

#### **4.2.3 Listed Buildings (figure 2)**

The Secretary of State for Culture, Media and Sport holds a List of Buildings of Special Architectural or Historic Interest, considered to be of national importance. Compiled under the Planning (Listed Buildings and Conservation Areas) Act 1990, the List includes structures from boundary walls and telephone boxes to cathedrals. Listing gives statutory protection and restrictions apply. Consent may be required for works to, or that affect the setting of, a Listed Building and the Local Planning Authority conservation officer should be consulted if in doubt.

There are 3 Listed Buildings within 1.0km of the proposed pipeline route (see appendix I) but none lie within the 40.0m assessment zone centred on the pipe.

The pipe route lies within 500.0m of the following:

- (i) Approximately 63.0m south of the grade II *Milestone* Listed Building (LB: 21839).

#### **4.2.4 National Monuments Record (figure 2)**

The Royal Commission on the Ancient and Historic Monuments in Wales (RCAHMW) maintains the National Monuments Record (NMR) for Wales. This is a register of non-designated archaeological sites represented as single point data or as polygons. These are identified through their National Primary Reference Number (NPRN) and include sites which are of archaeological/historical interest, artefact find spots, documentary evidence, and locations of past events such as archaeological projects that are not statutorily protected.

There are 2 non-designated monument points within 1.0km of the pipeline route (see appendix I) but none lie within the 40.0m assessment zone centred on the pipe.

The pipe route lies within 100.0m of the following:

- (ii) Approximately 76.0m west of the post-medieval *Blaen-y-Nant, Pass of Llanberis* (NPRN: 409912).

#### **4.2.5 Historic Landscape Character Areas (HLCAs) (figure 3)**

Cadw, National Resource Wales (formerly the Countryside Council for Wales), and the International Council of Monuments and Sites (ICOMOS UK) compiled the two volume Register of Landscapes of Historic Interest in Wales. This includes 58 landscapes of outstanding or special historic interest, which are considered to be the best examples of different types of historic landscapes in Wales. The Register provides information to decision makers and landscape managers, to help ensure that the historic character of the landscape is sustained, and that where change is contemplated, it is well-informed.

The proposed development site lies within the following Historic Landscape Area (HLA):

- (i) The *Dinorwig Landscape of Outstanding Historic Interest* (HLW(Gw)6).

Historic Landscape Characterisation takes a closer look at the historic landscape by showing the processes that have shaped the landscape over centuries of human activity, contributing to its present character. Detailed characterisation studies have been compiled by the four Welsh Archaeological Trusts for all 58 areas on the Register. They are used by local government and developers to help assess the impact of development proposals on the historic landscape.

The proposed development area lies within the following Historic Landscape Character Areas (HLCAs):

- (i) The *Nant Peris* Historic Landscape Character area (HLCA: 43);
- (ii) The *Unenclosed Mountain (North Carneddau)* Historic Landscape Character area (HLCA: 36).

#### **4.2.6 Historic Parks and Gardens**

Cadw holds a Register of Historic Parks and Gardens of Special Historic Interest. These Registered landscapes are graded I, II\* or II, and include private gardens, public parks and other green spaces. They are valued for their design, diversity and historical importance. Inclusion on the Register brings no additional statutory controls, but there is a presumption in favour of conservation of the designated site. Local authorities are required to consult Cadw on applications affecting sites Registered as grade I or II\* and the Garden History Society on sites of all grades.

There are no historic parks and gardens within the 40.0m wide assessment corridor centred on the pipe route or within 1.0km of the proposed development area.

#### **4.2.7 Events**

The location of the proposed pipeline route is included within the Historic Landscape Characterisation of Ardal Arfon carried out in 2000 by the Gwynedd Archaeological Trust but no specific sites were identified as part of the work. No other projects have been undertaken within the vicinity of the hydro scheme.





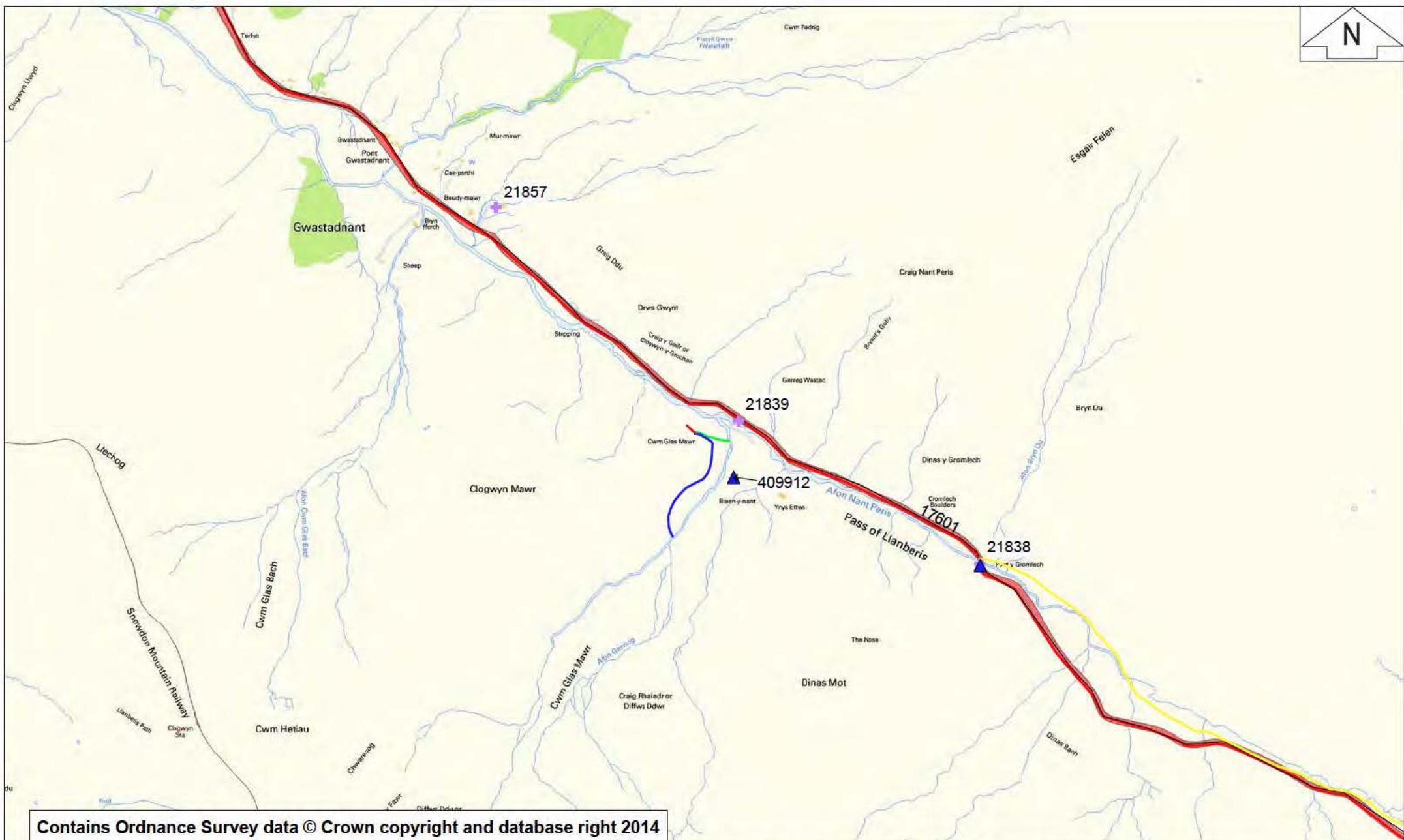
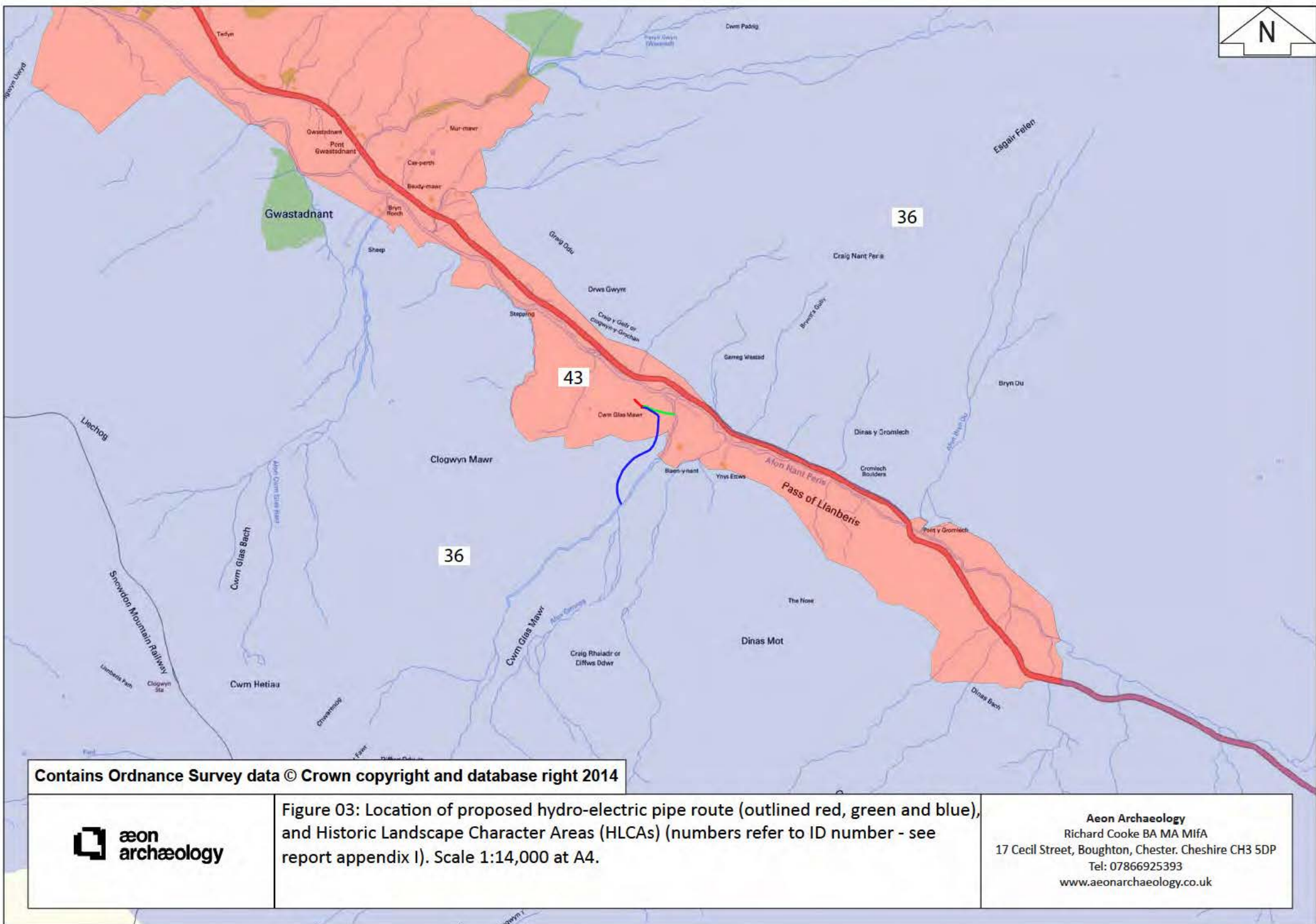


Figure 02: Location of proposed hydro-electric pipe route (outlined red, green and blue), monument points from the National Monuments Record (blue triangles), Listed Buildings (purple crosses), and Roman Road (outlined yellow) (numbers refer to ID number - see report appendix I). Scale 1:14,000 at A4.

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Figure 03: Location of proposed hydro-electric pipe route (outlined red, green and blue), and Historic Landscape Character Areas (HLCA) (numbers refer to ID number - see report appendix I). Scale 1:14,000 at A4.

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## 5.0 THE HISTORICAL CONTEXT

The following sections describe the known archaeological record within the general area of the proposed development. Sites are identified by their Primary Reference Number (PRN) which is the number by which they are identified in the Gwynedd Historic Environment Record (HER), or by their Scheduled Ancient Monument reference, Listed Building reference and/or their National Primary Reference Number (NPRN) if applicable. The intention of this section is to provide a historic and archaeological context to the site. This aids in establishing the relative importance of an archaeological feature within its landscape, as well as assessing the potential for unknown buried archaeological remains on the proposed development site.

The beginning and end of certain periods is a contentious issue. In the Gwynedd Historic Environment Record (HER) the following dates are used. This is a standard convention across all of the Welsh HERs.

**Table 1. Historic periods**

Palaeolithic (prehistoric)	500,000 BC – 10,001 BC
Mesolithic (prehistoric)	10,000 BC – 4,001 BC
Neolithic (prehistoric)	4,000 BC – 2,351 BC
Bronze Age (prehistoric)	2,350 BC – 801 BC
Iron Age (prehistoric)	800 BC – 47 AD
Romano-British	48 AD – 409 AD
Post-Roman (Early Medieval)	410 AD – 1065 AD
Medieval	1066 AD – 1539 AD
Post-Medieval	1540 AD – 1900 AD
Modern	1901 AD – 2050 AD

### 5.1 Prehistoric and Roman Period

The site is located within the Dinorwig Registered Landscape of Outstanding Historic Interest (HLW (Gw) 6), designated primarily for containing evidence of landuse and settlement from the prehistoric period onwards, superimposed by recent extensive and outstanding remains of the 19<sup>th</sup> and 20<sup>th</sup> Century slate industry.

However, the prehistoric period is poorly represented within the localised landscape and the only evidence of this era within 1.0km of the hydro scheme was the discovery of a Bronze Age flat bronze axe at Dinas Mot (PRN: 4504) which is currently held within a private collection.

The Roman period is also poorly represented and the only known Roman site within 1.0km of the pipeline route is the hypothesised route of the Segontium to Bryn-y-gefeiliau Roman road (PRN: 17601) running southeast to northwest through the pass of Llanberis, and located approximately 95.0m north of the proposed turbine house location. There is some structural evidence which could be regarded as evidence of a made Roman road measuring approximately 2.7m in width and the marching camp at Penygwryd would also suggest that the route was used but does not imply the presence of a made roadway (RCAHMS 1960).

### 5.2 Early Medieval, Medieval and Post-Medieval Periods

The Early Medieval period is also poorly represented within this part of northwest Wales and there are no known sites within 1.0km of the proposed pipeline. Sites from this era are



particularly rare in north Wales, although they must have existed, and it is likely that sites were reused and built upon thus accounting for the lack of surviving physical remains.

Approximately 370.0m to the southeast of the proposed pipeline route at Dinas Mot lies a well preserved medieval house platform (PRN: 4507). Further to the southeast and approximately 420.0m from the hydro scheme lies a stone built medieval long-hut (PRN: 5793) measuring 9.0m by 6.0m with a stony platform downslope and denuded drainage hood upslope. Two entrances were identified within the hut as well as the collapsed remains of a possibly later hut (HER).

Further evidence of the medieval period can be seen approximately 970.0m north of the proposed hydro route where ridge and furrow farming (PRN: 27644) has been identified. Aside from these three sites no other known medieval sites have been identified within 1.0km of the proposed development.

The proposed route of the hydro-electric scheme is depicted in detail on the first, second and third edition 25" county series Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6, and 7) although the southern part of the scheme including the hydro intake is not shown on these maps and the relevant map could not be sourced. However, the Ordnance Survey 6" map of 1891 (figure 5) does show the area to the south of the scheme, albeit in less detail.

All four maps depict the area much as it exists today, with the A4086 Pass of Llanberis road situated to the north and the property of Bryn-Goleu (feature 1), which is to be utilised as the turbine house, shown as a square structure surrounded by an enclosure. The maps all depict the footbridge (feature 3) over the Afon Gennog to the east of the scheme, as well as the trackway (feature 2) linking the A4086 with Bryn-Goleu and Cwm Glas Mawr in the west. The 25" edition maps depict the area of the pipeline route as two reasonably large fields, although the southern part of the scheme is not shown. The 6" map of 1891, which shows the entirety of the scheme, shows that the pipeline route actually passes through four enclosed grazing fields. The remains of the field walls can still be seen although some have become ruinous.

By the production of the second edition 25" Ordnance Survey map of 1900 (figure 6) the property of Bryn-Goleu appears to have been extended to include two circular sheepfolds to the immediate southeast, and is similarly shown on the third edition map of 1914 (figure 7). This map also depicts the sheep shelter (feature 4) and the sheepfold (feature 7) both of which were identified during the site visit.

### **5.3 Aerial Photographs**

Aerial photographs of the pipeline route were inspected in the RCAHMW for sites additional to the HER and site visit. Photographs taken by the Royal Air Force in 1946 and 1948 were examined, as were photographs taken by the Ordnance Survey in 1973, 1997, and 2009. No additional sites were observed aside from those identified from the site visit.



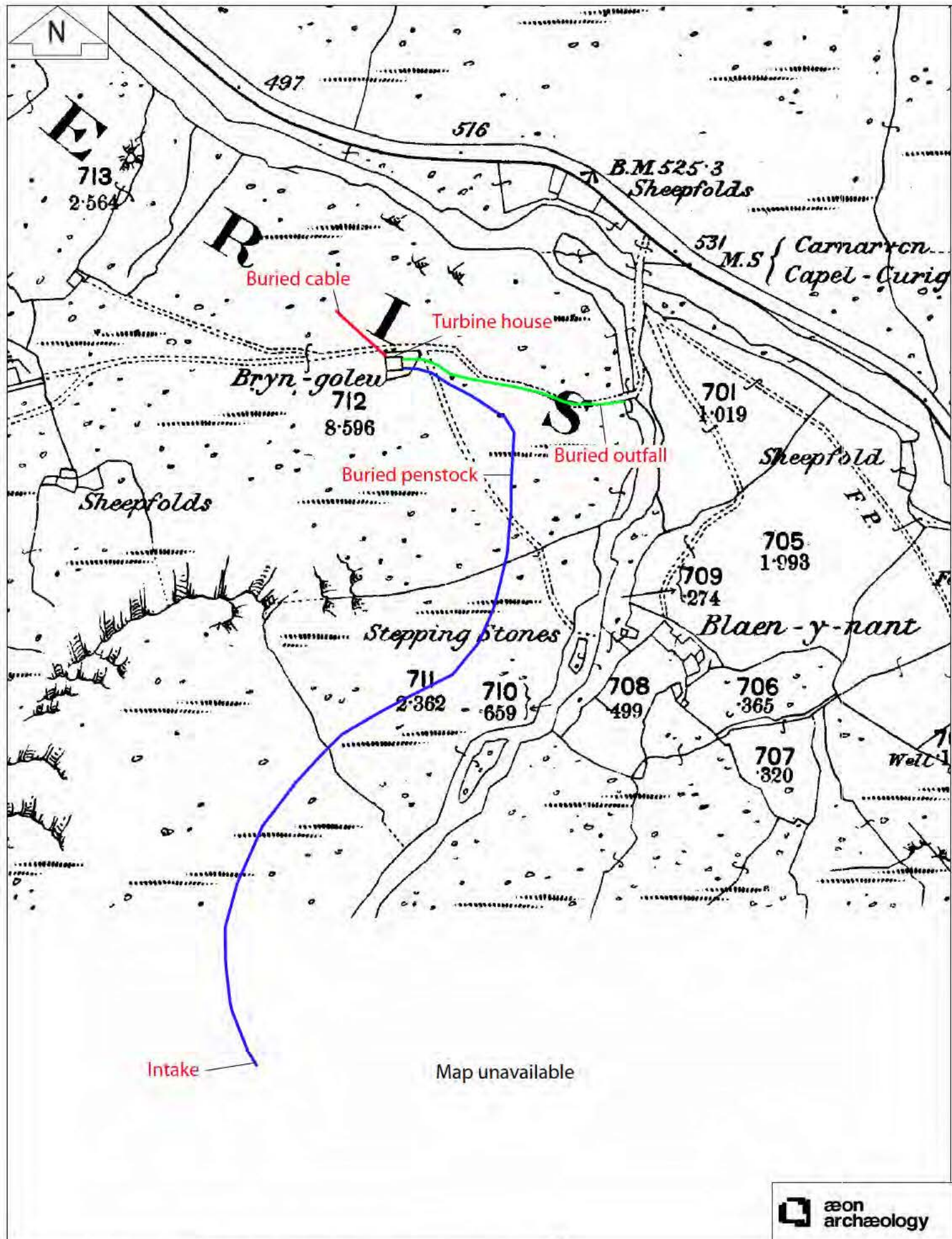


Figure 04: First Edition 25" County Series Ordnance Survey map of 1889.

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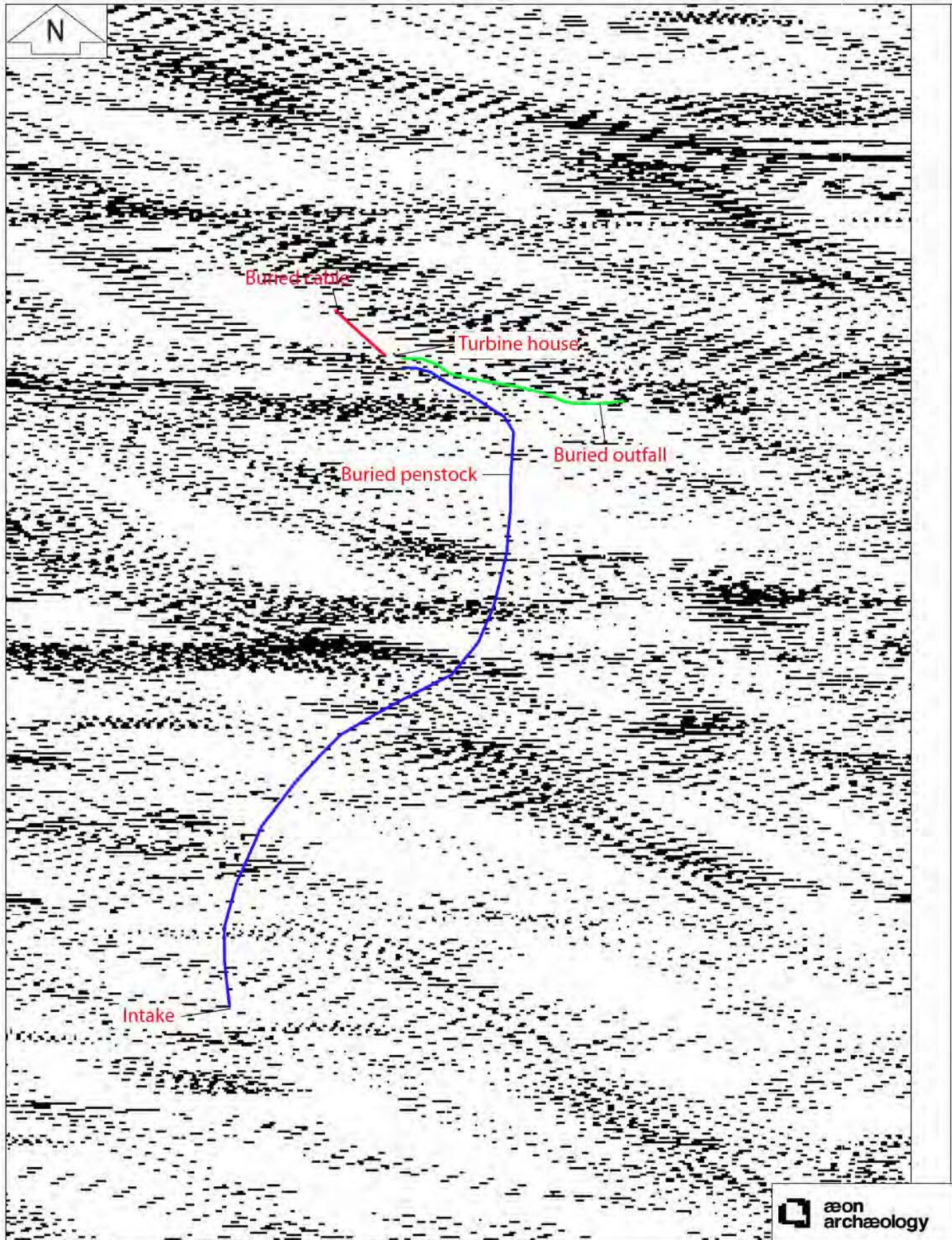


Figure 05: First Edition 6" County Series Ordnance Survey map of 1891.



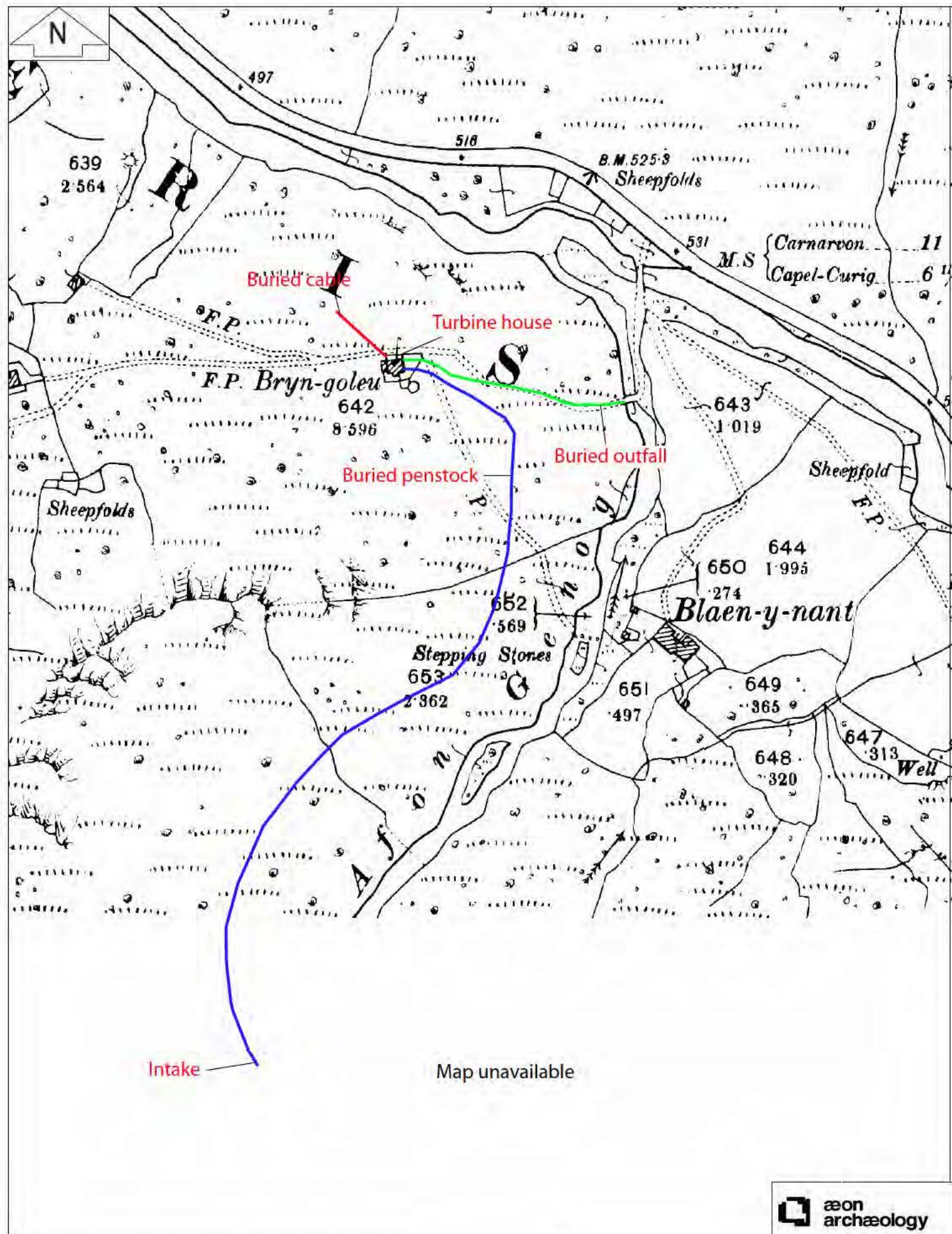


Figure 06: Second Edition 25" County Series Ordnance Survey map of 1900.



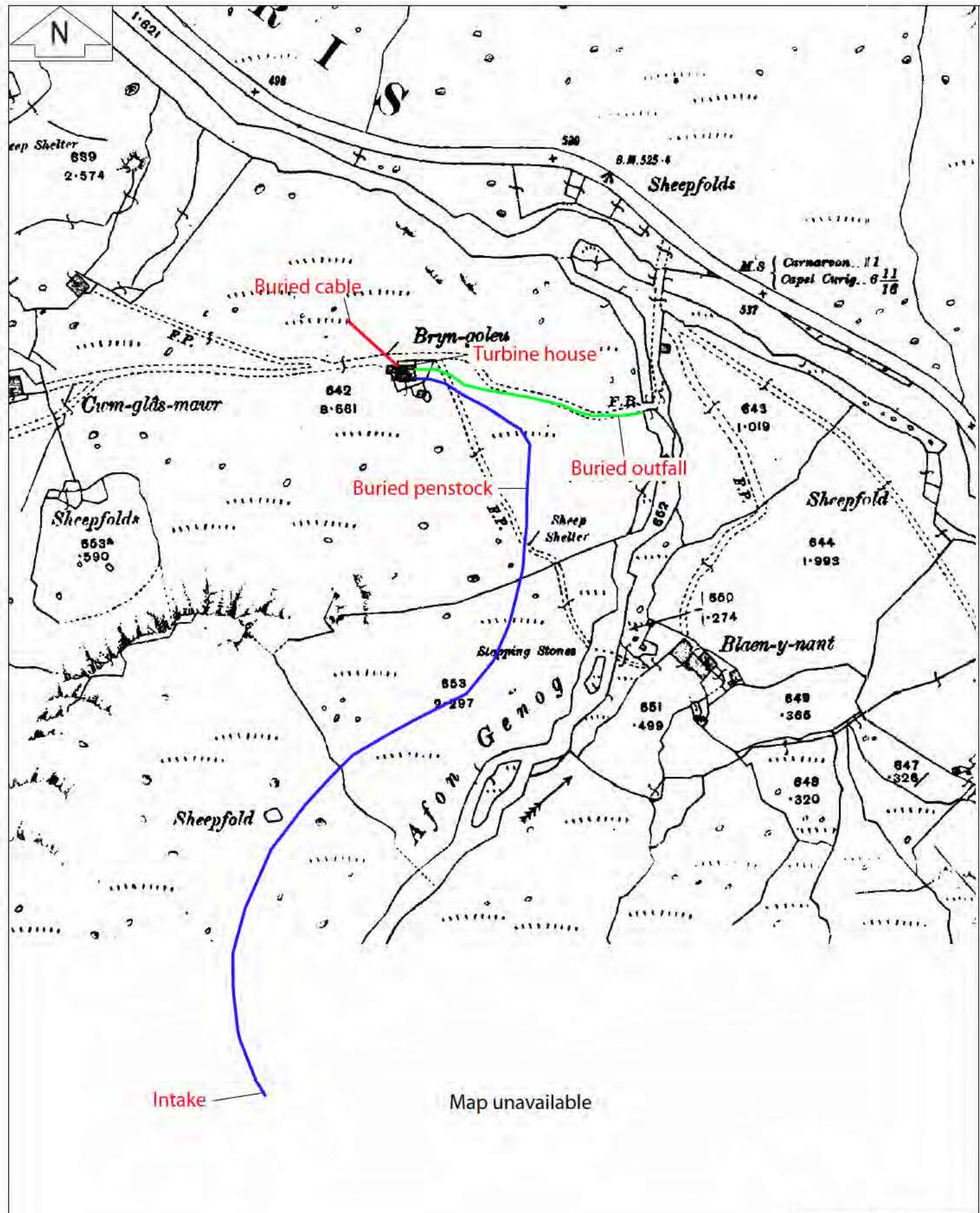


Figure 07: Third Edition 25" County Series Ordnance Survey map of 1914.



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## 6.0 ASSESSMENT OF HISTORICAL ASSETS

### 6.1 Definitions

Definitions of importance, impact, and significance of effect as used in the gazetteer (section 6.2) are listed below. Definitions of assessment and mitigation techniques as used in the gazetteer are listed in appendix II.

#### 1. Definition of Categories of importance

The following categories were used to define the importance of the archaeological resource.

Significance	Description
International (Very High)	Archaeological sites or monuments of international importance, including World Heritage Sites. Structures and buildings inscribed as of universal importance as World Heritage Sites. Other buildings or structures of recognised international importance.
National (High)	Ancient monuments scheduled under the Ancient Monuments and Archaeological Areas Act 1979, or archaeological sites and remains of comparable quality, assessed with reference to the Secretary of State's non-statutory criteria. Listed Buildings. Undesignated structures of national importance.
Regional/ County (Medium)	Conservation Areas Archaeological sites and remains which, while not of national importance, score well against most of the Secretary of State's criteria.
Local (Low)	Archaeological sites that score less well against the Secretary of State's criteria. Historic buildings on a 'local list'.
Negligible/None	Areas in which investigative techniques have produced no or only minimal evidence for archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.
Unknown	Archaeological sites whose importance cannot be determined with the information currently at hand. This can include sites where the extent of buried remains is unknown.



## 2. Definition of Impact

The direct impact of the proposed development on each site was estimated. The impact is defined as follows:

<b>Magnitude</b>	<b>Direct Impacts</b>	<b>Indirect Impacts</b>
High Adverse	Complete removal of an archaeological site. Complete destruction of a designated building or structure.	Radical transformation of the setting of an archaeological monument. A fundamental change in the setting of a building.
Medium Adverse	Removal of a major part of an archaeological site and loss of research potential.  Extensive alteration (but not demolition) of a historic building or feature, resulting in an appreciable adverse change.	Partial transformation of the setting of an archaeological site (e.g. the introduction of significant noise or vibration levels to an archaeological monument leading to changes to amenity use, accessibility or appreciation of an archaeological site). Partial adverse transformation of the setting of a designated building.
Low Adverse	Removal of an archaeological site where a minor part of its total area is removed but the site retains a significant future research potential. Change to a historic building or feature resulting in a small change in the resource and its historical context and setting.	Minor change to the setting of an archaeological monument or historic building.
Negligible/ Neutral	No impact from changes in use, amenity or access. No change in the ability to understand and appreciate the resource and its historical context and setting.	No perceptible change in the setting of a building or feature.
Low Beneficial	Land use change resulting in improved conditions for the protection of archaeological remains or understanding/ appreciation of a historic building or place	Decrease in visual or noise intrusion on the setting of a building, archaeological site or monument. Improvement of the wider landscape setting of a building, archaeological site or monument.
Medium Beneficial	Land use change resulting in improved conditions for the protection of archaeological remains, or understanding/ appreciation of a historic building or place, including through interpretation measures (heritage trails, etc). Removal of harmful alterations to better reveal the significance of a building or structure, with no loss of significant fabric.	Significant reduction or removal of visual or noise intrusion on the setting of a building, archaeological site or monument; and Improvement of the wider landscape setting of a building, archaeological site or monument Improvement of the cultural heritage amenity, access or use of a building, archaeological site or monument.
High Beneficial	Arrest of physical damage or decay to a building or structure;	Exceptional enhancement of a building or archaeological site, its cultural heritage amenity and access or use



### 3. The significance of effect

The significance of effect is derived from the importance of the resource and the magnitude of the impact upon it.

**Very large** - A serious impact on a site of international or national importance with little or no scope for mitigation. These effects represent key factors in the decision making process.

**Large** - Lesser impacts on sites of national importance and serious impacts on sites of regional importance, with some scope for mitigation. These factors should be seen as being very important considerations in the decision making process.

**Moderate** - Moderate or minor impacts on sites of regional importance and minor to major impacts on sites of local or minor importance. A range of mitigatory measures should be available.

**Slight** - Negligible impacts on sites of regional, local or minor importance and minor and moderate impacts on minor or damaged sites. A range of basic mitigatory measures should be available.

**Neutral** - No perceptible effect or change to sites of all categories.

The significance of effect will be determined using the table below, a basic matrix combining archaeological value and magnitude of impact.

**Determination of Significance of Effect**

<b>Archaeological Value</b>	<b>International</b>	Neutral	Moderate or Large	Large or Very Large	Very Large
	<b>National</b>	Neutral	Moderate or Slight	Moderate or Large	Large or Very Large
	<b>Regional</b>	Neutral	Slight	Moderate	Moderate or Large
	<b>Local</b>	Neutral	Neutral or Slight	Slight	Moderate or Slight
	<b>Negligible</b>	Neutral	Neutral or Slight	Neutral or Slight	Slight
		<b>None</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
		<b>Magnitude of impact</b>			

## 7.0 SITE GAZETTEER – PHYSICAL IMPACTS

The field walkover discovered 9 sites of archaeological and historic interest within the 40.0m wide assessment corridor, as listed below.

In accordance with Paragraph 128 of the National Planning Policy Framework and Welsh Office Circular 60/96 each heritage asset has been assigned a level of importance ranked from International through to National, Regional/County, Local, and None. If it is not possible to assess the importance of the site from the visible remains, then it is ranked Unknown with the suspected importance level placed in brackets if possible. Identified sites were also assigned a level of impact ranked from High through to Medium, and Low. Levels of impact can be considered as both adverse or beneficial, and can be direct (physically impacting upon a site) or indirect (indirectly physically impacting upon a site). The significance of effect is determined from the importance level of the resource and the magnitude of the impact upon it. Where it is expected that a site will be impacted upon by the proposed works then mitigation/assessment recommendations are provided. All archaeological/historical sites identified are depicted on figure 8 along with the location/orientation of photographs.



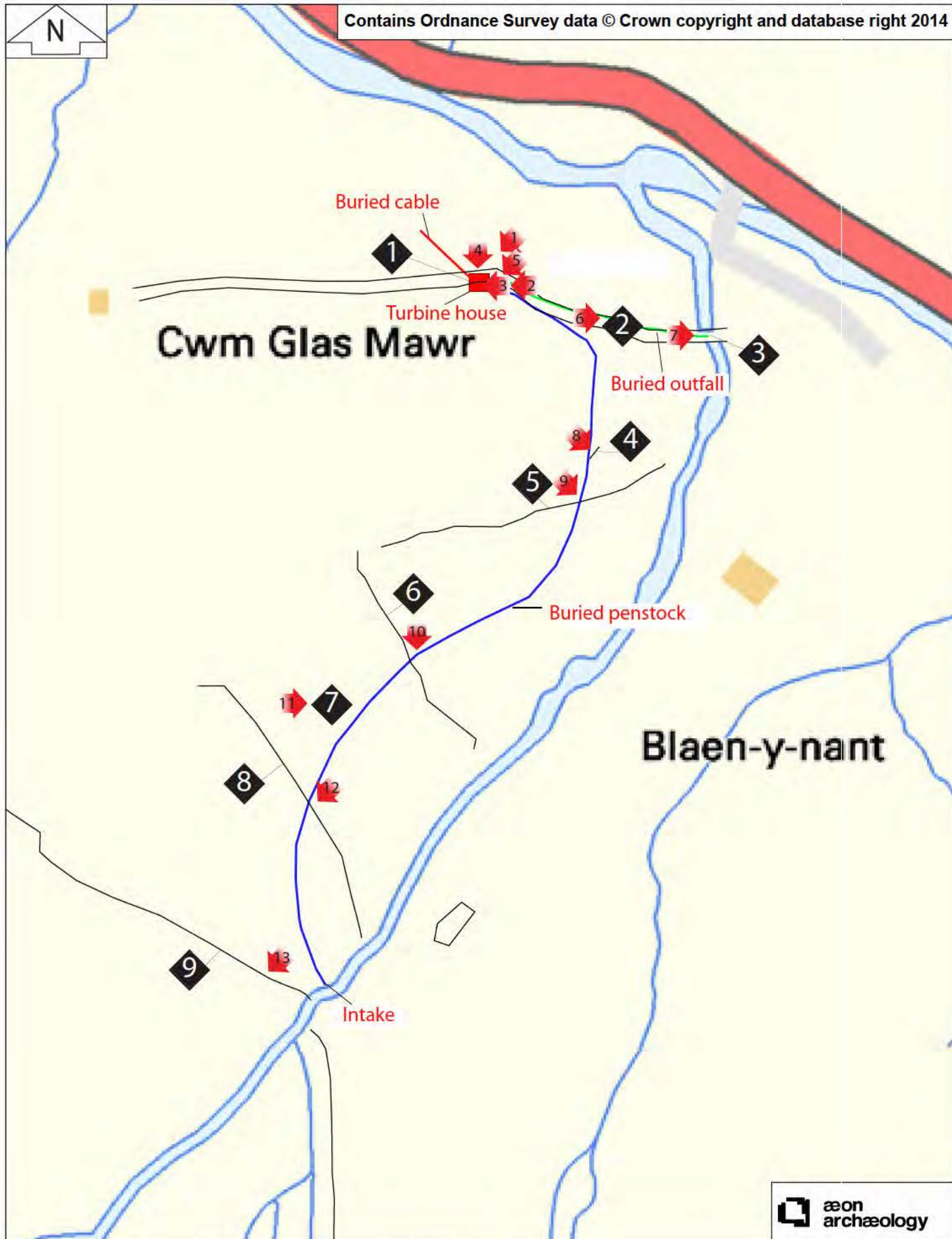


Figure 08: Location of archaeological sites identified during the site visit (black diamonds) and the location/orientation of photographs (numbered arrows). Scale 1:2,000 at A4.



<b>1. Bryn-Goleu</b>	<b>PRN: 59167</b>
<b>Figure: 8</b>	<b>Plate: 1-5</b>
<b>NGR: SH 62171 56942</b>	<b>Period: Post-medieval</b>
<p><b>Description</b></p> <p>The ruined property of Bryn-Goleu is located at the foot of the slope at this point. The structure measures approximately 6.0m by 4.0m in plan orientated east to west, with the walls standing to 1.5m in height, with the exception of the western gable which stands to approximately 2.5m in height. The building is roofless and the walls are constructed from very large sized dressed angular stone blocks of dry-stone bond, although later repairs using a gritty mortar are evident on the eastern elevation and traces of exterior render can be seen on the northern elevation. In plan the building is divided into four rooms, two larger rectangular rooms in the northwest and southwest quadrants and two smaller rooms in the northeast and southeast quadrants.</p> <p>A large open fireplace constructed from stone blocks is located on the west gable in the northeast room, which also has the remains of a window and entranceway in the northern elevation. The remains of a doorway leads into the smaller northeast room and it appears that these two rooms functioned as the living area and sleeping area respectively. The southwest room is accessed via an entranceway in the southern elevation and leads into the southeast room via the remains of a doorway, this room also having an entranceway through the southern elevation. A blocked aperture in the western wall appears to have been a sheep door. It appears that the northern half of the building was intended for domestic use with the southern half being utilised for animal shelters.</p> <p>An attached sheepfold is located to the immediate west of the building and the property is surrounded by an enclosure wall which has two circular sheepfolds at the southeast end. Bryn-Goleu is shown in detail on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 (figures 4, 6 and 7 respectively) and appears to have been enlarged to include the circular sheepfolds between 1889 and 1900. The building is post-medieval in date most likely 19<sup>th</sup> Century and is considered to be of local importance. However, although the upstanding remains are post-medieval in date, the site is suggestive of earlier use. A number of longhuts (relict medieval to post-medieval dwellings) are known in the valley at similar topographic locations, but none very close to this site; the gap in the distribution may suggest that this is a missing site. Furthermore, Bryn-Goleu is constructed upon a raised platform which may have been conducive to habitation in the medieval, and possibly even earlier periods.</p> <p>The proposed scheme will require the removal of fallen stone at the eastern side of the building and within the property. The ruins of Bryn-Goleu will house the new turbine, and although no information regarding building materials have been provided to Aeon Archaeology, the development is required to conform with planning condition 12 in relation to Policies 1 and A of the adopted Eryri Local Development Plan, which concerns the use of sympathetic building materials. It is therefore proposed that the fallen stone is recovered and reused in the reinstatement of the building and that its original dimensions are not altered. Moreover, the roof should be pitched and of local slate.</p> <p>If these building requirements are met then it is expected that the overall impact of the scheme will be medium beneficial direct physical. This is because the structure will be reinstated and retained thus ensuring its long-term survival. There will however be a low adverse direct physical impact upon the building through the removal of the internal wall divisions. It is</p>	

therefore recommended that a full photographic survey of the structure and adjoining features accompanied by a basic measured plan is undertaken, and that a watching brief is maintained on the excavation of the pipe trench into the building and any other intrusive/ground disturbing operations within 10.0m of the site due to the potential for earlier buried remains.

**Category of importance:** Local

**Level of impact:** Medium beneficial direct physical

**Significance of effect:** Slight beneficial

**Recommendations for further assessment:** None

**Recommendations for further mitigatory measures:** Reuse of fallen stone and sympathetic building materials and design; photographic survey and measured plan; watching brief of pipe trench and any ground disturbance within 10.0m.





**Plate 01:** Bryn Goleu (feature 1), from the northeast. Scale 1.0m.



**Plate 02:** Bryn Goleu (feature 1), from the east. Scale 1.0m.





**Plate 03:** Bryn Goleu (feature 1) showing fireplace, from the east. Scale 1.0m.



**Plate 04:** Bryn Goleu (feature 1), from the north. Scale 1.0m.





**Plate 05:** Bryn Goleu (feature 1) showing sheepfolds, from the northeast. Scale 1.0m.



<b>2. Trackway</b>	<b>PRN:</b> 59168
<b>Figure:</b> 8	<b>Plate:</b> 6
<b>NGR:</b> SH 62266 56293 – SH 62018 56943	<b>Period:</b> Post-medieval
<p><b>Description</b></p> <p>A trackway measuring approximately 2.0m in width runs from east to west connecting the A4086 with Bryn-Goleu and Cwm Glas Mawr in the west. The track does not appear to have any structural form although medium sized sub-rounded river cobbles have been added in places to negate the marshy flood plain of the Afon Nant Peris. The trackway is depicted in detail on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) and it is likely to be of post-medieval date, being contemporary with Bryn-Goleu and Cwm Glas Mawr.</p> <p>The track will require breaching by the proposed scheme as the current proposals are to bury the fallout pipe within the trackway for approximately 94.0m and as such it is recommended that a basic record of the feature be taken prior to the commencement of works. However, the description and photographs provided within this report should be seen as being commensurate with a basic record level, and as such no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> Low adverse direct physical	
<b>Significance of effect:</b> Neutral or slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Basic record – completed as part of desk-based assessment report	



**Plate 06:** Trackway (feature 2), from the west. Scale 1.0m.



<b>3. Footbridge</b>	<b>PRN:</b> 59169
<b>Figure:</b> 8	<b>Plate:</b> 7
<b>NGR:</b> SH 62268 56923	<b>Period:</b> Post-medieval
<p><b>Description</b>  A footbridge measuring approximately 2.0m in width runs from east to west and spans the Afon Gennog at this point. The bridge is constructed from wooden sleepers over iron girders and provides access between the A4086 with Bryn-Goleu and Cwm Glas Mawr in the west. The bridge is depicted on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) and it is likely to be of post-medieval date, being contemporary with Bryn-Goleu and Cwm Glas Mawr.</p> <p>The bridge will not be impacted upon by the proposed development and as such no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> None	
<b>Significance of effect:</b> Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None	



**Plate 07:** Footbridge (feature 3), from the west. Scale 1.0m.



<b>4. Wall/ sheep shelter</b>	<b>PRN:</b> 59170
<b>Figure:</b> 8	<b>Plate:</b> 8
<b>NGR:</b> SH 62218 56872 – SH 62222 56877	<b>Period:</b> Post-medieval
<p><b>Description</b>  A short section of dry-stone walling measuring 6.4m in length and orientated northeast to southwest is located at this point. The wall measures 1.0m in height and 1.0m in width and is constructed from large sized sub-rounded cobbles. The wall is depicted on the third edition 25" Ordnance Survey map of 1914 respectively (figure 7) where it is labelled 'sheep shelter' and it is likely to date to the first part of the 20<sup>th</sup> Century.</p> <p>The wall will not be impacted upon by the proposed development and as such no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> None	
<b>Significance of effect:</b> Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None	



**Plate 08:** Wall/ sheepfold (feature 4), from the northwest. Scale 1.0m.



<b>5. Field wall</b>	<b>PRN:</b> 59171
<b>Figure:</b> 8	<b>Plate:</b> 9
<b>NGR:</b> SH 62254 56869 – SH 62190 56848	<b>Period:</b> Unknown (Post-medieval)
<p><b>Description</b></p> <p>A dry-stone field wall measuring approximately 66.0m in length and orientated northeast to southwest divides the field in two at this point. The wall measures 0.6m in height and 0.5m in width and is constructed from large sized sub-rounded and sub-angular cobbles. The wall is depicted on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) and is probably post-medieval in date but could have earlier origins. The rough and uncoursed form of the walls as well as their meandering routes could suggest a medieval field pattern or potentially even a prehistoric field enclosure.</p> <p>The wall will require breaching by the penstock and as such it is recommended that a basic record of the feature be taken prior to the commencement of works. However, the description and photographs provided within this report should be seen as being commensurate with a basic record level. In addition it is proposed that a watching brief be maintained while the wall is breached and that a photographic and section drawing is taken of the revealed wall cross-section.</p>	
<b>Category of importance:</b> Unknown (Local)	
<b>Level of impact:</b> Low adverse direct physical	
<b>Significance of effect:</b> Neutral or slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Basic record – completed as part of desk-based assessment report; watching brief during wall breach; photographic record and section drawing.	



**Plate 09:** Field wall (feature 5), from the northwest. Scale 1.0m.



<b>6. Ruined field wall</b>	<b>PRN:</b> 59172
<b>Figure:</b> 8	<b>Plate:</b> 10
<b>NGR:</b> SH 62114 56828 – SH 62157 56756	<b>Period:</b> Unknown (Post-medieval)
<p><b>Description</b></p> <p>A dry-stone field wall measuring approximately 85.0m in length and orientated northwest to southeast divides the field in two at this point. The wall measures 0.8m in height and 0.6m in width and is constructed from large and medium sized sub-rounded cobbles. The wall is depicted on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) and is probably post-medieval in date but could have earlier origins. The rough and uncoursed form of the walls as well as their meandering routes could suggest a medieval field pattern or potentially even a prehistoric field enclosure.</p> <p>The wall will require breaching by the penstock and as such it is recommended that a basic record of the feature be taken prior to the commencement of works. However, the description and photographs provided within this report should be seen as being commensurate with a basic record level. In addition it is proposed that a watching brief be maintained while the wall is breached and that a photographic and section drawing is taken of the revealed wall cross-section.</p>	
<b>Category of importance:</b> Unknown (Local)	
<b>Level of impact:</b> Low adverse direct physical	
<b>Significance of effect:</b> Neutral or slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Basic record – completed as part of desk-based assessment report; watching brief during wall breach; photographic record and section drawing.	



**Plate 10:** Ruined field wall (feature 6), from the north. Scale 1.0m.



<b>7. Sheepfold</b>	<b>PRN:</b> 59173
<b>Figure:</b> 8	<b>Plate:</b> 11
<b>NGR:</b> SH 62110 56769	<b>Period:</b> Post-medieval
<p><b>Description</b>  A sheepfold measuring 4.5m in length by 2.5m in width and orientated east to west. The upstanding walls measure 0.6m in height by 0.5m in width and are constructed from dry-stone medium and large sized sub-rounded cobbles, with a large glacial erratic boulder having been utilised at the eastern end. The sheepfold is first depicted on the third edition 25" Ordnance Survey map of 1914 (figure 7) and is post-medieval in date.</p> <p>The sheepfold will not be impacted upon by the proposed development and as such no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> None	
<b>Significance of effect:</b> Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None	



**Plate 11:** Sheepfold (feature 7), from the west. Scale 1.0m.



<b>8. Ruined field wall</b>	<b>PRN:</b> 59174
<b>Figure:</b> 8	<b>Plate:</b> 12
<b>NGR:</b> SH 62052 56719 – SH 62099 56670	<b>Period:</b> Unknown (Post-medieval)
<p><b>Description</b></p> <p>A dry-stone field wall measuring approximately 68.0m in length and orientated northwest to southeast divides the field in two at this point. The wall measures 0.5m in height and 0.5m in width and is constructed from large and medium sized sub-rounded cobbles. The wall is not depicted on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) as there is no coverage for this area. However, the wall is shown on the 6" Ordnance Survey map of 1891 (figure 5) and is probably post-medieval in date but could have earlier origins. The rough and uncoursed form of the walls as well as their meandering routes could suggest a medieval field pattern or potentially even a prehistoric field enclosure.</p> <p>The wall will require breaching by the penstock and as such it is recommended that a basic record of the feature be taken prior to the commencement of works. However, the description and photographs provided within this report should be seen as being commensurate with a basic record level. In addition it is proposed that a watching brief be maintained while the wall is breached and that a photographic and section drawing is taken of the revealed wall cross-section.</p>	
<b>Category of importance:</b> Unknown (Local)	
<b>Level of impact:</b> Low adverse direct physical	
<b>Significance of effect:</b> Neutral or slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Basic record – completed as part of desk-based assessment report; watching brief during wall breach; photographic record and section drawing.	



**Plate 12:** Ruined field wall (feature 8), from the northeast. Scale 1.0m.



<b>9. Field wall</b>	<b>PRN:</b> 59175
<b>Figure:</b> 8	<b>Plate:</b> 13
<b>NGR:</b> SH 62098 56645 – SH 61953 56751	<b>Period:</b> Post-medieval
<p><b>Description</b></p> <p>A dry-stone field wall measuring approximately 178.0m in length and orientated northwest to southeast divides the field in two at this point. The wall measures 1.5m in height and 1.0m in width and is constructed from large sized angular cobbles. The wall is not depicted on the first, second and third edition 25" Ordnance Survey maps of 1889, 1900 and 1914 respectively (figures 4, 6 and 7) as there is no coverage for this area. However, the wall is shown on the 6" Ordnance Survey map of 1891 (figure 5) and is probably post-medieval in date.</p> <p>The wall will not be impacted upon by the proposed development and as such no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> None	
<b>Significance of effect:</b> Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None	



**Plate 13:** Field wall (feature 9), from the northeast. Scale 1.0m.



Table 2: Summary of archaeological features. <span style="float: right;">GREEN = no action required; RED= Action required</span>						
Number	Name	Importance	Impact	Significance of effect	Further Assessment	Mitigation Recommendations
<b>PHYSICAL DIRECT AND INDIRECT IMPACTS</b>						
1	Bryn-Goleu	Local	Medium beneficial direct physical	Slight beneficial	None	Reuse of fallen stone and sympathetic building materials and design; photographic survey and measured plan; watching brief of pipe trench and any ground disturbance within 10.0m.
2	Trackway	Local	Low adverse direct physical	Neutral or slight adverse	None	Basic record – complete
3	Footbridge	Local	None	Neutral	None	None
4	Wall/ sheep shelter	Local	None	Neutral	None	None
5	Field wall	Unknown (Local)	Low adverse direct physical	Neutral or slight adverse	None	Watching brief during wall breach; photographic record and section drawing.
6	Ruined field wall	Unknown (Local)	Low adverse direct physical	Neutral or slight adverse	None	Watching brief during wall breach; photographic record and section drawing.
7	Sheepfold	Local	None	Neutral	None	None
8	Ruined field wall	Unknown (Local)	Low adverse direct physical	Neutral or slight adverse	None	Watching brief during wall breach; photographic record and section drawing.
9	Field wall	Local	None	Neutral	None	None

## 8.0 IMPACT AND RECOMMENDATIONS

### 8.1 Direct physical impact

#### *Construction phase*

The proposed development scheme is expected to have a *low adverse direct physical* impact upon four sites of archaeological importance (features 2, 5, 6 and 8) during the construction phase. All of these features with the exception of the trackway (feature 2) are field boundary walls and are all considered to be of *unknown (local)* importance thus resulting in an overall *neutral or slight adverse* significance of effect.

In addition, the ruins of Bryn-Goleu (feature 1) will be rebuilt to accommodate the new turbine. It is expected that there will be a *low adverse direct physical* impact on the building through the removal of the upstanding room partitions; however the overall impact is expected to be *medium beneficial direct physical* during the construction phase through the reinstatement of the building using fallen stone and sympathetic building materials and form. This will ultimately ensure the survival of the building. Bryn-Goleu is of *local* importance and the overall significance of effect is expected to be *slight beneficial*.

#### *Completion phase*

The proposed development scheme is not expected to have any direct physical impact upon any known sites of archaeological and historical significance upon completion.

### 8.2 Indirect physical and non-physical (visual) impact

#### *Construction phase*

The proposed development scheme is not expected to have any indirect physical or non-physical impacts upon any known sites of archaeological and historical significance during the construction phase.

#### *Completion phase*

The proposed development scheme is not expected to have any indirect physical or non-physical impacts upon any known sites of archaeological and historical significance upon completion.

### 8.3 Historic Landscapes

The proposed development site currently lies within the *Nant Peris* (HLCA: 43), and the *Unenclosed Mountain (north Carneddau)* (HLCA: 36) Historic Landscape Character Areas. Due to the proposal to bury the hydro penstock it is not expected that there will be a loss or alteration to any of the historic landscape character areas.

### 8.4 Site Specific Recommendations

It has been recommended that a basic photographic and descriptive record be taken of all the features to be impacted upon prior to the commencement of works. However, the record presented for each site within this report is considered to be commensurate with a basic record level. In addition, it has been recommended that a watching brief be maintained during the breaching of the field walls (features 5, 6, and 8) and that a photographic record and section drawing be taken of the cross-section of each wall once breached.



In order to comply with planning condition 12 in relation to Policies 1 and A of the adopted Eryri Local Development Plan, which concerns the use of sympathetic building materials, it is proposed that the fallen stone is recovered and reused in the reinstatement of the Bryn-Goleu (feature 1) and that its original dimensions are not altered. Moreover, the roof should be pitched and of local slate. It has also been recommended that a photographic survey and measured plan is taken of the building prior to the commencement of works.

The report has identified the potential for earlier remains of occupation beneath the upstanding remains of Bryn-Goleu and as such it has been recommended that a watching brief be maintained during the excavation of the pipe trench into the structure and during any ground disturbance within 10.0m.

### **8.5 General recommendations**

The archaeological assessment did not identify any sites considered to be above local importance within the 40.0m wide assessment corridor or indeed within the localised landscape. The majority of the features identified were dry-stone field boundaries. It is possible that unknown remains are preserved at a buried level, although due to the lack of archaeological sites of all periods within 1.0km of the pipe route and due to the steepness of the upland slope, it is considered that this potential is low with the exception of Bryn-Goleu. As such, no further general assessment or mitigatory measures are proposed.

## 9.0 SOURCES

### *OS Maps*

1<sup>st</sup> edition 25 inch Ordnance Survey Map of 1889.

2<sup>nd</sup> edition 25 inch Ordnance Survey Map of 1900.

3<sup>rd</sup> edition 25 inch Ordnance Survey Map of 1914.

OS 1:10 000 Series sheet SH 65NE, SH 65SE, SH 65SW, and SH 65NW.

### *Aerial Photographs*

#### RAF Aerial Photographs

3G/TUD/UK/193 frames 6173, 6174, 6203 and 6204. Dated 10<sup>th</sup> May 1946.

541/38 frames 3098-3101. Dated 21<sup>st</sup> May 1948.

#### OS Aerial Photographs

73-113 frame 793. Dated 1973.

97-562 frame 061. Dated 1997.

97-538 frame 008. Dated 1997.

2009 frame 3181 and 3182. Dated 2009.

### *Sources*

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Chisholm, H. 1911. *Encyclopaedia Britannica*

Dodd, C. R. 1844. *The Peerage, Baronetage, and Knightage of Great Britain and Ireland*

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

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

English Heritage, 2011. *The Settings of Heritage Assets*

Gwynedd Historic Environment Record (HER)

NMR Site Record Cards

RCAHMW, 1960. *Inventory Caernarvonshire Vol.II*

The Institute for Archaeologists, 1994 (revised 2009) *Standard and Guidance for Archaeological Desk-Based Assessment*



## APPENDIX 1: SCHEDULED AND NON-SCHEDULED SITES WITHIN 1.0KM

Undesignated monuments within 1.0km of the proposed development area as listed on the Gwynedd HER (figure 1)

PRN	Name	Type	Broadclass	Period
3876	Trackway, Llanberis Pass (Pen y Pass)	Trackway	Transport	Post-Medieval
4504	Bronze Axe - Findspot, Dinas Mot	Findspot	Object	Bronze Age
4507	Platform House, Dinas Mot	House platform	Domestic	Medieval
5793	Long Hut, SE of Dinas Mot	Long hut	Domestic	Medieval
17601	Part of Roman Road, Segontium - Bryn-y-gefeiliau	Road	Transport	Roman

**Undesignated new monument points within 1.0km of the proposed development area as listed on the Gwynedd HER (figure 1)**

PRN	Name	Type	Period
27631	Building? E of Tan y Gadlas	Building?	Unknown
27632	Mur Mawr	Building	Unknown
27634	Building and Enclosures SE of Mur Mawr	Building and Enclosures	Unknown
27635	Sheepfold NE of Mur Mawr	Sheepfold	Unknown
27636	Building NE of Mur Mawr	Building	Unknown
27637	Sheepfold 2 NE of Mur Mawr	Sheepfold 2 NE of Mur Mawr	Unknown
27638	Building? NE of Mur Mawr	Building?	Unknown
27639	Sheepfold E of Ynys Hettws	Sheepfold	Unknown
27643	Sheepfold NE of Pont y Cromlech	Sheepfold	Unknown
27644	Ridge and Furrow? NE of Mur Mawr	Ridge and Furrow?	Medieval?
30517	SH61675767	Sheep shelter	Unknown
30518	Sheepfold NE of Hafod Gwynfor	Sheepfold	Unknown
30519	Hafod Gwynfor	Building	Unknown
30520	Building SE of Hafod Gwynfor	Building	Unknown
30521	Building/structure SE of Hafod Gwynfor	Building/structure	Unknown
30526	Hafod Cottage	Cottage	Post-medieval

**Listed Buildings within 1.0km of the proposed development area (figure 2).**

Number	Name	Locality	Grade
21838	Pont y Gromlech	Pass of Llanberis	II
21839	Milestone	Pass of Llanberis	II
21857	Hafod Cottage	Gwastadnant	II



**NMR Monument Points within 1.0km of the proposed development area (figure 2)**

<b>NPRN</b>	<b>Name</b>	<b>Broadclass</b>	<b>Type</b>	<b>Period</b>
700	Pont-y-cromlech	Transport	Bridge	Post medieval
409912	Blaen y-y-nant, pass of llanberis	Domestic	Cottage	Post medieval

**Historic Landscape Character areas (HLCAs) within 1.0km of the proposed pipeline route (figure 3)**

<b>HLCA</b>	<b>HLCA name</b>	<b>Landscape</b>
36	Unenclosed mountain (North Carneddau)	Gw6 & gw10
43	Nant peris	Gw6

## APPENDIX 2: DEFINITIONS OF FURTHER ASSESSMENT AND MITIGATORY MEASURES

### 1. Definition of field evaluation techniques

Field evaluation is sometimes necessary when the importance of an identified archaeological feature cannot be ascertained via an archaeological desk based assessment alone. There are several different techniques but the three most common are geophysical survey, trial trenching, and supervised metal detector survey:

#### *Geophysical survey*

This technique is a non-intrusive form of archaeological field evaluation. It utilises a magnetometer which detects differences within the earth's magnetic field caused by the presence of iron in the soil. This iron often takes the form of magnetised iron oxides in the topsoil which have been re-deposited into lower archaeological features through cutting and backfill. A magnetometer can also detect iron artefacts within the soil and the presence of burnt stone material such as on hearths, kilns, and burnt mounds.

#### *Trial trenching*

Where a site is suspected to contain more subtle archaeological features such as pits, a geophysical survey may not be appropriate due to its lack on sensitivity in detecting these features. Indeed, trial trenching can also be utilised when anomalies have been identified during the geophysical survey and clarification is required in order to identify them. Trial trenches usually measure 20m by 2m although can vary in size if targeting geophysical anomalies. Trenches are excavated using a mechanical tracked excavator and supervised by an archaeologist. The topsoil and subsoil are removed onto buried features or if absent, on to the natural glacial substrata. Any archaeological remains found are usually evaluated and recorded prior to backfilling of the trench, so that further site specific mitigatory recommendations can be made.

#### *Supervised Metal Detector Survey*

Some types of underlying substrata and bedrock can mask the results of investigation techniques such as geophysical survey. In such instances an archaeologically supervised metal detector survey can be undertaken. This involves the supervision of metal detectorists by a suitably qualified archaeologist and the spatial mapping of artefacts as they are discovered. This technique can give a geographical spread of metal finds and thus be indicative of 'hotspot' areas which may require further investigation by trial trenching for example.

### 2. Definition of Mitigatory Recommendations

None:

No further action is required.

Detailed recording:

A photographic and concise descriptive record is required, along with a digital survey.

Basic recording:

A photographic and basic descriptive record is required.

Watching brief:

Monitoring is required by a suitably qualified archaeologist during the proposed development. An archaeological watching brief is divided into four categories according to the IFA, 2001.



*Institute for Archaeologists 2001 Standard and Guidance for an archaeological watching brief:*

- comprehensive (present during all ground disturbance)
- intensive (present during sensitive ground disturbance)
- intermittent (viewing the trenches after machining)
- partial (as and when seems appropriate).

**Avoidance:**

These features should be avoided by the proposed development and any ancillary works including the establishment of compound and material lay-down areas. It may be necessary to surround the feature with a barrier and/or signage to avoid accidental damage.

**Reinstatement:**

These features should be reinstated to their original location and condition. Supervision by an archaeologist is required.

