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**Gelli Ffrydiau Hydro Scheme 2,  
Nantlle, Gwynedd.  
July 2014  
V 2.0**

aeon archaeology



Archaeological Assessment  
Project Code: A0006.1  
Report no. 0005

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# **Gelli Ffrydiau Hydro Scheme 2, Nantlle, Gwynedd. July 2014**

Report no. 0005 v2.0

Archaeological Assessment  
Aeon Archaeology  
17 Cecil Street  
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Project Code: A0006.1

Date: 10/07/2014

Client: Greenearth Hydro Ltd

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## 1.0 NON-TECHNICAL SUMMARY

Aeon Archaeology has undertaken an archaeological desk based assessment on behalf of Greenearth Hydro of a proposed hydro-electric scheme located at Gelli Ffrydiau, Nantlle, Gwynedd. The proposed scheme is to include a power house located in a field to the south of Gelli Ffrydiau farm and a 500.0m long penstock (buried pipe), running from the farm to an intake weir located on a tributary of the Afon Drws-y-Coed.

The archaeological assessment looked at three potential routes (schemes 1, 2 and 3) and the impacts of each upon the historic environment. Scheme 1 was found to have the highest impact and adverse significance of effect as by running the penstock along the base of the natural slope and covering with soil the setting between the Geulan Hut Group SAM, the flat plateau that it sits upon, a possible paddock wall, and the natural slope are all altered and frustrated. This impact did not occur with schemes 2 and 3 as these see the penstock route carry along inside the river gorge until outside of the SAM polygon. Moreover, if scheme 2 or 3 is utilised a retaining wall of river cobbles will be constructed to stop the erosion of the western limit of the Geulan Hut Group SAM resulting in a moderate beneficial significance of effect and safe-guarding the SAM for the medium term.

The report identified two possible roundhouses immediately adjacent to the weir intake point and it has been recommended for all schemes that the weir is relocated 10.0-15.0m further to the south in order to avoid any impact upon these monuments.

To the south of the SAM polygon a roundhouse was identified where the dense vegetation had died back and although not within the route of any of the proposed schemes there is a high potential for associated hut circles. As such it has been recommended that a watching brief be maintained within this area.

There is a medium to high potential for the survival of unknown buried archaeological remains outside of the Scheduled Ancient Monument polygon to the south, and a watching brief has been recommended for this area. The exception to this is in the last two fields located at the southern end of the scheme which have been heavily improved and ploughed. In this area the potential for the survival of buried archaeological remains is deemed to be low and as such no further mitigatory measures have been recommended.



## 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 is to include a power house located in a field to the southwest of Gelli Ffrydiau farm (NGR **SH 51942 53550**) and a 500.0m long penstock (buried pipe) from an intake weir located on a tributary of the Afon Drws-y-Coed (NGR **SH 52085 53987**) (Figure.1).

This archaeological assessment report looks at three potential penstock routes:

- Scheme 1 will involve the penstock route leaving the river gorge north of the *Hut Group, Geulan, northeast of Nantlle* Scheduled Ancient Monument (CN 179; PRN 2789) and running approximately 12.0m to the east of the monument. The pipe will be over-grounded while within the SAM polygon and will be covered with soil to blend the pipe into the base of the existing slope. Once out of the SAM polygon the penstock will be placed within a 500mm deep trench.
- Scheme 2 will involve over-grounding the penstock route within the river gorge until immediately out of the SAM polygon, where it will then be placed within a 500mm deep trench.
- Scheme 3 will involve over-grounding the penstock route within the river gorge until approximately 90.0m south of the SAM polygon, where it will then be placed within a 500mm deep trench.

This archaeological assessment is for the proposed development area, which includes the water intake point, the three penstock route options, 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, Caernarfon. 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 original site walkover was carried out on 11<sup>th</sup> January 2013 with a follow up visit made on 8<sup>th</sup> July 2014 by Richard Cooke BA MA MifA, archaeological contractor and consultant at Aeon Archaeology. The weather conditions were ideal for the field search on both occasions 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 **A0006.1** 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 location, including penstock routes, are located in close proximity to the eastern bank of a tributary of the Afon Drws-y-Coed, on the south-western slopes of Mynydd Mawr, within the Snowdonia National Park Authority (SNPA). The tributary runs from northeast to southwest before feeding into the Afon Drws-y-Coed, which is fed from Llyn Nantlle Uchaf within Dyffryn Nantlle. The turbine house is to be located within a field located to the southwest of Gelli Ffrydiau farm which lies at the foot of the slope, and approximately 1.2km east of the village of Nantlle, Gwynedd (NGR **SH 51942 53550** to NGR **SH 52085 53987**). The site lies within the civil parish of Llandwrog (upper).

The proposed penstock route is 500.0m in length and will be orientated from northeast to southwest before turning and heading southeast to cross the B4418 to a turbine house located within the field. The landscape is dominated by enclosed and semi-enclosed fields utilised for sheep and cattle grazing, and interspersed with occasional rocky outcrops. The vegetation is limited to short upland grasses with occasional wetland sedge towards wetter areas around streams.

The bedrock geology is of the Nant Ffrancon subgroup. A siltstone sedimentary bedrock which formed approximately 449 to 485 million years ago in the Ordovician Period within an environment previously dominated by shallow seas (British Geological Survey).

### 4.2 Statutory and non-statutory designations

The proposed development area was included within the Caernarfon-Nantlle Historic Landscape Characterisation report by the Gwynedd Archaeological Trust (report 402). Furthermore, the site lies within or in close proximity to the following areas/ sites:

- (i) Within the Snowdonia National Park Authority (SNPA).
- (ii) Listed within the Register of Landscapes of Outstanding Historic Interest in Wales (ICOMOS UK) *Dyffryn Nantlle* Historic Landscape Area (HLW(Gw)9), specifically within the *Mynydd Cilgwyn- Moel Tryfan- Moel Smytho* Historic Landscape Character Area (HLCA 14) (figure 10).
- (iii) Partially within and in close proximity to the Roman *Hut Circles and field systems north east of Gelli Ffrydiau* Scheduled Ancient Monument (CN179).
- (iv) Approximately 4.0m west of the *Hut Group, Geulan, northeast of Nantlle* Scheduled Ancient Monument (CN 179; PRN 2789).
- (v) Approximately 105.0m east of the Roman *Hut Circles, northeast of Geulan, Nantlle* Scheduled Ancient Monument (CN179; PRN 2796).
- (vi) Approximately 143.0m south of the *Hut Circles and Enclosure, northeast of Geulan, Nantlle* Scheduled Ancient Monument (CN179; PRN 2794).
- (vii) Approximately 231.0m west of the *Hut Circles, Field System, north of Gelli Ffrydiau* Scheduled Ancient Monument (CN179; PRN 2788).
- (viii) Approximately 252.0m west of the *Hut Group and Mining Adit, north of Gelli Ffrydiau* Scheduled Ancient Monument (CN179; PRN 2790).

- (ix) Approximately 262.0m south of the *enclosure southeast of Caeronwy-Uchaf* Scheduled Ancient Monument (CN179; PRN 2798).
- (x) Approximately 326.0m east of the *Hut Circle and Enclosure, Blaen y Garth, Nantlle* (PRN 5567).
- (xi) Approximately 399.0m south of the *enclosure northeast of Caeronwy-Uchaf* Scheduled Ancient Monument (CN179; PRN 2797).
- (xii) Approximately 456.0m south of the *enclosure east of Caeronwy-Isaf* Scheduled Ancient Monument (CN179; PRN 2799).
- (xiii) Approximately 514.0m southeast of the grade II Listed Building of *Caeronwy-isaf* (ref: 22405).
- (xiv) Approximately 520.0m southeast of the grade II Listed Building of the *Cowhouse at Caeronwy-isaf* (ref: 22407).
- (xv) Approximately 536.0m southwest of the *Hut Circles, northeast of Gelli Ffrydiau, Nantlle* Scheduled Ancient Monument (CN179; PRN 2791).
- (xvi) Approximately 599.0m south of the *enclosure northeast of Caeronwy-Isaf* Scheduled Ancient Monument (CN179; PRN 2795).
- (xvii) Approximately 630.0m west of the *Small Fort near Nantlle* prehistoric hillfort Scheduled Ancient Monument (CN178; PRN 2781).
- (xviii) Approximately 766.0m southwest of the Roman platform hut southeast of *Castell-Caeronwy* Scheduled Ancient Monument (CN179; PRN 2792).

The lists of non-designated sites recorded within the Gwynedd Historic Environment Record (HER) are shown on figure 3. Listed Buildings and Scheduled Ancient Monuments (SAMs) are shown on figure 4. Sites from the National Monuments Record (NMR) housed at the Royal Commission on the Ancient and Historic Monuments in Wales (RCAHMW) are shown on figure. 5. The sites are shown with their reference numbers and are listed in Appendix 1.

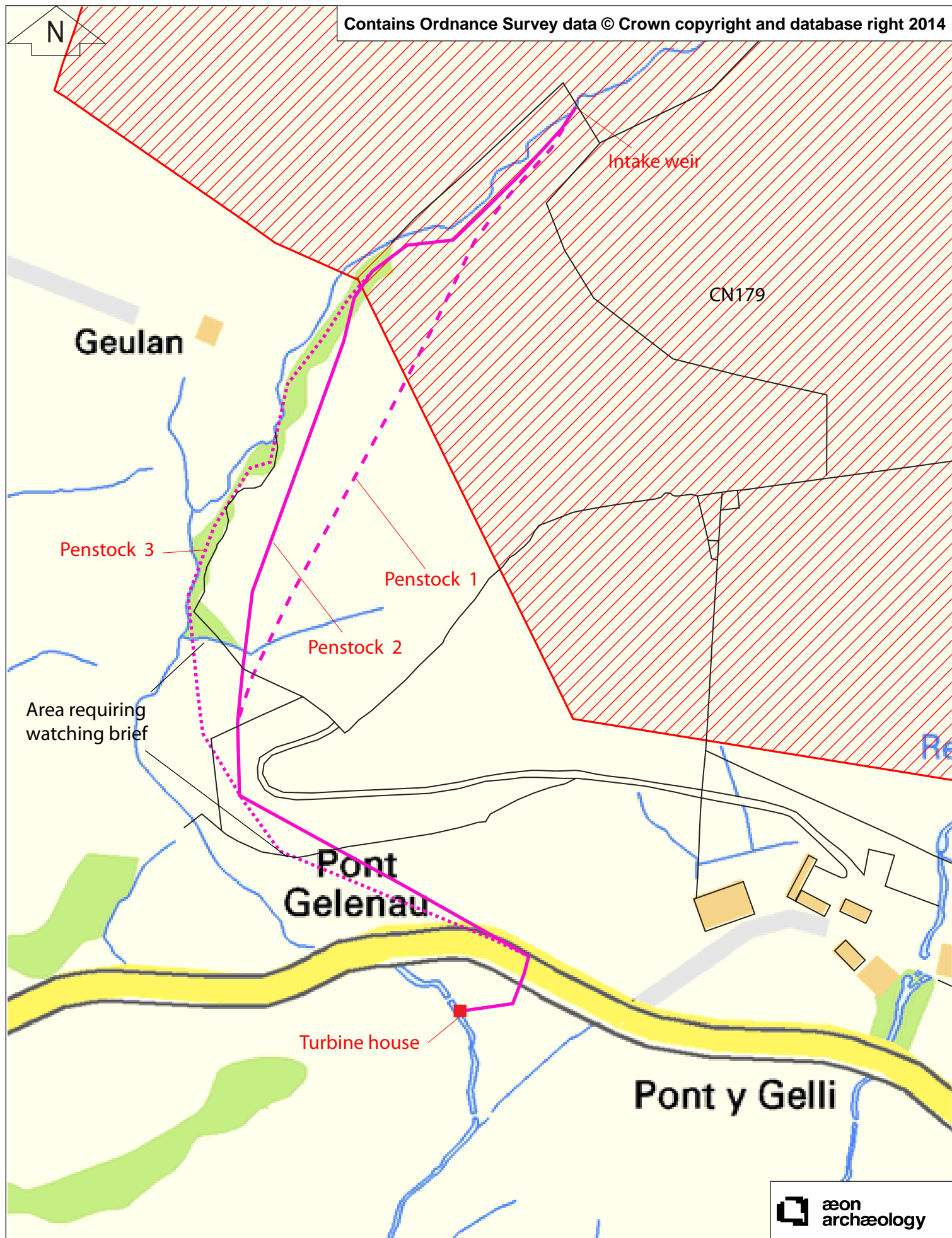


Figure 1: Location of proposed hydro scheme. Scale 1:2,500 at A4.  
(SAM polygon shaded in red).

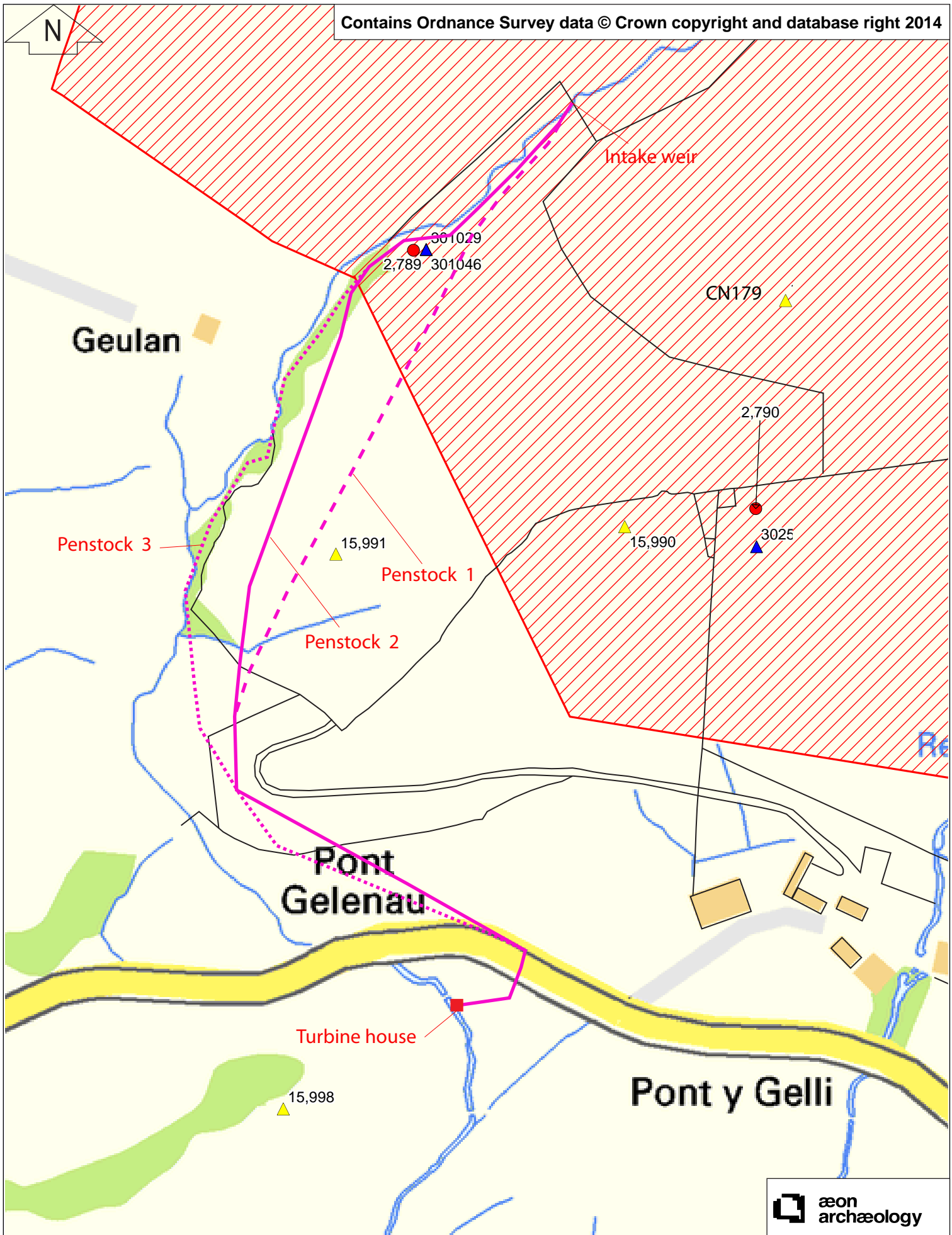
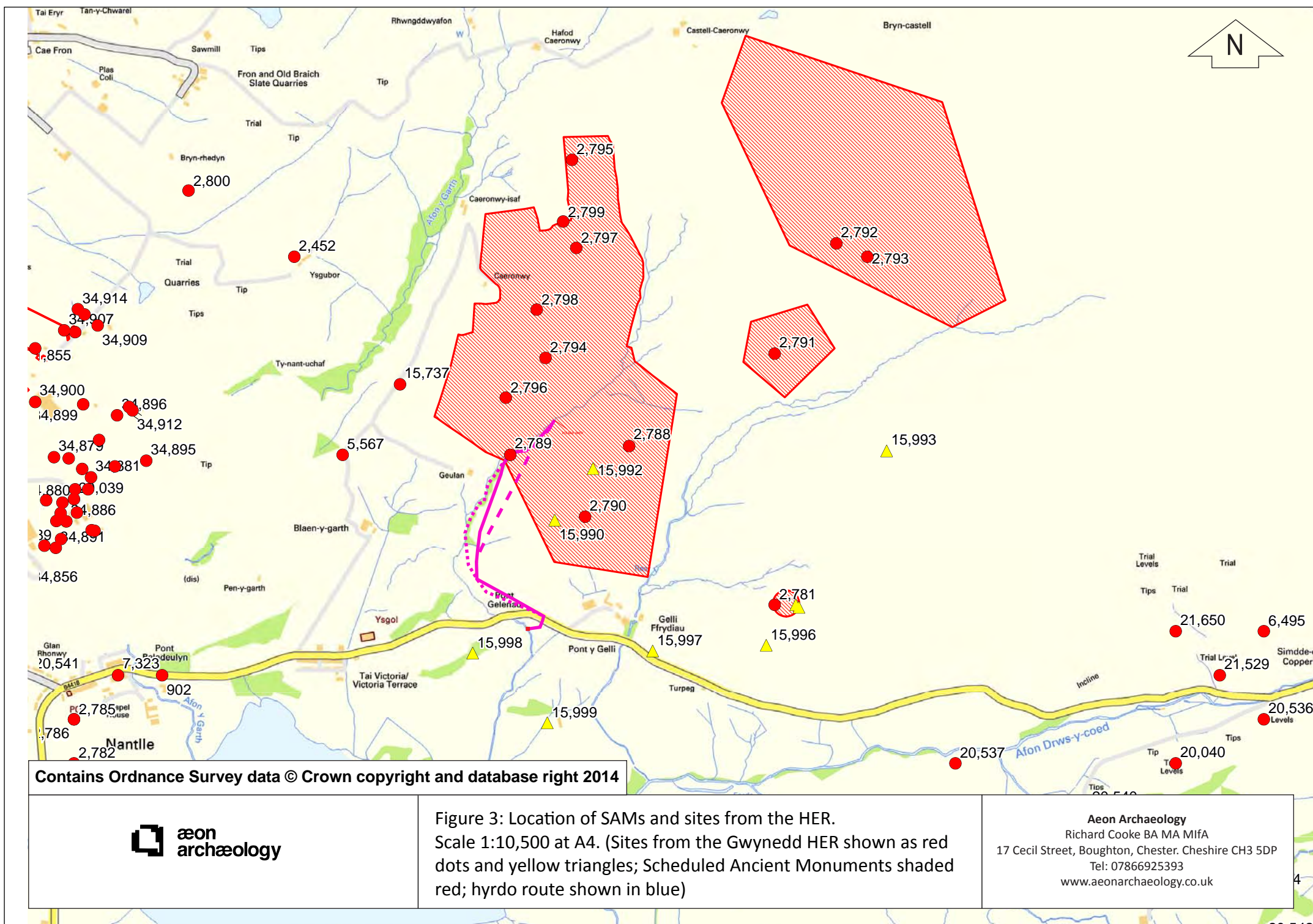


Figure 2: Location of known historic sites  
(Sites from the HER shown as red dots and yellow triangles;  
sites from the NMR shown as blue triangles;  
SAMs shown as red shaded area). Scale 1:2,500 at A4.







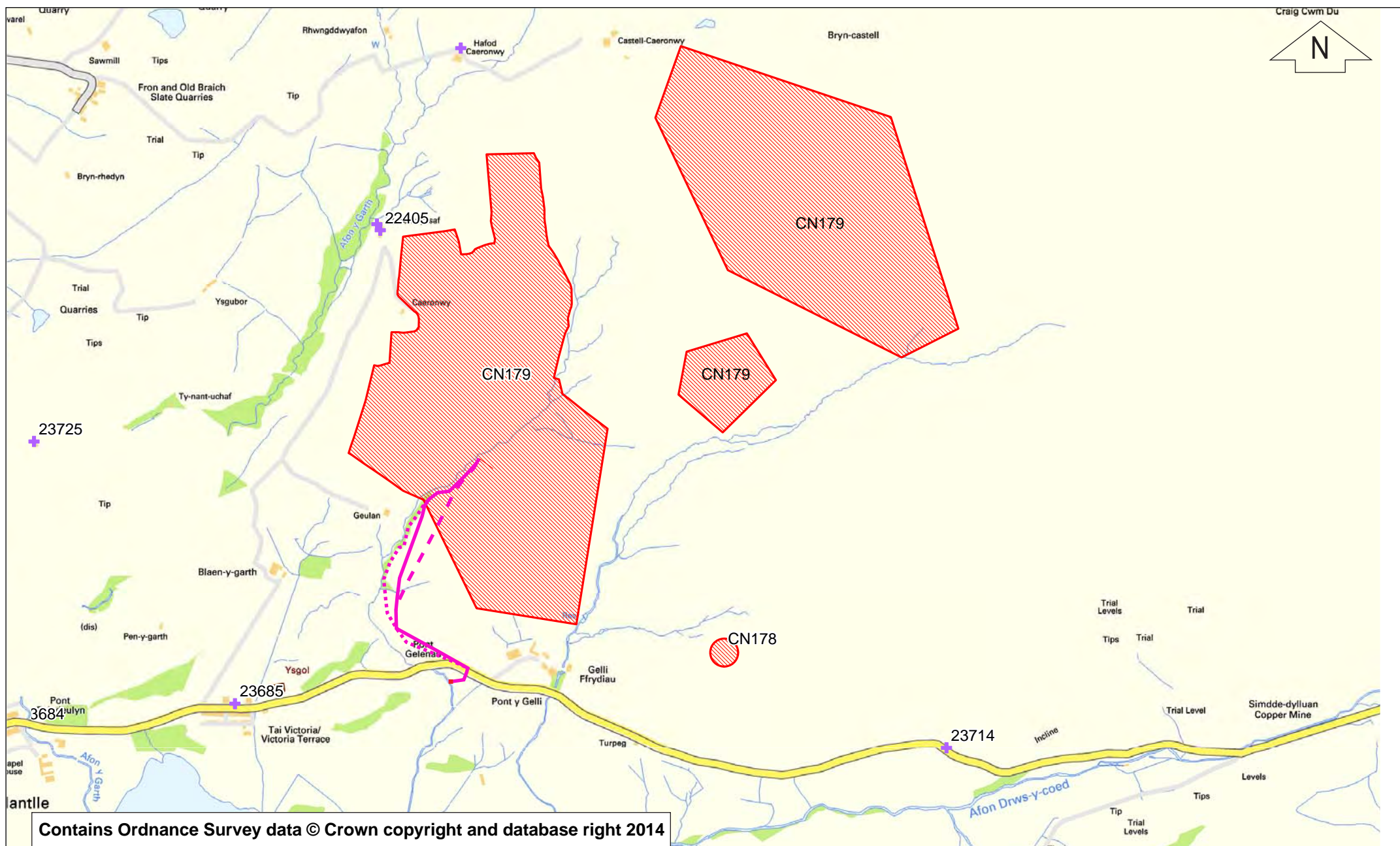
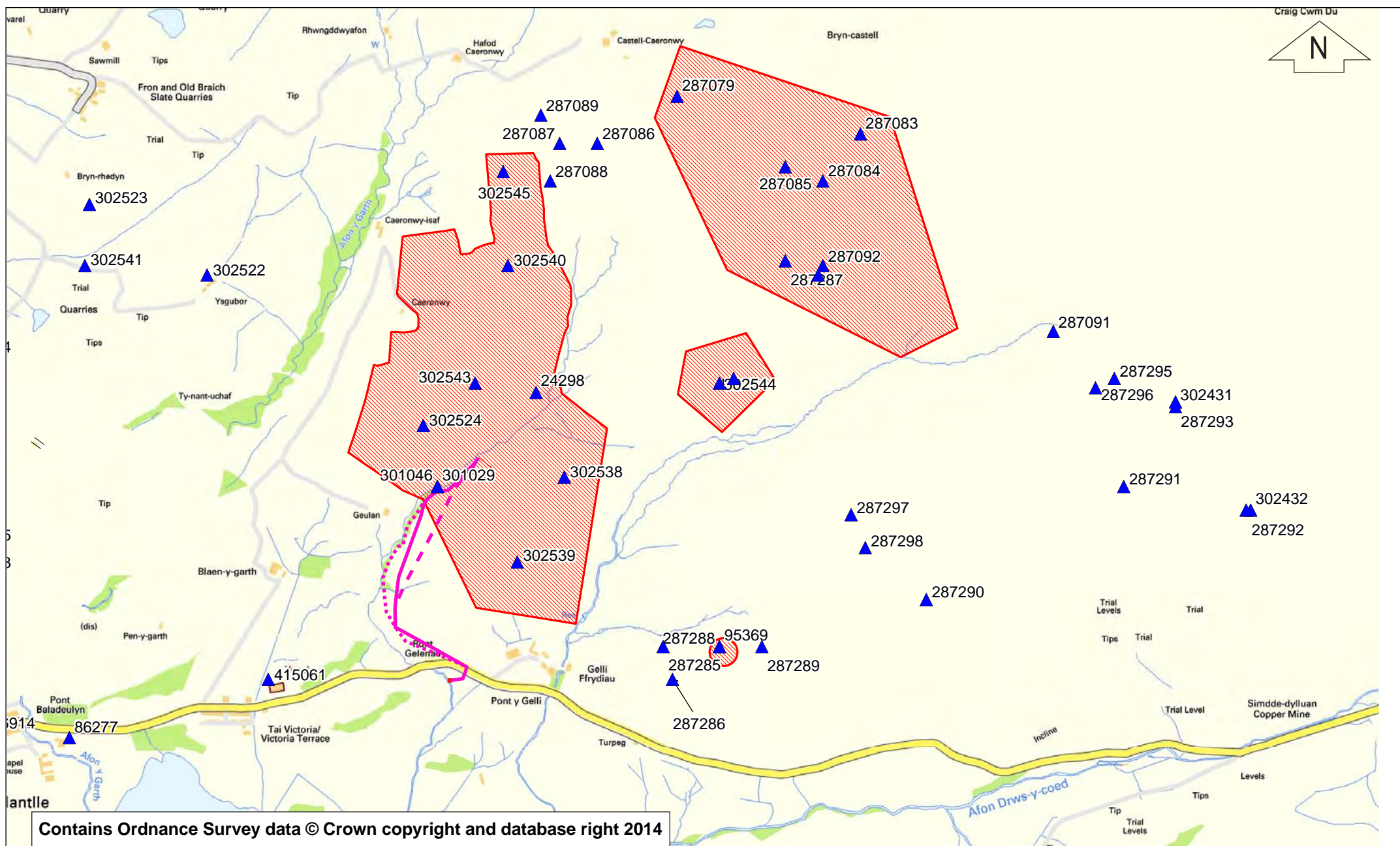


Figure 4: Location of Listed Buildings and SAMs, scale 1:10,500 at A4.  
(Listed Buildings shown as purple crosses; Scheduled Ancient Monuments shaded red; hydro route shown in blue)

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Figure 5: Location of sites from the NMR, scale 1:10,500 at A4.  
(NMR sites shown as blue crosses; Scheduled Ancient Monuments shaded red; hydro route shown in blue)

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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

There is evidence of human occupation within the Nantlle valley since the Bronze Age, and it is likely that the copper deposits at Drws y Coed, approximately 2.2km to the east of the proposed development area, acted as a catalyst for that occupation. Evidence from the Bronze Age is however mostly limited to a scatter of burial cairns (PRN 599, 138, 2780, 1429, 3345, 1829, and 600) and burnt mounds (PRN 1388, 126, and 1389) across the northern slopes of the valley.

Physical evidence becomes more frequent in the Iron Age and Romano-British periods. Approximately 630.0m to the east of the penstock route lies the *Small Fort near Nantlle* prehistoric hillfort Scheduled Ancient Monument (CN178). The monument is situated on a rocky knoll on the western end of a small ridge and is constructed from large stone slabs laid flat and forming an irregular heptagon measuring approximately 22.0m in diameter. An entrance into the fort is located towards the centre of the western side and is now in a ruinous state.

Numerous hut circle sites are found clinging to the upland slopes between the slate quarry of Pen yr Orsedd in the west and Fron quarry in the east. A large area of the south-western slopes of Mynydd Mawr and in close proximity to the study area is included within the Scheduled Ancient Monument of *Hut Circles and field systems north east of Gelli Ffrydiau* (CN 179), and incorporates several clusters of hut circles with associated relict field walls enclosing paddocks. These sites constitute part of a wider relict historic landscape, in which evidence of various periods of settlement and land-use can be recognised. The group value of



these early settlements is of particular importance and can be seen as being of national, if not international importance.

The proposed penstock route runs through approximately 151.0m of the Scheduled Ancient Monument area belonging to the *Hut Circles and field systems north east of Gelli Ffrydiau* (CN 179). This scheduled area comprises a land take of approximately 0.53km<sup>2</sup> and includes the remains of at least twelve separate hut circle settlements belonging primarily to the Romano-British period. However, it is proposed that the penstock route run over ground through the existing river valley while within the Scheduled Ancient Monument polygon.

The extensive remains of Romano-British settlement within the Nantlle valley strongly suggest that the area was being exploited at this time for its resources. This would almost certainly have included the quarrying of slate and most likely the mining of copper ore. Undoubtedly food production both on the valley bottom and slopes would also have taken place, and would likely have played an important role in supplying the Roman fort of Segontium at Caernarfon.

## 5.2 Early Medieval and Medieval Periods

The Early Medieval period is poorly represented within the Nantlle valley. However, by the 12<sup>th</sup> and 13<sup>th</sup> centuries the kingdom of Gwynedd was divided into administrative *commotes*, administered through a network of local centres governed by a royal court or *Llys*. The township of a commote associated with a *llys* was known as the *maerdref*, in which the Prince's agent would reside. The component parts of a *llys* included the royal hall and other buildings associated with the residence, as well as the royal demesne worked by bond tenants, and the settlements of these tenants which constituted small hamlets. One such *llys* was located at Baladeulyn in Nantlle, although the precise location of the *llys* is not known (Govannon report 277). The *llys* and royal lands became the property of the English King upon the conclusion of the conquest of Wales.

The nearest surviving remains of the Medieval period to the proposed development site includes a possible long hut (PRN 6495) at SH53705350; a platform house (PRN 1412) at SH53975461; and a Medieval field system (PRN 7986) at SH52255479.

## 5.3 Post-Medieval Period

The property of Gelli Ffrydiau is first mentioned in the will of James David, yeoman of Gelli Ffrydiau, dated 1712 (Bangor probate records 1576-1858), in which he bequeathed the property to his wife Angharad Humphries. In addition to this he bequeathed sums of money to his five children and two grandchildren, the former of which included Angharad James. She was noted as being highly educated and was a celebrated early female Welsh poet. Several of her original manuscripts survive in the National Library of Wales and they include an elegy to her son who had died when sixteen years old and another to her husband in the form of an imaginary dialogue. She was also fluent in Latin and learned in the law of the land. She played the harp and according to local tradition would gather her family and servants together to dance before retiring each night. Angharad James moved to Dolwyddelan when she was twenty years old after marrying William Prichard, a man far older than herself, who farmed Cwm Penamnen. She continued to farm after she was widowed until her death in 1749.

Part of the land belonging to Gelli Ffrydiau is Rhos Pawl, which is located on the southern side of the valley. Local tradition has it that a lad from Gelli Farm fell in love with a girl from Talymignedd Uchaf, but the girl's father did not approve of the match. The lad pleaded with the father for his daughter's hand in marriage and in the end he agreed on one condition, that the lad would spend a freezing night naked on top of Rhos Pawl, remaining there until

morning. The father expected that the lad would give up on the pursuit of his daughter, but instead he accepted the challenge. The lad took a post with him, as well as an axe and mallet and repeatedly hammered the post into the ground through the night to keep his body warm, while the girl kept a lantern burning in her window throughout the night. He succeeded in keeping his body temperature high and thus presented himself to the father and his daughter in the morning, thus winning her hand in marriage (www.nantlle.com).

The property of Gelli Ffrydiau is next mentioned in a sale catalogue dated the 28<sup>th</sup> June 1808, when it was put up for sale by auction along with the tenant Robert Davies, a sixty-five year old farmer. The landowner at the time is not mentioned and it is not clear who bought the property.

The Llandwrog (upper) parish tithe map of 1849 (figure 6.) depicts the proposed development area rather similarly to how it exists today. The site is depicted as a long strip of land lying to the north of the farm of Gelli Ffrydiau, and flanked to the east and the west by tributaries of the Afon Drws-y-Coed. The land is shown as being divided into two large fields (2151 and 2152) with common land north of the *fridd* wall. The lower of the two fields (2151) is shown as one large field, whereas today the field is divided in two by a north-south field wall. Two smaller fields (2149 and 2150), both of which are in existence today, are depicted either side of the B4418.

**Table 1. The tithe apportionment of 1849**

Plot	Landowner	Tenant	Plot Name	A/R/P
2149	William Lewis Hughes, Lord Dinorben	Catherine Davies of Gelli Ffrydiau	Buarth (pasture)	10/3/3
2150	William Lewis Hughes, Lord Dinorben	Catherine Davies of Gelli Ffrydiau	Cae'r ardd goch (meadow)	4/1/30
2151	William Lewis Hughes, Lord Dinorben	Catherine Davies of Gelli Ffrydiau	Cae'r allt (pasture)	18/1/4
2152	William Lewis Hughes, Lord Dinorben	Catherine Davies of Gelli Ffrydiau	Nant (pasture)	32/1/34

As can be seen from the 1849 tithe apportionment (table 1), the proposed development site was owned by William Lewis Hughes, Lord Dinorben of the Kinnel Hall estate in Denbighshire. He inherited the estate from his father Edward Hughes upon his death in 1815. Edward Hughes had made the family money after marrying Mary Lewis, the daughter of his employer, the Rector of Trefdraeth in Anglesey. She had inherited on the death of her uncle the house of Llysduelas in Anglesey, as well as a 'baron hill' nearby. This hill later became known as the Mynydd Parys (Parys Mountain) copper mine and jointly earned Edward Hughes and Sir Nicholas Baylys a fortune through the demand for copper. Through this Edward Hughes built up a prodigious Estate, the jewel of which was the purchase of Kinnel in 1786.

William Lewis Hughes was made Baron Dinorben of Kinnel in 1831, as well as being MP for Wallingford, Aide de Camp to Queen Victoria, Colonel of the Anglesey Militia, and a champion of the poor, founding a free school for local girls in the grounds of Kinnel Hall in 1830. He died in 1852 and was succeeded by his only surviving son William Lewis Hughes, second Lord Dinorben. He however was invalided and unmarried, and died with no children only eight months after succeeding his father thus leaving the title extinct (www.Kinnel Estate.co.uk).

The property of Gelli Ffrydiau is mentioned in the Welsh census of 1841 when the farm was tenanted by Catherine Prichard recorded as an eighty year old farmer. Catherine would almost certainly have been a descendant of the marriage between Angharad James and William Prichard in the previous century or through her marriage into the Prichard family. She is recorded as living with her son William (aged fifty) and daughter Mary (aged thirty-five). The property was also home at this time to six agricultural labourers, one shepherd, and one house servant. By the time of the tithe apportionment of 1849 the primary tenant is Catherine Davies and it can only be assumed that Catherine Prichard had remarried or changed her name at the ripe old age of eighty eight. By the time of the Welsh census of 1851 the farm of Gelli Ffrydiau was tenanted by Mary Davis, presumably the former Mary Prichard, daughter of Catherine Prichard Davies.

The tithe apportionment of 1849 names the southernmost field (2149), which is the proposed location of the turbine house, as *buarth* or playground. This suggests that the field was being utilised by the local school *Ysgol Baladeulyn* located approximately 500.0m to the west. The names of the remaining fields all relate to the terrain of the site.

By the production of the first edition county series Ordnance Survey map in 1889 (figure 7.) the proposed development site is depicted more like it exists today. The first large field to the north of the farm had been subdivided by a north-south field wall with a sheepfold constructed in its north-western corner. Moreover, a weir had been built across the stream, which by way of a sluice and leat fed water to an overshot wheel for the churning of butter and the threshing of gorse (pers comm. Geraint Ellis, landowner). By this point the current farm house had been built to the south of the original Gelli Ffrydiau house. This building does not appear to be depicted on the 1849 tithe map and it is probable that it was constructed sometime in the mid to late 19<sup>th</sup> century. The original farmhouse became dilapidated and was demolished in 2005.

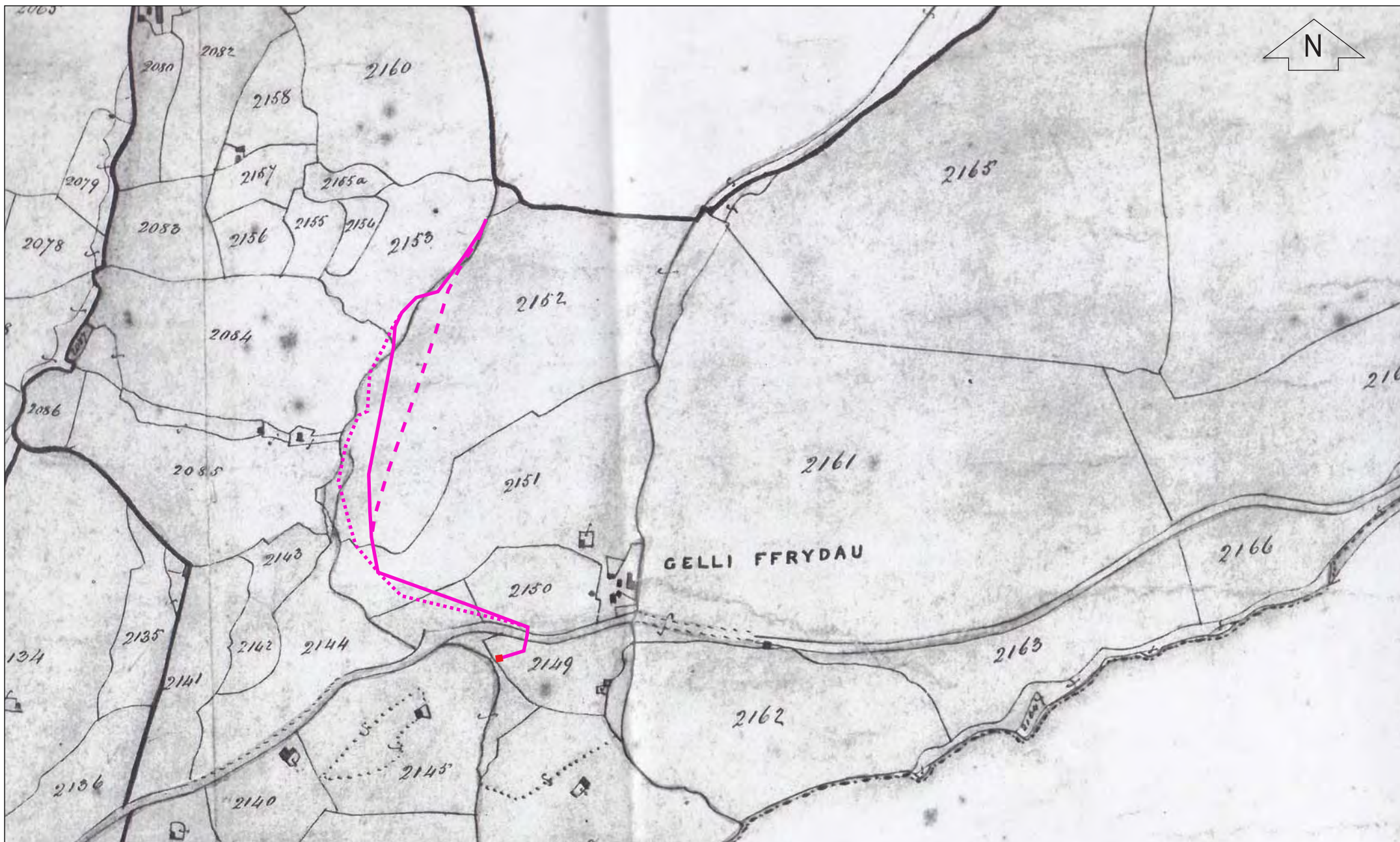
The second and third edition county series Ordnance Survey maps of 1900 and 1915 (figures 8 and 9) respectively, depict the study area the same as the first edition map, and there appears to have been little development of the farm between these times.

The farm of Gelli Ffrydiau was sold by auction (lot 42) on behalf of the Kinmel Estate by Addie and Son on the 19<sup>th</sup> March 1921. The farm was described as a ‘compact and conveniently situated sheep farm with rich feeding pastures’. The farmhouse was described as having ‘two sitting rooms and hall, pantry, kitchen and back kitchen, coal house and potato house outside, seven bedrooms approached by a front and back staircase’. The auction also included a range of outbuildings including the original house, which is described as being used as a storehouse. This shows that by 1921 the original Gelli Ffrydiau farmhouse had already been abandoned for use as an outbuilding (Kinmel Estate sale catalogue 1921).

## 5.4 Aerial Photographs

A range of aerial photographs of the proposed development area were examined from the Welsh Government. This included a high level photograph taken by the Royal Air Force in 1946 and 1948, as well as an Ordnance Survey photographs from 1973. Recent aerial coverage of the proposed development area from 2012 was also inspected. No new archaeological sites were identified in the aerial photographs.





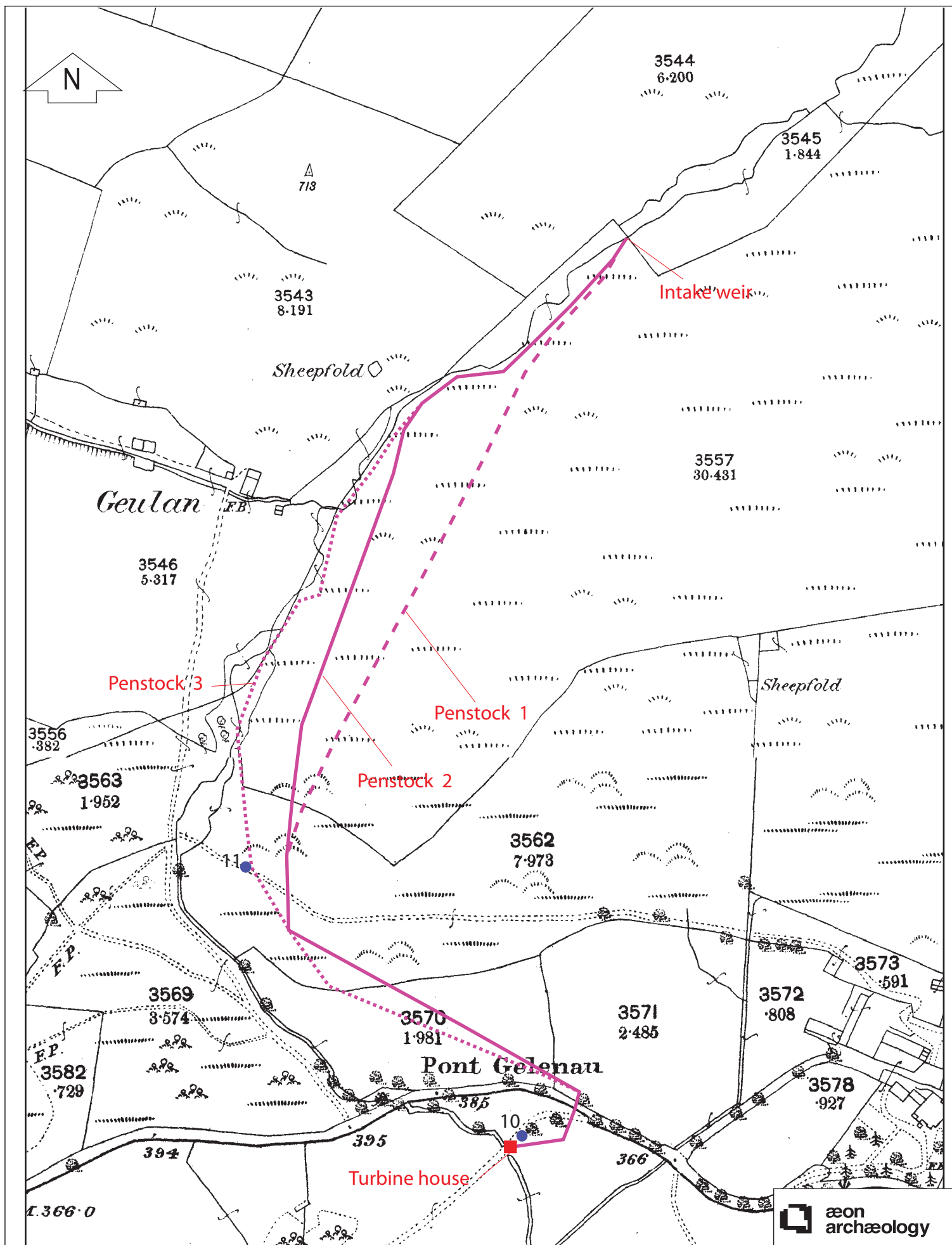


Figure 7: First Edition Ordnance Survey map of 1889 (pipeline route shaded in red). Scale 1:2,500 at A4.

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 Richard Cooke BA MA MIFA  
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 Tel: 01244 460070/ 07866925393  
[www.aeonarchaeology.co.uk](http://www.aeonarchaeology.co.uk)



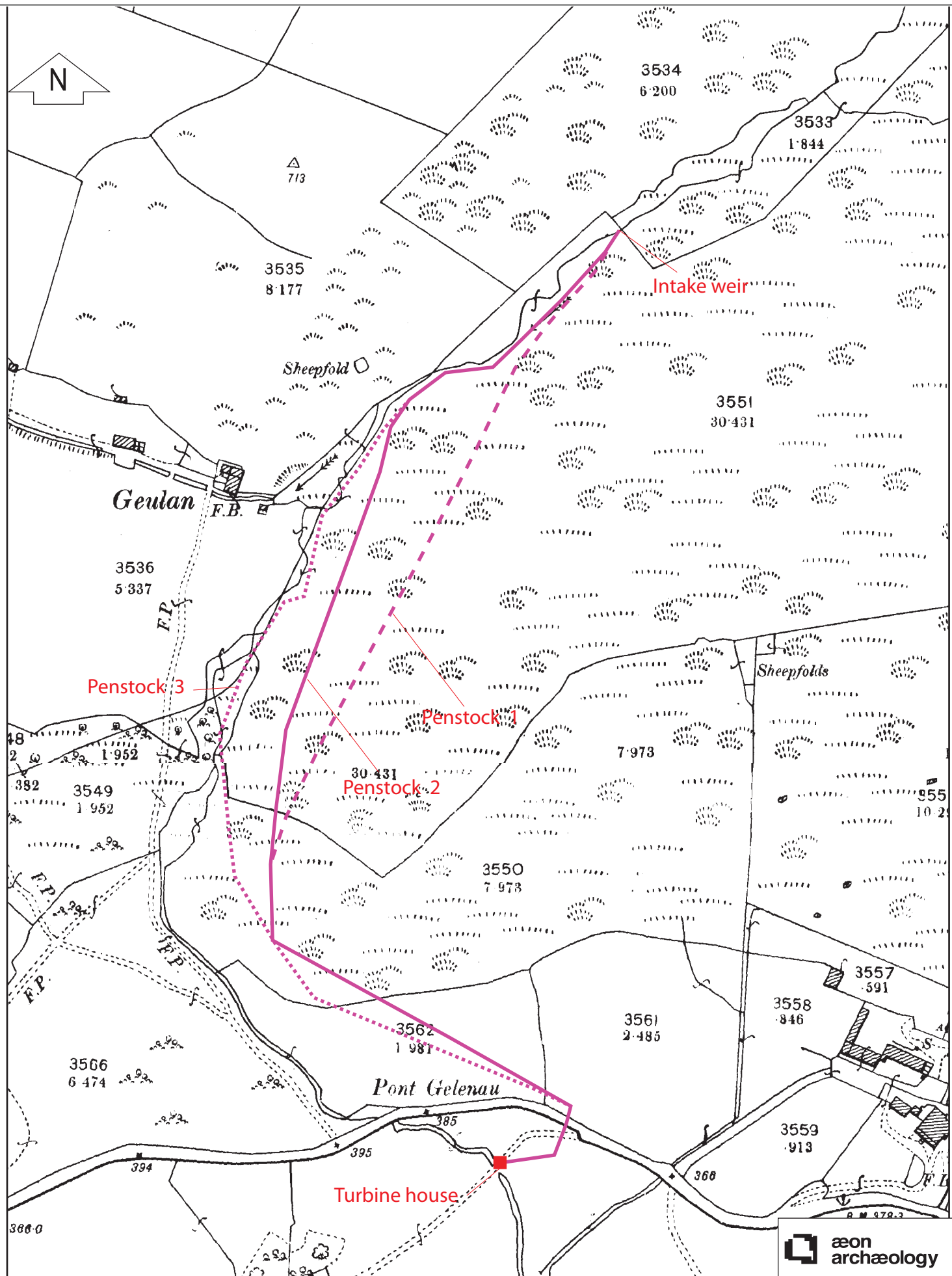


Figure 8: Second Edition Ordnance Survey map of 1900 (pipeline route shaded in red). Scale 1:2,500 at A4.

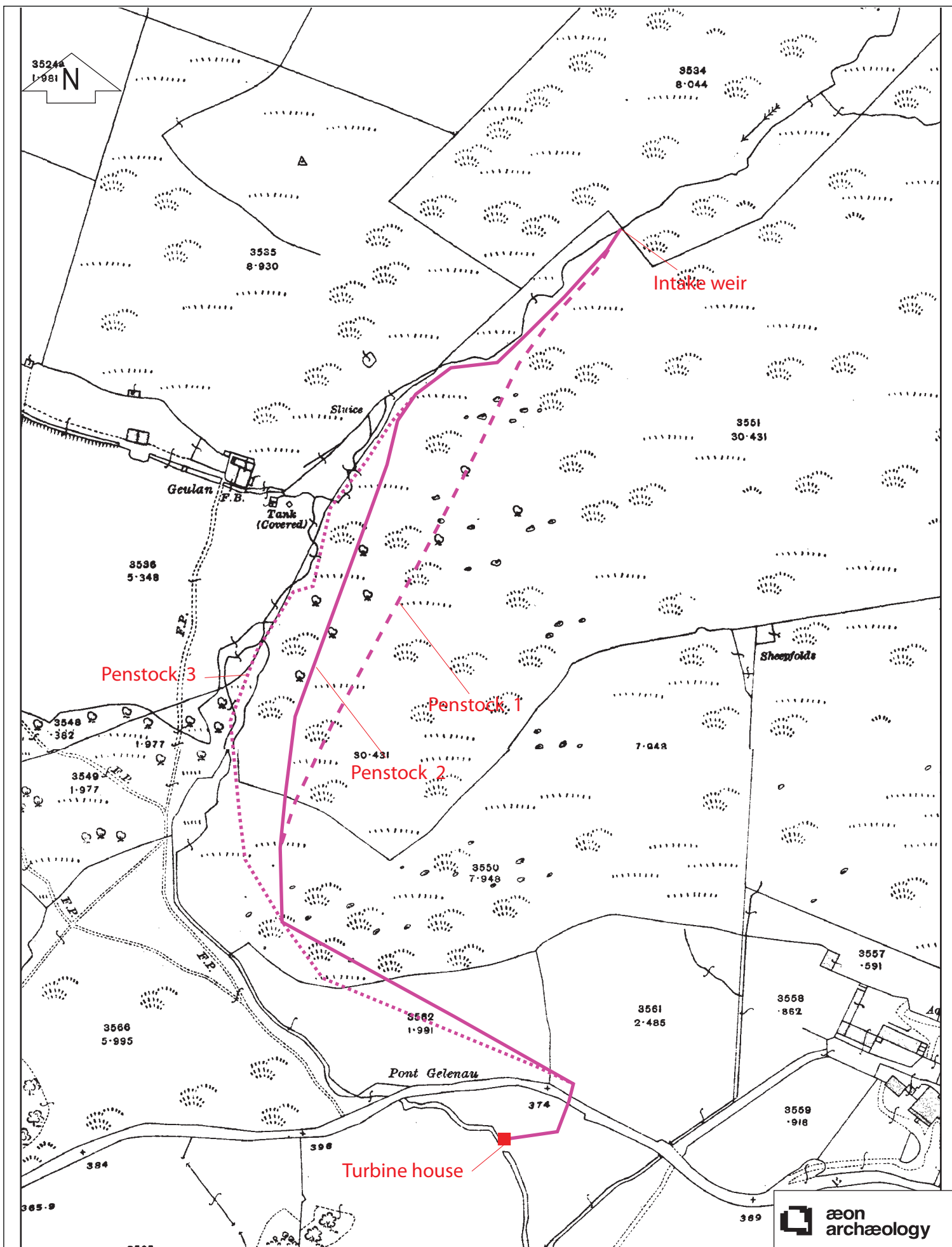


Figure 9: Third Edition Ordnance Survey map of 1915 (pipeline route shaded in red). Scale 1:2,500 at A4.

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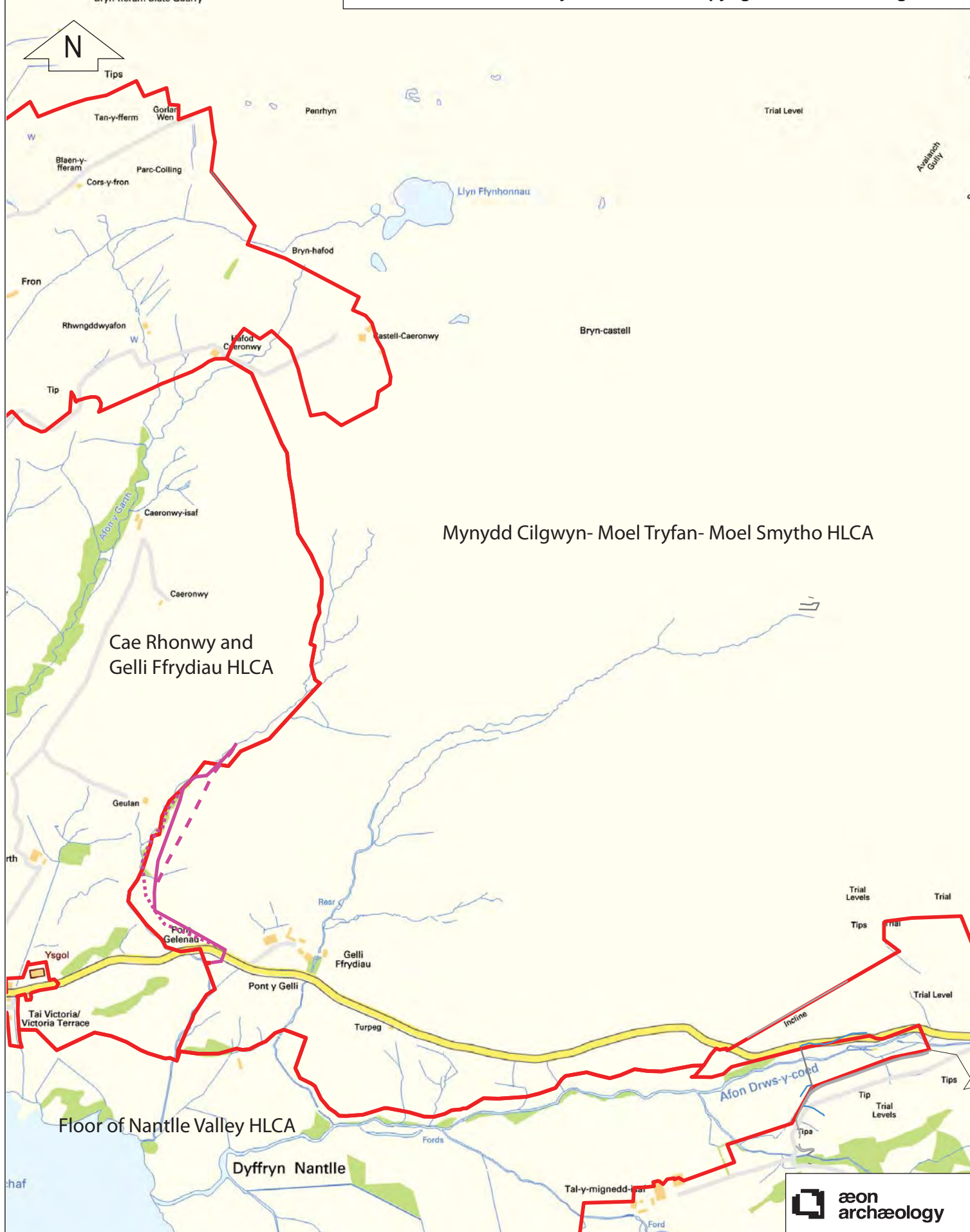


Figure 10: Location of Historic Landscape Character Areas (HLCAs). (Hydro route shaded in blue).  
Scale 1:10,500 at A4.

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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 11 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 11.

<b>1. Two possible roundhouses</b>	<b>PRN:</b> 59437
<b>Figure:</b> 11	<b>Plate:</b> 1 and 2
<b>NGR:</b> SH 52071 53978	<b>Period:</b> Unknown (Roman)
<p><b>Description</b></p> <p>Approximately 4.0m to the southeast of the weir intake point are the remains of two possible roundhouses lying approximately 2.0m apart. The identification of these two structures is by no means certain, as the eastern bank of the stream is littered with stones deposited during times of flood. Moreover, despite the two possible structures occupying a relatively flat plateau of ground, the site is low lying and may not have been conducive to habitation due to the risk of flooding.</p> <p>The stones of both possible structures do however appear to have at least two surviving courses measuring approximately 0.3m in height and a curve from north to east is visible in both. If the structures are in fact stone-built roundhouses they are most likely associated with the <i>Hut Circles and field systems north east of Gelli Ffrydiau</i> Scheduled Ancient Monument (CN179) and are almost certainly Iron Age or Roman in date.</p> <p>The two possible roundhouses lie directly within the path of all three proposed penstock routes, however as the pipe lies within the SAM polygon at this point the intention is to over-ground the penstock. As such there will be no adverse direct physical impact upon the site, although there may be a requirement to secure or anchor the penstock in place. If identified correctly the two roundhouses would be of national importance and as such the visual impact upon them should be taken into account. This is expected to be high adverse indirect non-physical (visual). It is therefore recommended that the weir intake point is moved approximately 10.0-15.0m south so that the penstock does not pass through the monuments.</p>	
<b>Category of importance:</b> Unknown (national)	
<b>Level of impact:</b> Scheme 1: High adverse indirect non-physical (visual) Scheme 2: High adverse indirect non-physical (visual) Scheme 3: High adverse indirect non-physical (visual)	
<b>Significance of effect:</b> Scheme 1: Unknown (Large adverse) Scheme 2: Unknown (Large adverse) Scheme 3: Unknown (Large adverse)	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Avoidance and repositioning of weir intake point 10.0-15.0m south of the current proposed location.	





**Plate 01:** Possible roundhouse 1 (feature 1), from the west. Scale 1.0m.





**Plate 02:** Possible roundhouse 2 (feature 1), from the west. Scale 1.0m.

<b>2. Field boundary wall</b>	<b>PRN:</b> 36404 <b>SAM:</b> CN179
<b>Figure:</b> 11	<b>Plate:</b> 3
<b>NGR:</b> SH 52074 53981	<b>Period:</b> Unknown (Post Medieval)
<p><b>Description</b></p> <p>A field boundary wall measuring approximately 1.0m in width and 0.3m in height runs from northwest to southeast away from the proposed pipeline route. The wall is constructed from medium sized sub-angular stones bonded by soil, and exists to foundation level having been replaced along the same route by a modern wood post and wire fence. The boundary is depicted on the first, second and third edition Ordnance Survey maps (1889, 1900, and 1915) and is probably post-medieval in date, although it could be an earlier wall associated with the Roman field system Scheduled Ancient Monument (CN179).</p> <p>The wall does not continue into the river valley and thus will not be impacted upon by any of the three penstock routes. As such no further assessment or mitigatory measures are recommended.</p>	
<b>Category of importance:</b> Unknown (local)	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None.	





**Plate 03:** Field boundary wall (feature 2), from the southeast. Scale 1.0m.

<b>3. Relict field revetment wall</b>	<b>PRN:</b> 59438 <b>SAM:</b> CN179
<b>Figure:</b> 11	<b>Plate:</b> 4
<b>NGR:</b> SH 52030 53936	<b>Period:</b> Unknown
<p><b>Description</b></p> <p>A relict field revetment wall measuring approximately 0.5m in width and 0.8m in height runs from north to south for approximately 3.0m to the immediate southeast of the stream at this point. The wall is constructed from medium and large sized sub-angular stones of dry-stone construction. The wall is not depicted on the first, second and third edition Ordnance Survey maps (1889, 1900, and 1915) and is of unknown date. It is possible that it is associated with the Roman field system Scheduled Ancient Monument (CN179).</p> <p>The revetment wall will not be impacted upon by scheme 1 as the penstock will have already moved out of the river gorge by this point. The wall does lie within the path of schemes 2 and 3, however as the pipe lies within the SAM polygon at this point the intention is to over-ground the penstock. As such there will be no adverse direct physical impact upon the site and no further assessment or mitigatory measures are proposed.</p>	
<b>Category of importance:</b> Unknown	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None.	





**Plate 04:** Relict field revetment wall (feature 3), from the south. Scale 1.0m.

<b>4. Possible paddock wall</b>	<b>PRN:</b> 59439 <b>SAM:</b> CN179
<b>Figure:</b> 11	<b>Plate:</b> 5
<b>NGR:</b> SH 52020 53854 – SH 52024 53866	<b>Period:</b> Roman
<p><b>Description</b></p> <p>A scatter of large angular and sub-angular stones form a rough line at the base of the slope approximately 20.0m east of the <i>Hut Group, Geulan, northeast of Nantlle</i> Scheduled Ancient Monument (CN 179; PRN 2789). The possible wall shows no evidence of coursing and runs from southeast to northwest for approximately 15.0m. The land between the possible wall and the hut group is mostly flat and was most likely an agricultural paddock, with this wall forming an eastern boundary to it at the base of the natural slope.</p> <p>The wall is not depicted on the first, second and third edition Ordnance Survey maps (1889, 1900, and 1915) and is of unknown date although it is probable that it is associated with the Roman field system Scheduled Ancient Monument (CN179).</p> <p>Scheme 1 will require to be buried alongside this wall and although there will not be a direct physical impact as the wall will remain in place, there will be an indirect physical impact through the removal of this feature from its setting at the base of the slope. This is because the slope will be graded to cover the penstock, as such the indirect physical impact is expected to be medium adverse.</p> <p>Schemes 2 and 3 will not impact upon this feature.</p>	
<b>Category of importance:</b> National	
<b>Level of impact:</b> Scheme 1: Medium adverse indirect physical Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Moderate or large adverse Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Avoidance by using scheme 2 or 3 <u>or</u> basic photographic and descriptive record prior to commencement of works.	





**Plate 05:** Possible paddock wall (feature 4), from the south. Scale 1.0m.



<b>5. Hut Group, Geulan, northeast of Nantlle Scheduled Ancient Monument</b>	<b>PRN:</b> 2789 <b>SAM:</b> CN179
<b>Figure:</b> 11	<b>Plate:</b> 6 - 7
<b>NGR:</b> SH 5199 5390	<b>Period:</b> Roman
<p><b>Description</b></p> <p>A hut group of at least three hut circles open into an irregular courtyard with traces of further small enclosures. The hut group is located immediately next to the river gorge cut by the tributary of the Afon Drws y Coed. The walls of the hut circles are constructed from medium and large sized sub-angular stone overgrown with turf, and standing in places to nearly 1.0m in height. The group belong within the Scheduled Ancient Monument Roman <i>Hut Circles and field systems north east of Gelli Ffrydiau</i> (CN179).</p> <p>Recent heavy rains and flooding has caused the western limit of the hut group outer enclosure bank to erode into the stream. It is proposed that if scheme 2 or 3 is utilised then a large boulder wall of stones recovered from the stream will be used to protect the penstock and stabilise the eroding bank.</p> <p>Scheme 1 will be over-grounded but covered in soil at the foot of the slope approximately 20.0m to the east of the hut group and as such will not directly impact upon the monument. However, there will be a medium to high adverse indirect physical impact through the frustration of the historic association between the monument and the possible paddock wall (feature 4) located approximately 20.0m to the east. This wall marks the base of the natural slope, however by covering the penstock with soil and blending out the slope gradient the historic setting of the hut group lying upon a reasonably broad flat plateau is altered. Moreover, it is probable that the flat ground to the immediate east of the monument would have been an agricultural paddock and this association would also be frustrated.</p> <p>The proposed penstock route for scheme 2 and 3 runs in very close proximity to this monument (approximately 4.0m to the west), however the pipe will be laid across the ground surface within the existing river gorge to the west, and as such there will be no direct physical impact upon the monument. There will however be an indirect non-physical (visual) impact upon the SAM when viewing eastward across the SAM polygon, although due to the depth of the river gorge the pipe will only be visible from the very western limit of the monument. As such it is expected that the proposed scheme will have a low visual impact upon the hut group. Furthermore, the use of river stones to construct a retaining wall to the immediate west will stabilise the SAM from further erosion thus ensuring its medium-term survival. As such it is considered that both schemes 2 and 3 will have a medium beneficial indirect physical impact upon the monument.</p>	
<b>Category of importance:</b> National	
<p><b>Level of impact:</b> Scheme 1: Medium to high adverse indirect physical  Scheme 2: Low adverse indirect non-physical (visual) and medium beneficial indirect physical  Scheme 3: Low adverse indirect non-physical (visual) and medium beneficial indirect physical</p>	
<p><b>Significance of effect:</b> Scheme 1: Moderate or large adverse  Scheme 2: Slight adverse and moderate beneficial  Scheme 3: Slight adverse and moderate beneficial</p>	
<b>Recommendations for further assessment:</b> None	

**Recommendations for further mitigatory measures:** Avoidance essential



**Plate 06:** Eroded western limit of Geulan hut group SAM (feature 5), from the north. Scale 1.0m.





**Plate 07:** Geulan hut group SAM (feature 5), from the northeast. Scale 1.0m.

<b>6. Relict field wall</b>	<b>PRN:</b> 36405
<b>Figure:</b> 11	<b>Plate:</b> 8
<b>NGR:</b> SH 51876 53740 – SH 51967 53901	<b>Period:</b> Unknown (post-medieval)
<p>A ruinous field boundary wall runs north to south along the western edge of the river gorge as a revetment wall. It is of dry-stone construction utilising medium and large sized rounded river cobbles. At its highest it measures approximately 1.2m although its ruinous condition may be an indication that it was formed as a result of field clearance, by moving stones into the river gorge, rather than a deliberately constructed wall. The boundary is depicted on the first, second and third edition Ordnance Survey maps (1889, 1900 and 1915) and it is depicted as a continuation of a field boundary which continues north by crossing to the western bank of the stream. The wall was clearly utilised in the post-medieval period but may well have earlier origins and be associated with the Romano-British settlement (PRN 2789).</p> <p>The wall will not be impacted upon by schemes 1 and 2.</p> <p>Scheme 3 will require the wall to be breached by the penstock route, however due to its ruinous condition very little of the stones will require moving, thus the expected impact is low adverse direct physical. A basic record of the wall is recommended prior to it being breached, although the description and photographs provided in this report should be seen as being commensurate with a basic record and thus no further work is required. Furthermore, a watching brief should be maintained during intrusive groundworks in this area to identify whether the wall is of earlier provenience. The wall should be reinstated upon the completion of works.</p>	
<b>Category of importance:</b> Unknown (local)	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: Low adverse direct physical	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Watching brief and reinstatement.	





**Plate 08:** Relict field wall (feature 6), from the southwest. Scale 1.0m.

<b>7. Former field boundary</b>	<b>PRN:</b> 36406
<b>Figure:</b> 11	<b>Plate:</b> 9
<b>NGR:</b> SH 51873 53699	<b>Period:</b> Unknown (post-medieval)
<p>A ruinous field boundary wall runs from west to east to connect up with a modern wooden post and wire fence. The wall survives as a scatter of medium sized sub-rounded stones at foundation level measuring approximately 1.0m in width, 0.4m in height, and heavily overgrown with mosses. The wall is depicted on the first, second and third edition Ordnance Survey maps (1889, 1900 and 1915). The wall was clearly utilised in the post-medieval period but may well have earlier origins and be associated with the Romano-British settlement (PRN 2789).</p> <p>The wall will require breaching by all three penstock routes, however due to its ruinous condition very little of the stones will require moving, thus the expected impact is low adverse. A basic record of the wall is recommended prior to being breached, although the description and photographs provided in this report should be seen as being commensurate with a basic record and thus no further work is required. Furthermore, a watching brief should be maintained during intrusive groundworks in this area to identify whether the wall is of earlier provenience. The wall should be reinstated upon the completion of works.</p>	
<b>Category of importance:</b> Unknown (local)	
<b>Level of impact:</b> Scheme 1: Low adverse direct physical Scheme 2: Low adverse direct physical Scheme 3: Low adverse direct physical	
<b>Significance of effect:</b> Scheme 1: Slight adverse Scheme 2: Slight adverse Scheme 3: Slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Watching brief and reinstatement.	





**Plate 09:** Former field boundary (feature 7), from the northwest. Scale 1.0m.



<b>8. Roundhouse</b>	<b>PRN:</b> 59440
<b>Figure:</b> 11	<b>Plate:</b> 10
<b>NGR:</b> SH 51863 53642	<b>Period:</b> Roman
<p>A roundhouse measuring approximately 4.0m in internal diameter is located on flat ground at this point. The walls of the roundhouse stand approximately 0.3m in height and measure 0.4m in width, surviving only to one visible course of dry-bonded medium and large sized sub-angular cobbles. The site lies within an area of heavily overgrown scrubland and it is a distinct possibility that more such huts lie undiscovered within the surrounding vegetation.</p> <p>The roundhouse lies to the west of all three schemes by approximately 30.0-50.0m and as such will not be impacted upon by them. However, the area is likely to have further such monuments and it is recommended that a watching brief be maintained while trenching in this area is carried out.</p>	
<b>Category of importance:</b> National	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Watching brief in proximity.	



**Plate 10:** Roundhouse (feature 8), from the south. Scale 1.0m.

<b>9. Field boundary wall</b>	<b>PRN:</b> 36407
<b>Figure:</b> 11	<b>Plate:</b> 11
<b>NGR:</b> SH 51989 53639	<b>Period:</b> Post-medieval
<p>A dry-stone single skin field boundary wall measuring approximately 0.75m in height runs from west to east and marks the northern limit of the field. The boundary is constructed from medium sized angular stone cobbles and has been reinforced with the addition of a modern wood post and wire fence. The boundary is depicted on the tithe map of 1849 as well as on the first, second and third edition Ordnance Survey maps (1889, 1900 and 1915). It is most likely of post-medieval origin.</p> <p>The boundary will require breaching by all three schemes, although the impact is expected to be low adverse direct. A basic record of the wall is recommended prior to being breached, although the description and photographs provided in this report should be seen as being commensurate with a basic record and thus no further work is required. The wall should be reinstated upon the completion of works.</p>	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> Scheme 1: Low adverse direct physical Scheme 2: Low adverse direct physical Scheme 3: Low adverse direct physical	
<b>Significance of effect:</b> Scheme 1: Slight adverse Scheme 2: Slight adverse Scheme 3: Slight adverse	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> Reinstatement upon completion.	





**Plate 11:** Field boundary wall (feature 9), from the south. Scale 1.0m.

<b>10. Trackway</b>	<b>PRN:</b> 36408
<b>Figure:</b> 7	<b>Plate:</b> N.A.
<b>NGR:</b> SH 52012 53511	<b>Period:</b> Post-medieval
A trackway is depicted on the first and second edition Ordnance Survey maps of 1889 and 1900 respectively. The trackway is shown connecting the fields and Llyn Nantlle Uchaf to the south with the B4418. The track is not shown on the third edition Ordnance Survey map of 1915 and had presumably gone out of use by this time. No visible trace of the track could be seen during the site visit, however the field had been largely improved and ploughed over the years and thus it is likely to have been destroyed.	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None.	

<b>11. Trackway</b>	<b>PRN:</b> 36409
<b>Figure:</b> 7	<b>Plate:</b> N.A.
<b>NGR:</b> SH 51931 53664	<b>Period:</b> Post-medieval
A trackway is depicted on the first edition Ordnance Survey map of 1889 running from east to west and connecting the farms of Gelli Ffrydiau and Geulan. The track is not shown on the second or third edition Ordnance Survey maps of 1900 and 1915, and had presumably gone out of use by this time. No visible trace of the track could be seen during the site visit.	
<b>Category of importance:</b> Local	
<b>Level of impact:</b> Scheme 1: None Scheme 2: None Scheme 3: None	
<b>Significance of effect:</b> Scheme 1: Neutral Scheme 2: Neutral Scheme 3: Neutral	
<b>Recommendations for further assessment:</b> None	
<b>Recommendations for further mitigatory measures:</b> None.	

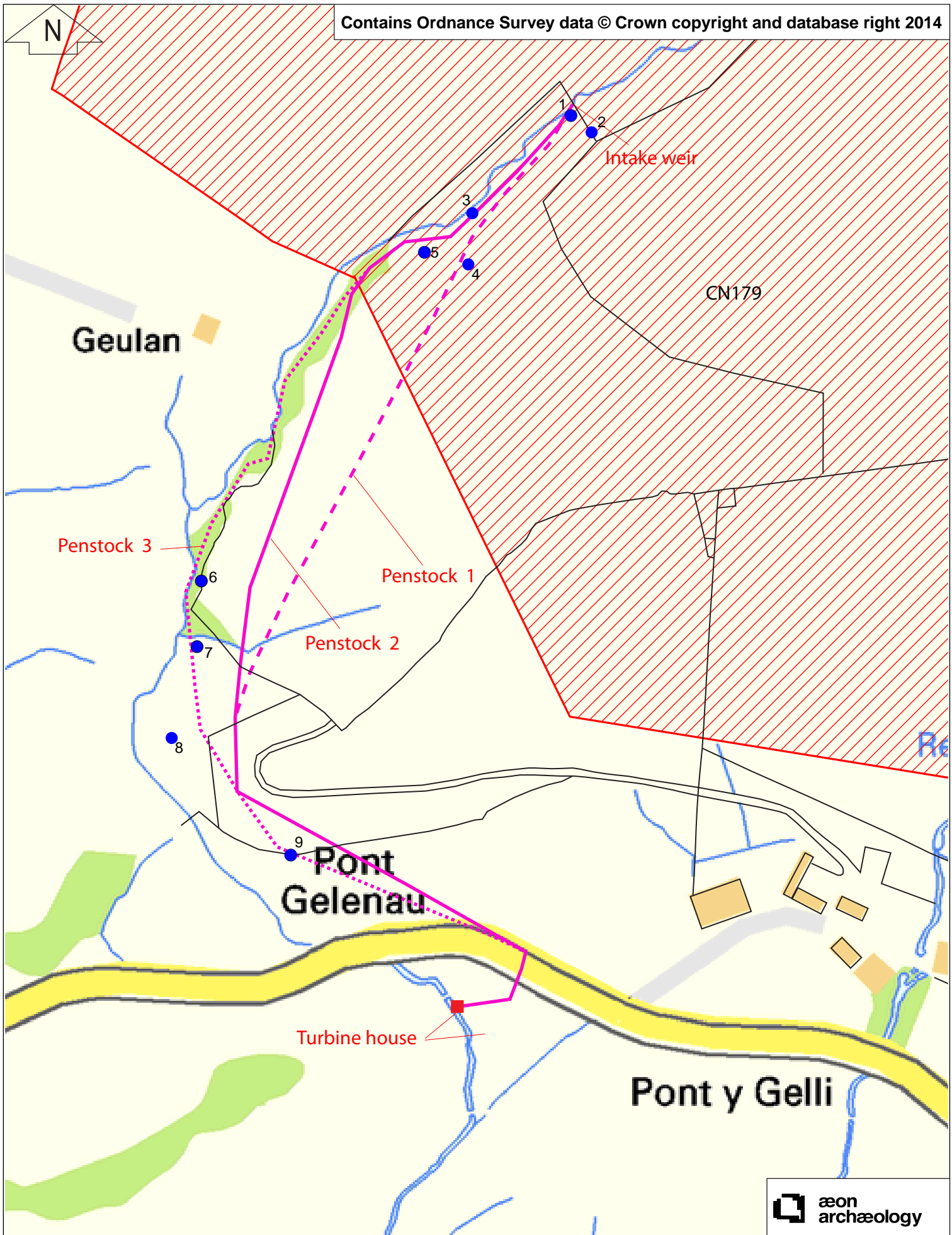


Figure 11: Location of archaeological sites discovered during the site visit (blue circles). Scale 1:2,500 at A4.

Table 2: Summary of archaeological features. <span>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	Two possible roundhouses	Unknown (national)	<b>All schemes:</b> High adverse indirect non-physical (visual)	<b>All schemes:</b> Unknown (large adverse)	None	Avoidance and repositioning of weir intake to the south.
2	Field boundary wall	Unknown (local)	<b>All schemes:</b> None	<b>All Schemes:</b> Neutral	None	None
3	Relict field revetment wall	Unknown	<b>All schemes:</b> None	<b>All Schemes:</b> Neutral	None	None
4	Possible paddock wall	National	<b>Scheme 1:</b> Medium adverse indirect physical. <b>Scheme 2 &amp; 3:</b> None	<b>Scheme 1:</b> Moderate or large adverse. <b>Scheme 2 &amp; 3:</b> Neutral	None	Avoidance by using scheme 2 or 3 or basic photographic and descriptive record prior to works.
5	Hut Group, Geulan, SAM	National	<b>Scheme 1:</b> Medium to high adverse indirect physical. <b>Scheme 2 &amp; 3:</b> Low adverse visual and medium beneficial indirect physical	<b>Scheme 1:</b> Moderate or large adverse. <b>Scheme 2 &amp; 3:</b> Slight adverse and moderate beneficial.	None	Avoidance essential
6	Relict field wall	Unknown (local)	<b>Scheme 1 &amp; 2:</b> None. <b>Scheme 3:</b> Low adverse direct physical	<b>Scheme 1 &amp; 2:</b> Neutral. <b>Scheme 3:</b> Slight adverse	None	Watching brief during wall breach; reinstatement.
7	Former field boundary	Unknown (local)	<b>All schemes:</b> Low adverse direct physical	<b>All schemes:</b> Slight adverse	None	Watching brief during wall breach; reinstatement.
8	Roundhouse	National	<b>All schemes:</b> None	<b>All Schemes:</b> Neutral	None	Watching brief in proximity.
9	Field boundary wall	Local	<b>All schemes:</b> Low adverse direct physical	<b>All schemes:</b> Slight adverse	None	Reinstatement.
10	Trackway	Local	<b>All schemes:</b> None	<b>All Schemes:</b> Neutral	None	None
11	Trackway	Local	<b>All schemes:</b> None	<b>All Schemes:</b> Neutral	None	None



## 8.0 IMPACT AND RECOMMENDATIONS

### 8.1 Direct physical impact

#### Scheme 1

The proposed development scheme 1 is expected to have a *low adverse direct physical* impact upon two sites of archaeological importance (features 7 and 8) during the construction phase. Both of these features are field boundary walls of *unknown (local)* and *local* importance resulting in a *slight adverse* significance of effect.

#### Scheme 2

The proposed development scheme 2 is expected to have a *low adverse direct physical* impact upon two sites of archaeological importance (features 7 and 8) during the construction phase. Both of these features are field boundary walls of *unknown (local)* and *local* importance resulting in a *slight adverse* significance of effect.

#### Scheme 3

The proposed development scheme 3 is expected to have a *low adverse direct physical* impact upon three sites of archaeological importance (features 6, 7 and 8) during the construction phase. All of these features are field boundary walls, of which features 6 and 7 are of *unknown (local)* importance and feature 8 is of *local* importance, resulting in a *slight adverse* significance of effect.

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

#### *Construction phase*

#### Scheme 1

The proposed development scheme 1 is expected to have a *high adverse visual* impact upon two possible roundhouses (feature 1) during the construction and completion phases. This will result in a suspected *large adverse* significance of effect upon the monument, although it must be stressed that the identification of these two roundhouses is by no means certain.

The development will have a further *medium adverse indirect physical* impact upon a possible paddock wall (feature 4) and a *medium to high adverse indirect physical* impact upon the Geulan Hut Group SAM (feature 5). Both of these impacts will result in a *moderate or large* significance of effect. In both of these cases the high impact and significance of effect levels is because of the frustration of the relationship between the hut group SAM, the paddock wall, and the flat ground between them and the natural slope causing an alteration to the setting of the scheduled monument and the way in which it is experienced.

#### Scheme 2

The proposed development scheme 2 is expected to have a *high adverse visual* impact upon two possible roundhouses (feature 1) during the construction and completion phases. This will result in a suspected *large adverse* significance of effect upon the monument, although it must be stressed that the identification of these two roundhouses is by no means certain.

There will be a further *low adverse visual* impact upon the Geulan Hut Group SAM (feature 5) resulting in a *slight adverse* significance of effect. This however will be negated by a *medium beneficial indirect physical* impact resulting in a *moderate beneficial* significance of

effect through the creation of a stone retaining wall thus stopping the erosion of the western limit of the monument.

#### Scheme 3

The proposed development scheme 3 is expected to have a *high adverse visual* impact upon two possible roundhouses (feature 1) during the construction and completion phases. This will result in a suspected *large adverse* significance of effect upon the monument, although it must be stressed that the identification of these two roundhouses is by no means certain.

There will be a further *low adverse visual* impact upon the Geulan Hut Group SAM (feature 5) resulting in a *slight adverse* significance of effect. This however will be negated by a *medium beneficial indirect physical* impact resulting in a *moderate beneficial* significance of effect through the creation of a stone retaining wall thus stopping the erosion of the western limit of the monument.

### 8.3 Site Specific Recommendations

#### Scheme 1

It has been recommended that the weir intake is repositioned approximately 10.0-15.0m further to the south in order to avoid the visual impact upon the possible two roundhouses (feature 1). In addition, it is recommended that a basic descriptive and photographic record is taken of the possible paddock wall (feature 4) and the relationship with the Geulan Hut Group SAM (feature 5) – although it is advised that scheme 2 or 3 is favoured over scheme 1 so that impact upon the setting of the SAM is avoided.

Furthermore, it is recommended that a watching brief be maintained during the breaching of the former field boundary (feature 7) and in proximity of the roundhouse (feature 8).

#### Scheme 2

It has been recommended that the weir intake is repositioned approximately 10.0-15.0m further to the south in order to avoid the visual impact upon the possible two roundhouses (feature 1). In addition, it is recommended that a watching brief be maintained during the breaching of the former field boundary (feature 7) and in proximity of the roundhouse (feature 8).

#### Scheme 3

It has been recommended that the weir intake is repositioned approximately 10.0-15.0m further to the south in order to avoid the visual impact upon the possible two roundhouses (feature 1). In addition, it is recommended that a watching brief be maintained during the breaching of relict field wall (feature 6) and the former field boundary (feature 7), as well as in proximity of the roundhouse (feature 8).

### 8.4 General recommendations

The overall potential for unknown buried archaeological remains within the Scheduled Ancient Monument polygon (CN179) is expected to be high, however as the penstock will be laid on the ground surface within the river gorge or across the polygon, there is no potential for direct physical damage to any of these remains, and thus no further mitigatory measures are required for this area. Once the penstock route moves out of the SAM polygon the intention is to bury the pipe within a trench. The potential for unknown buried archaeological remains within this area is expected to be medium to high due to the proximity of nationally

importance monuments in the localised landscape, and thus a watching brief is recommended for this area. It is also recommended that a size limit be placed upon the plant machinery utilised for the burying of the pipe in the central area, to thus reduce the potential for compression damage to buried archaeological remains.

The two fields located furthest south have been heavily improved and ploughed and as such the potential for the survival of unknown buried archaeological remains within this area is expected to be low. No further mitigatory measures are proposed for this area.

Where a Scheduled monument will be impacted upon, either physically or non-physically, Scheduled Ancient Monument consent must be obtained from Cadw prior to the commencement of works.

## **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 1915

OS 1:10 000 Series sheet SH 55 NE, SH 55 SE, SH 55 SW, and SH 55 NW

### ***Aerial Photographs***

#### ***RAF Aerial Photographs***

RAF 3G.TUD.UK 193. Frame 6077. 10<sup>th</sup> May 1946

RAF 541/178 frame 3059. 8<sup>th</sup> October 1948

#### ***OS Aerial Photographs***

Ordnance Survey 73/028 frame 048. 23<sup>rd</sup> March 1973

Google Maps: 2012

### ***Manuscript Sources***

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Tithe Map and Apportionment of the Parish of Llandwrog (upper) 1849. DEGWM4 IR29/48

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### ***Published sources***

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[www.KinmelEstate.co.uk](http://www.KinmelEstate.co.uk)

### ***Unpublished Sources***

1841 census of Wales. Parish of Llandwrog (R4).

1851 census of Wales. Parish of Llandwrog (C30).

GAT report 402. *Historic Landscape Characterisation: Caernarfon-Nantlle.*

GAT report 1058. Davidson, A. 2008. *Pen yr Orsedd Slate Quarry.*

GAT report 910. Cooke, R. 2010. *Pen yr Orsedd Slate Quarry, Nantlle: Archaeological Assessment.*

Govannon Consultancy report GCo25A. Dr David Gwyn. 2002. *Landscape of Outstanding Historic Interest: Assessment of the Nantlle slate quarrying complex for planning and conservation purposes.*

Govannon Consultancy report 277. Dr David Gwyn. 2011. *Afon Craig Las: Archaeological Assessment.*

James David: Will 1712. Bangor Probate Records 1576-1858

Kinmel Estate sale catalogue. 1921. Lot 42 plan no.3. National Library of Wales.

Sale Catalogue. XSC0362. *Sale of Gelli Ffrydiau in 1808.*



## APPENDIX 1

### Sites within 1km of the proposed development area as listed on the Gwynedd HER

prn	name	form	ngr	type	period	Status
15737	Cae Rhonwy and Gelli Ffrydiau - Landscape		SH51745406	Landscape	Multi-Period	-
20537	Trial, Afon Drws Y Coed	Other Structure	SH53005320	Trial Mine	Post-Medieval	-
2781	Small Fort Near Nantlle	Other Structure	SH52595356	Hillfort	Prehistoric	Scheduled Ancient Monument
2783	Axe Hammer - Findspot, Tal-y-mignedd, Dyffryn Nantlle	Document	SH52905300	Findspot	Prehistoric	-
2788	Hut Circles, Field System, N of Gelli Ffrydiau	Multiple	SH52265392	Hut Circle Settlement	Roman	Scheduled Ancient Monument
2789	Hut Group, Geulan, NE of Nantlle	Building - Ruined	SH51995390	Hut Circle Settlement	Roman	Scheduled Ancient Monument
2790	Hut Group and Mining Adit, N of Gelli Ffrydiau	Multiple	SH52165376	Hut Circle Settlement	Roman	Scheduled Ancient Monument
2791	Hut Circles, NE of Gelli Ffrydiau, Nantlle	Building - Ruined	SH52595413	Hut Circle Settlement	Roman	Scheduled Ancient Monument
2792	Platform Hut, SE of Castell-Caeronwy, Nantlle	Building - Ruined	SH52735438	Hut Platform	Roman	Scheduled Ancient Monument
2793	Hut Group, Enclosed, SE of	Multiple	SH52805435	Hut Circle Settlement	Roman	Scheduled Ancient Monument

	Castell-Caeronwy					
2794	Hut Circles and Enclosure, NE of Geulan, Nantlle	Multiple	SH52075412	Hut Circle	Unknown	Scheduled Ancient Monument
2795	Hut Circle, NE of Caeronwy-Isaf, Nantlle	Building - Ruined	SH52135457	Hut Circle	Unknown	Scheduled Ancient Monument
2796	Hut Circles, NE of Geulan, Nantlle	Building - Ruined	SH51985403	Hut Circle Settlement	Roman	Scheduled Ancient Monument
2797	Enclosure, NE of Caeronwy-Uchaf, Nantlle	Other Structure	SH52145437	Enclosure	Unknown	Scheduled Ancient Monument
2798	Enclosure, SE of Caeronwy-Uchaf, Nantlle	Other Structure	SH52055423	Enclosure	Unknown	Scheduled Ancient Monument
2799	Platform Hut, E of Caeronwy-Isaf, Nantlle	Building - Ruined	SH52115443	Hut Platform	Unknown	Scheduled Ancient Monument
33912	Drainage Feature, Possible, Dyffryn Nantlle	Earthwork	SH52245277	Ditch	Modern	-
33913	Footbridge, Dyffryn Nantlle	Other Structure	SH52305280	Footbridge	Modern	-
33914	Field Walls, Dyffryn Nantlle	Other Structure	SH52365275	Field Boundary	Post-Medieval	-
33915	Trackway, Dyffryn Nantlle	Earthwork	SH52575278	Trackway	Post-Medieval	-
5567	Hut Circle and Enclosure, Blaen y Garth, Nantlle	Multiple	SH51615390	Hut Circle	Prehistoric	-
7319	?Circular Feature, E of Llyn Nantlle	Earthwork	SH52205280	Feature	Unknown	-

	Uchaf					
7986	Field System, Castell Caeronwy	Earthwork	SH52255479	Field System	Medieval	-
8469	Area of Cultivation Ridges, E of Llyn Nantlle	Earthwork	SH52045295	Ridge And Furrow	Modern	-
8470	Cottage and Barn, W of Tal Y Mignedd	Building - Roofed	SH52545281	Cottage	Post-Medieval	-

**New sites within 1km of the proposed development area as listed on the Gwynedd HER**

<b>Prn</b>	<b>Sitename</b>	<b>Ngr</b>	<b>Sitetype</b>	<b>Period</b>
22531	Ffridd cowshed	SH51805276	Cowshed	Post Medieval
22533	Ffridd footbridge 2	SH51985279	Footbridge	Post Medieval
22532	Ffridd footbridge 1	SH51945278	Footbridge	Post Medieval
15990	Platform/terrace, N. of Gelli Ffrydiau	SH52095375	Terrace	Prehistoric/Romano British
15991	Lynchets/field boundaries, NW of Gelli Ffrydiau	SH51925375	Lynchet	Prehistoric/Romano British
15992	Field system, N of Gelli Ffrydiau	SH52175386	Field system	Prehistoric/Romano British
15993	Field system, NE of Gelli Ffrydiau	SH52845390	Field system	Prehistoric/Romano British
15994	Rectangular structure, E of Gelli Ffrydiau	SH52645355	Long hut?, Building	Undetermined
15995	Cairn? E of Gelli Ffrydiau	SH52635356	Cairn	Undetermined
15996	Relict field boundaries, E of Gelli Ffrydiau	SH52575346	Field system	Undetermined
15997	?Trial, Pont y Gelli	SH52315345	Trial?	Post Medieval
15998	Field Barn/Beudy, SW of Gelli Ffrydiau	SH51905345	Barn	Post Medieval
15999	Field Barn, S of Gelli Ffrydiau	SH52075329	Barn	Post Medieval/Modern

### Sites within 1km of the proposed development area as listed on the NMR

Nprn	Nmrwname	Type	Period	Ngr	Community
16872	Tal-Y-Mignedd Isaf	House	Post Medieval?	Sh52945298	Llanllyfni
24298	Llandwrog: Ancient Agriculture	Field System	Medieval	Sh522541	Llandwrog
95369	Small Hillfort North East Of Gelli Ffrydiau Near Nantlle	Hillfort	Iron Age	Sh52595356	Llanllyfni
301029	Hut Group, Geulan, Ne Of Nantlle	Settlement	Roman	Sh51995390	Llandwrog
301046	Hut Group, Geulan, Ne Of Nantlle	Settlement	Roman	Sh51995390	Llanllyfni
287078	South East Of Llyn Ffynhonnau Enclosure	Enclosure	Iron Age	Sh52495494	Llandwrog
287079	East Of Castell Caeronwy Field System	Field System	Iron Age	Sh52505473	Llandwrog
287080	Bryn Castell Farmstead	Farmstead	Post Medieval	Sh52805486	Llandwrog
287081	West Of Bryn Castell Cairnfield	Cairnfield	Prehistoric;Iron Age	Sh52645485	Llandwrog
287082	South West Of Bryn Castell Wall	Wall	Iron Age?	Sh52695482	Llandwrog
287083	South Of Bryn Castell Wall	Wall	Iron Age	Sh52895465	Llandwrog
287084	South Of Bryn Castell Shelter	Shelter	Post Medieval	Sh52815455	Llandwrog
287085	South Of Bryn Castell Cairnfield	Cairnfield	Prehistoric;Iron Age	Sh52735458	Llandwrog
287086	South Of Castell Caeronwy Shelter	Shelter	Post Medieval	Sh52335463	Llandwrog
287087	South Of Castell Caeronwy Enclosure Boundary	Boundary Bank	Iron Age?	Sh52255463	Llandwrog
287088	South Of Castell Caeronwy Boundary Bank And Ditch	Boundary Bank	Iron Age?	Sh52235455	Llandwrog
287089	West Of Castell Caeronwy Boundary Bank And Ditch	Boundary Bank	Iron Age?	Sh52215469	Llandwrog
287090	North East Of Gelli Ffrydiau Field System I	Field System	Iron Age	Sh52625413	Llandwrog
287091	South West Of Craig Y Bera Sheep Fold I	Sheep Fold	Post Medieval	Sh53305423	Llanllyfni
287092	North East Of Gelli Ffrydiau Field System Ii	Field System	Iron Age	Sh52815437	Llandwrog
287285	North East Of Gelli Ffrydiau Clearance	Clearance Cairn	Post Medieval	Sh52475356	Llanllyfni



	Cairn				
287286	North East Of Gelli Ffrydiau Wall	Wall	Post Medieval	Sh52495349	Llanllyfni
287287	Gelli Ffrydiau Platform House	House Platform	Iron Age	Sh52735438	Llandwrog
287288	North East Of Gelli Ffrydiau Structure	Structure	Post Medieval?	Sh52595356	Llanllyfni
287289	North East Of Gelli Ffrydiau Longhouse	Longhouse	Medieval	Sh52685356	Llanllyfni
287290	North East Of Gelli Ffrydiau Hut Circle Ii	Hut Circle	Iron Age	Sh53035366	Llanllyfni
287291	South West Of Craig Y Bera Wall I	Wall	Post Medieval	Sh53455390	Llanllyfni
287296	South West Of Craig Y Bera Wall Iii	Wall	Post Medieval	Sh53395411	Llanllyfni
287297	North East Of Gelli Ffrydiau Field System Iii	Field System	Iron Age	Sh52875384	Llanllyfni
287298	North East Of Gelli Ffrydiau Hut Circle Iii	Hut Circle	Iron Age	Sh52905377	Llanllyfni
302539	Gelliffrydiau, Homestead	Homestead	Roman	Sh52165374	Llanllyfni
302543	Hut S.E Of Caeronwy-Uchaf	Homestead	Roman	Sh52075412	Llandwrog
302545	Caeronwy-Isaf, Enclosed Hut	Homestead	Early Medieval	Sh52135457	Llandwrog
302544	Hut Circle North East Of Gelli Ffrydiau	Hut Circle	Iron Age	Sh52595412	Llandwrog
302542	Gelli Ffrydiau Hut Circle	Hut Circle	Iron Age	Sh52805435	Llandwrog
302540	Caeronwy-Uchaf, Enclosure	Enclosure	Unknown	Sh52145437	Llandwrog
302538	Gelliffrydiau, Round Hut	Hut Circle	Roman	Sh52265392	Llanllyfni
302524	Caeronwy-Uchaf, Round Huts	Hut Circle	Roman	Sh51965403	Llandwrog
415061	Ysgol Baladeulyn, Nantlle	School	Post Medieval	Sh51635349	Llanllyfni

### Listed Buildings within 1km of the proposed development area

Number	Name	Locality	Eastings	Northings	Grade
22404	Hafod Caeronwy	Nantlle	252035	354841	II
22405	Caeronwy-Isaf	Nantlle	251864	354454	II
22407	Cowhouse At Caeronwy-Isaf	Nantlle	251857	354467	II
23685	Milestone	Nantlle	251555	353448	II
23714	Milestone	Nantlle	253067	353354	II

### Scheduled Ancient Monuments within 1km of the proposed development area

Sam_No	Sam_Name	NGR_X	NGR_Y	Site_Type	General_Pe	Broadclass
Cn179	Huts & Field Systems Ne Of Nantlle	252081	354077	Enclosure	Prehistoric	Monument
Cn178	Small Fort Near Nantlle	252592	353563	Hillfort	Prehistoric	Defence

## 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 of 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.

