

Nant Helyg Hydro Scheme, Abergeriw, Dolgellau, LL23 7TE. May 2016 V 1.0





Archaeological Assessment Project Code: A0084.1 Report no. 0088





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Archaeological Assessment

Aeon Archaeology 25, Mold Road Broughton Chester CH4 OPQ



Project Code: A0084.1 Date: 23/05/2016

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1.0 NON-TECHNICAL SUMMARY

Aeon Archaeology was commissioned by North Wales 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 Nant yr Helyg, a tributary of the Afon Mawddach and approximately 7.8km northeast of the village of Ganllwyd, Gwynedd and within the Snowdonia National Park Authority (SNPA).

The archaeological assessment identified nine archaeological sites within the 40.0m wide assessment corridor centred on the pipe route, all of which were either medieval or post-medieval in date. The proposed scheme will directly impact upon three archaeological features, a bridleway (feature 1), field boundary (feature 8) and a series of drainage ditches (feature 9). All of these features are considered to be of *local* importance. The photographs and descriptions provided within this report are considered commensurate with a basic archaeological record level and as such no further recommendations are made for assessment or mitigatory measures for these features.

The assessment has highlighted the increased potential for the location of prehistoric burnt mounds in proximity to Nant Helyg, as well as the potential for preserved palaeoenvironmental remains within the suspected underlying peat deposits. As such it is considered that the archaeological interest at the Site could be safeguarded by the imposition of a suitably worded condition on consent, should it be forthcoming for the application.

2.0 INTRODUCTION, AIMS AND PROJECT DESIGN

Aeon Archaeology was commissioned by North Wales 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 Nant yr Helyg, a tributary of the Afon Mawddach and approximately 7.8km northeast of the village of Ganllwyd, Gwynedd and within the Snowdonia National Park Authority (SNPA) (figure 1).

The proposed scheme will consist of an intake weir located at NGR SH 79791 27815 and a c.1.0km long buried penstock running northwest to a new turbine house located at NGR SH 79494 28768 and which will be installed on the southern bank of the Afon Mawddach. In addition a buried new power cable will run northwest from the turbine house for approximately 80.0m and within the existing bridleway, to an existing transformer at NGR SH 79435 28812. The bridleway will be used to transport materials to site (turbine house and outfall) and construction access between the intake site and turbine house will be along the penstock route.

The assessment has been carried out as part of an outline planning application (**ref: NP5/54/450**). A mitigation brief was not prepared for this scheme by the SNPA Archaeologist but an archaeological assessment was requested in a letter from the Principle Planning Officer (Mr. R.Thomas) at SNPA to North Wales Hydro Ltd (dated 26th February 2016).

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.

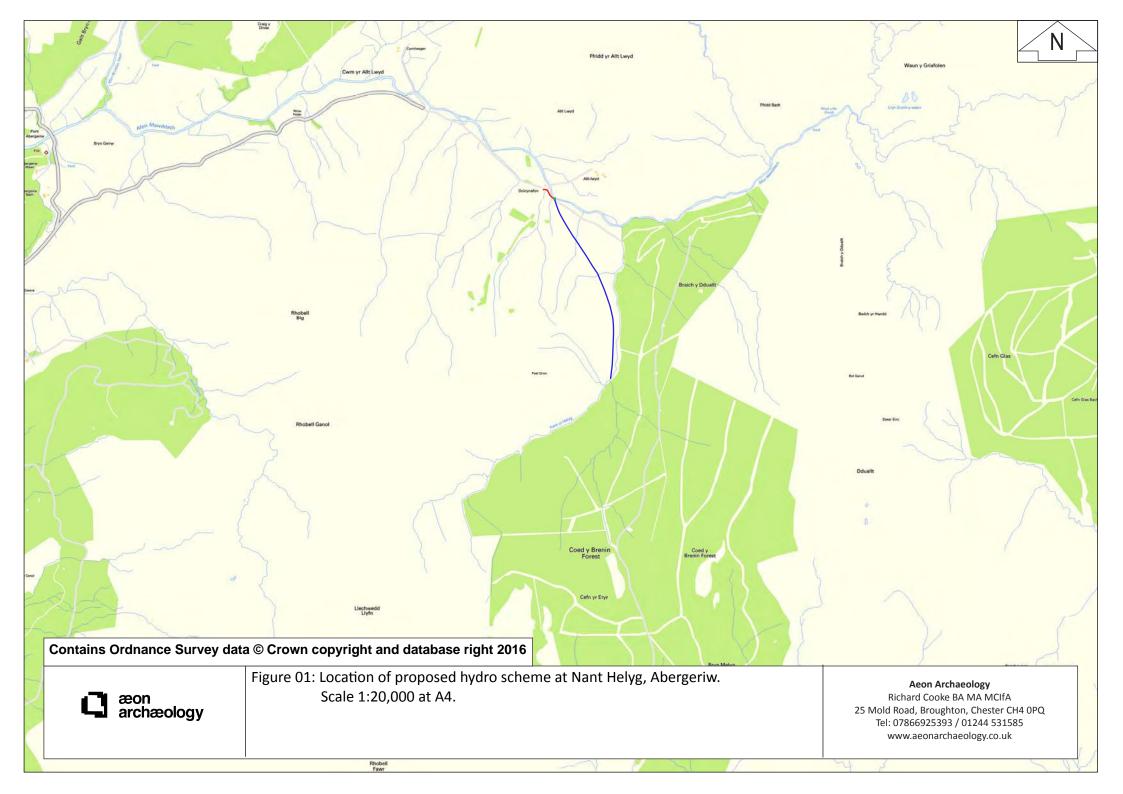
The following report conforms to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Chartered Institute for Archaeologists, 2014).

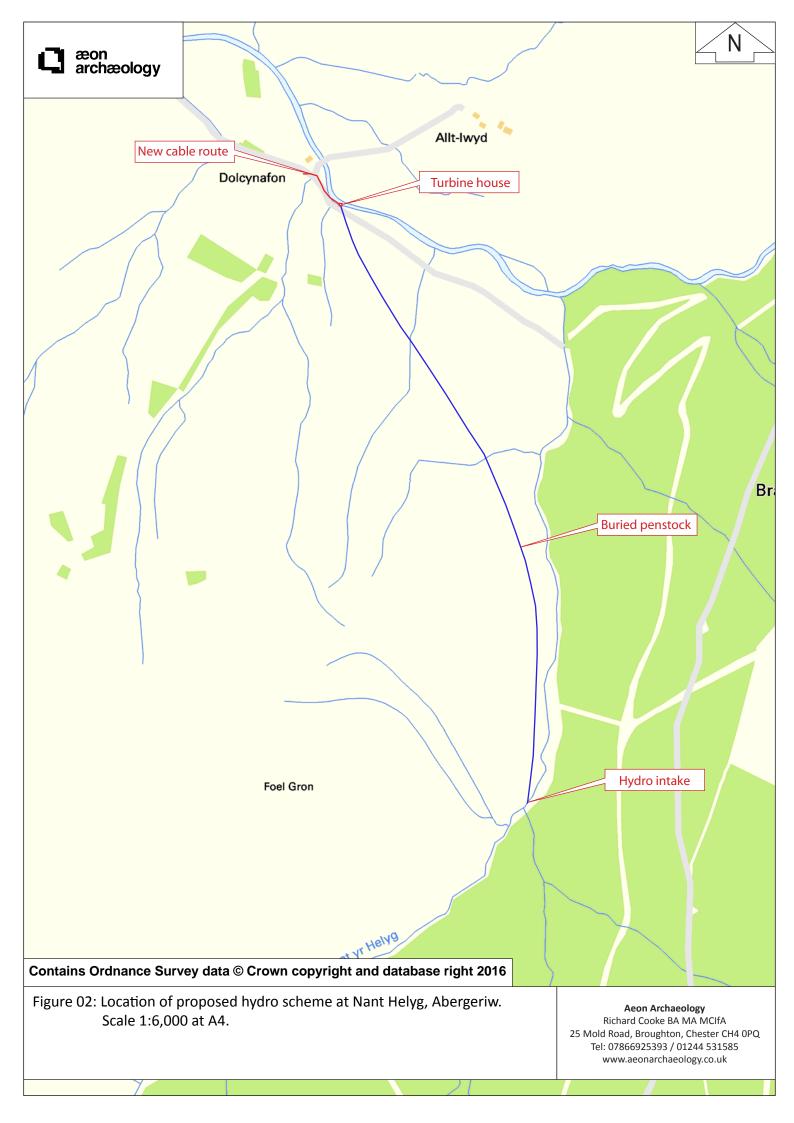
The archaeological assessment considered the following:

- (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 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.
- Results from previous archaeological work within the area was also reviewed.

3.2 Site walkover

The site walkover was carried out on 19th May 2015 by Richard Cooke BA MA MCIfA, 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 600D) set to maximum resolution.

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 Planning Policy Wales, National Planning Policy Framework (NPPF), Welsh Office Circular 60/96, and the Heritage Bill (Wales) 2015.

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 A0084.1 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 Nant yr Helyg, a tributary of the Afon Mawddach and approximately 7.8km northeast of the village of Ganllwyd, Gwynedd and within the Snowdonia National Park Authority.

The proposed scheme will consist of an intake weir located at NGR SH 79791 27815 and a c.1.0km long buried penstock running northwest to a new turbine house located at NGR SH 79494 28768 and which will be installed on the southern bank of the Afon Mawddach. In addition a buried new power cable will run northwest from the turbine house for approximately 80.0m to an existing transformer at NGR SH 79435 28812. An existing trackway will be used to transport materials to site (turbine house and outfall) and construction access between the intake site and turbine house will be along the penstock route.

The site lies within the parish of Brithdir and Llanfachreth Community, within the historic county of meirionnydd 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 unenclosed mountain slope and 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 435m OD at the proposed hydro intake with the proposed turbine house lying at approximately 305m OD.

The bedrock geology is of the Dolgellau Formation, a mudstone and siltstone sedimentary bedrock that formed approximately 488 to 502 million years ago in the Cambrian Period within an environment previously dominated by open seas with pelagite deposits (British Geological Survey).

4.2 Statutory and non-statutory designations

4.2.1 Non-designated monument points from the Gwynedd Historic Environment Record (figure 3)

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 9 non-designated monuments 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 100.0m of the following:

(i) Approximately 80.0m west of the unknown period *Nant Yr Helyg Foot Bridge* (PRN: 9410).

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.

4.2.3 Listed Buildings

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 no Listed Buildings within 1.0km of the proposed pipeline route.

4.2.4 National Monuments Record (figure 4)

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 25 non-designated monument points within 1.0km of the pipeline route (see appendix I) but none lie within the 40.0m wide assessment zone centred on the pipe or within 100.0m.

4.2.5 Historic Landscape Character Areas (HLCAs)

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.

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 is not included within the Register of Historic Landscapes of Historic Interest in Wales.

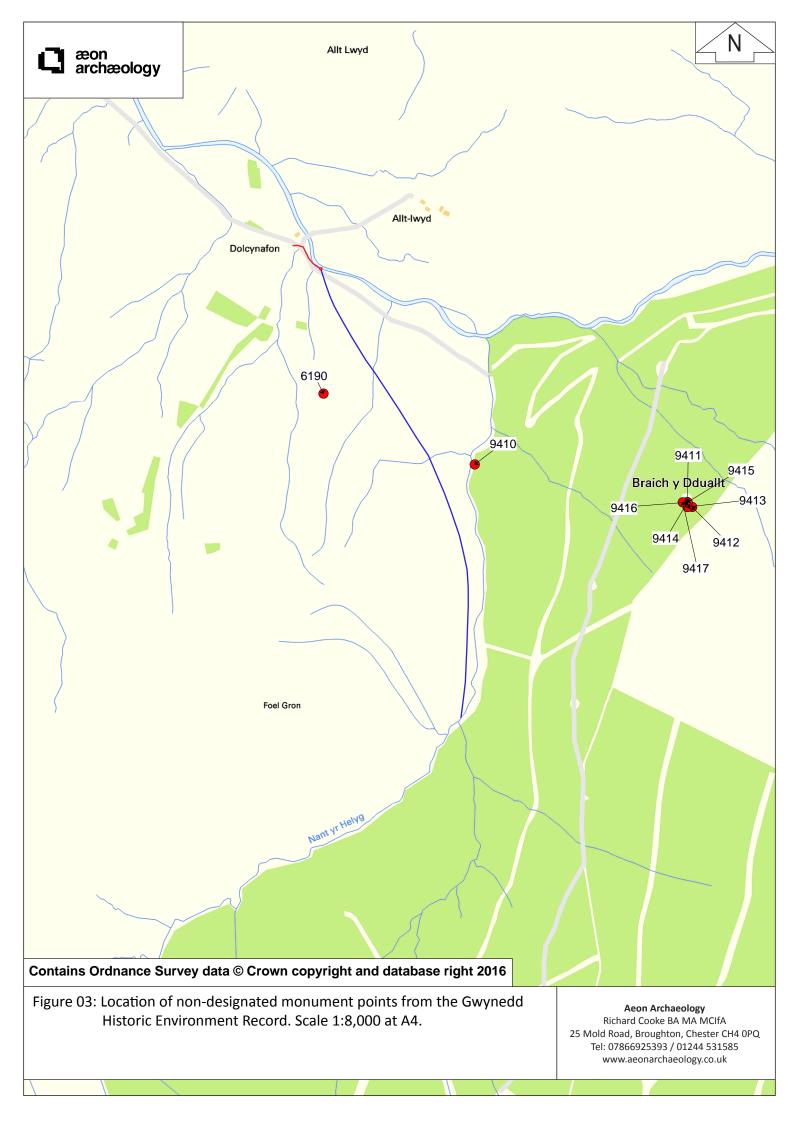
4.2.6 Historic Parks and Gardens

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 and the surrounding location has not been included within any previous archaeological projects.



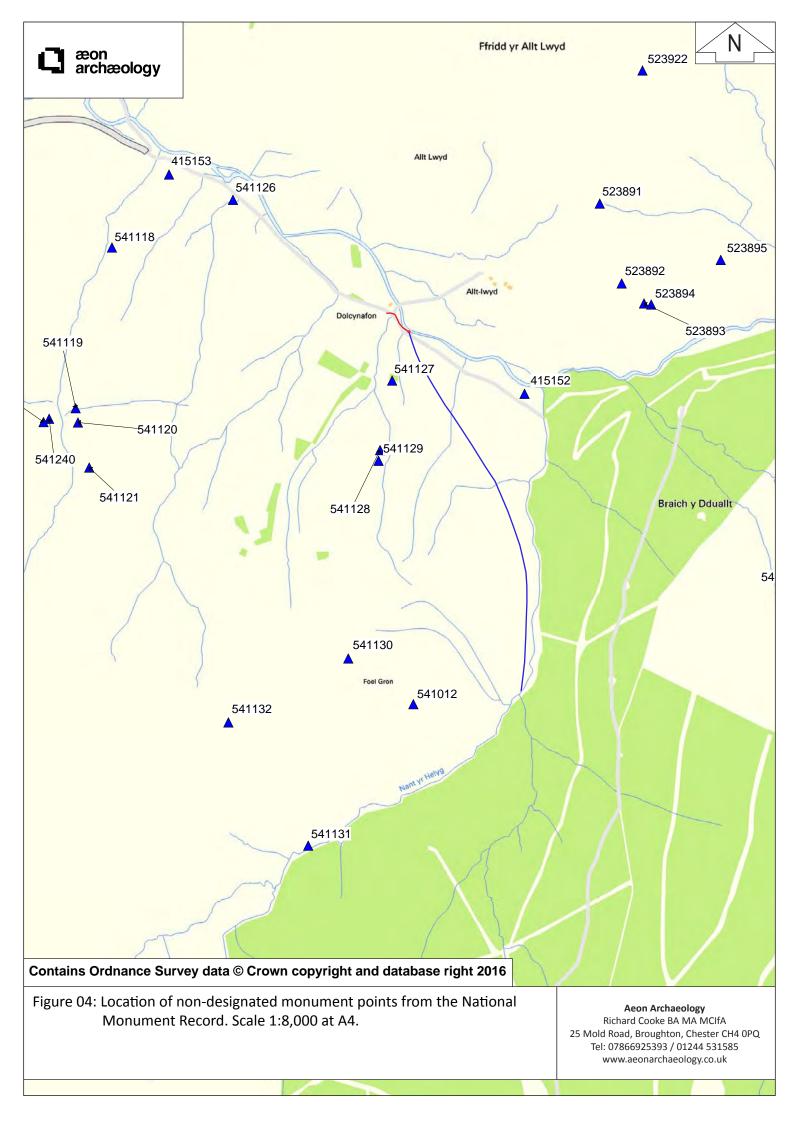




Plate 01: Proposed hydro intake, from the northwest.





Plate 02: Proposed turbine house location, from the west. Scale 1.0m.



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 there 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

Tuble 1. Historic perious		
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 prehistoric and Roman periods are poorly represented within the localised landscape and there are no known sites within 1.0km of the proposed hydro scheme.

The topography of the surrounding landscape would lend itself to early habitation, in particular upon the flat plateau of land to the immediate north of Foel Gron, although no structural remains are evident at this location. However the steeply sloping topography through which the penstock route is to be excavated would not have been conducive to early habitation.

The proximity of Nant Helyg to the east and the Afon Mawddach in the north would have made the site ideal for the location of prehistoric burnt mounds, although none are known to exist within the localised environment.

The potential for prehistoric and Roman sites to have been located along the route of the proposed hydro scheme as such is expected to be low, with the exception of prehistoric burnt mound sites which may exist beneath the turf in proximity to the stream.

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 590.0m to the northeast of the proposed pipeline route a rectangular sheepfold built on top of an earlier medieval platformed longhouse (PRN: 523893) is cut perpendicularly into the hillslope. The platform measures approximately 15.0m in length by 6.0m in width and is up to 0.7m high on the east side. The walls of the fold survive up to 0.7m wide by 0.5m high. There is a hood wall located on the west side but no internal divisions are evident in the longhouse. At the same location are the foundations of a sub-square ancillary structure (PRN: 523894) The structure measures approximately 9.0m square with a wall surviving up to 1.2m high on the southeast side. It is platformed internally and was built cut parallel to the slope and crossed by a later enclosure boundary wall with a drove wall on the east side.

The proposed development site is relatively marshy and has been partially drained via the excavation of parallel drainage gullies, suggesting that there are underlying peat deposits. It is probable that the land had been utilised for the extraction of peat for burning as fuel since medieval times. The extraction of peat leaves little trace except for rectangular depressions where the peat was cut from, as well as occasionally peat drying platforms.

The proposed route of the hydro-electric scheme is first depicted on the Llanfachreth tithe map of 1846 (figure 5) which depicts the site much as it exists today, albeit in very little detail. The area is shown as being bordered to the east by the Nant yr Helyg and by the existing field boundary to the south and west. The existing bridleway is depicted as running from southeast to northwest across the site and the turbine house and grid connection are shown as being within a smaller enclosed field.

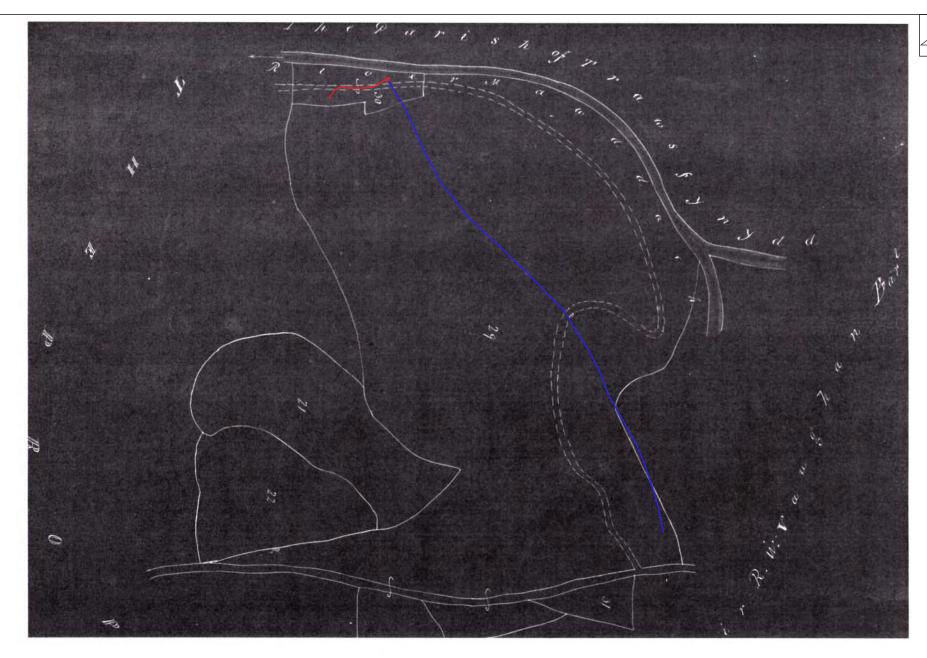
No further structures or features of note are depicted on the tithe map and the proposed development area is labelled as plots 29 and 30. The Llanfachreth tithe apportionment lists the following information for the field plots:

Plot	Landowner	Occupier	Field Name	A/R/P
29	R.H. Bart'	Jane Jones	Cadwgan	36/0/0
	Vaughan			
30	R.H. Bart'	David Jones	Cyplau	53/0/34
	Vaughan			

The field names listed in the apportionment relate to the names of the two farms rather than the field plot names and as such give no indication of the historic use of the proposed development area.

The site is depicted in detail on the first, second and fourth edition 6" county series Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7, and 8). All three maps depict the area much as it exists today, with the Nant yr Helyg shown as bordering the site to the east and the Afon Mawddach to the north. The bridleway is again shown snaking its way from southeast to northwest across the site and a minor trackway is depicted taking a more direct route northwest across the hill slope. A field boundary is depicted running from east to west and separating the proposed development area into two equally sized enclosed fields and the property of Dol-y-Cynafon is shown to the immediate north of the proposed grid connection. In addition the second and fourth edition maps depict a second field boundary running from east to west and located further to the north, dividing the northern field into two roughly equally sized enclosed plots.



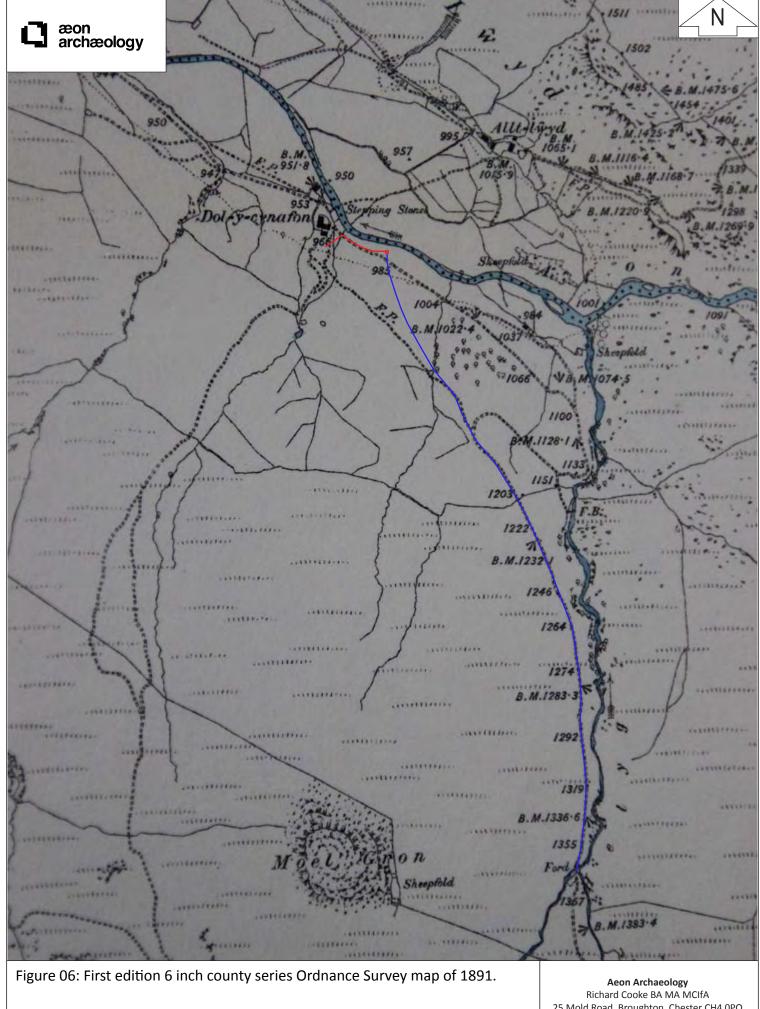


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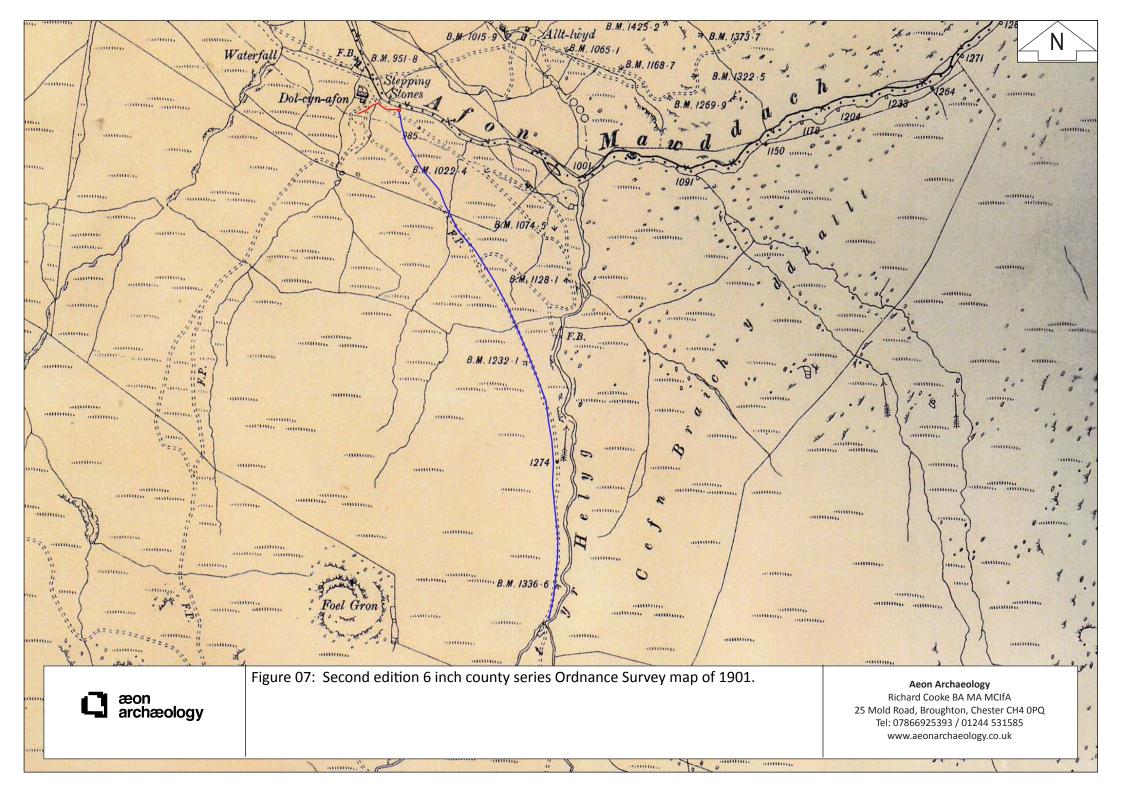
Figure 05: Llanfachreth tithe map of 1846.

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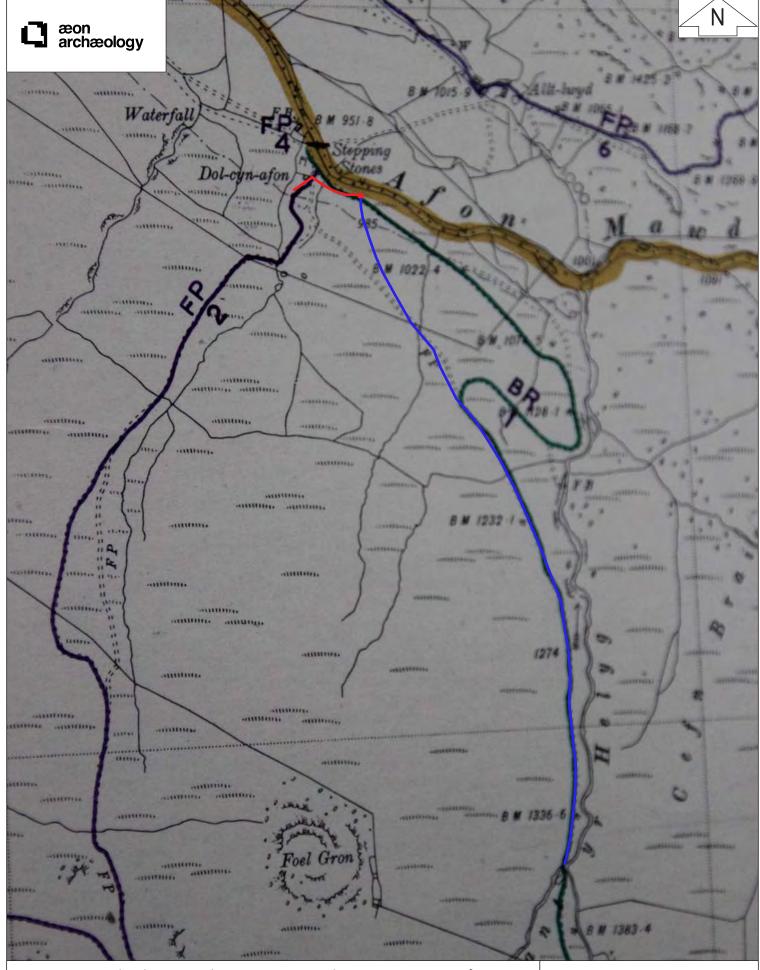


Figure 08: Fourth edition 6 inch county series Ordnance Survey map of 1949.

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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	Archaeological sites or monuments of international importance, including
(Very High)	World Heritage Sites.
	Structures and buildings inscribed as of universal importance as World
	Heritage Sites.
	Other buildings or structures of recognised international importance.
National	Ancient monuments scheduled under the Ancient Monuments and
(High)	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.
Dagional/	Conservation Areas
Regional/ County	Archaeological sites and remains which, while not of national importance,
(Medium)	score well against most of the Secretary of State's criteria.
(Wedium)	score wen against most of the secretary of state's criteria.
Local	Archaeological sites that score less well against the Secretary of State's
(Low)	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:

Magnitude	Direct Impacts	Indirect Impacts
High Adverse	Complete removal of an	Radical transformation of the setting of
	archaeological site.	an archaeological monument. A
	Complete destruction of a	fundamental change in the setting of a
	designated building or structure.	building.
Medium Adverse	Removal of a major part of an	Partial transformation of the setting of an
	archaeological site and loss of	archaeological site (e.g. the introduction
	research potential.	of significant noise or vibration levels to
	Testuren potential	an archaeological monument leading to
	Extensive alteration (but not	changes to amenity use, accessibility or
	demolition) of a historic building or	appreciation of an archaeological site).
	feature, resulting in an appreciable	Partial adverse transformation of the
	adverse change.	setting of a designated building.
Low Adverse	Removal of an archaeological site	Minor change to the setting of an
Low Adverse	where a minor part of its total area	archaeological monument or historic
	is removed but the site retains a	building.
	significant future research potential.	building.
	Change to a historic building or	
	feature resulting in a small change	
	in the resource and its historical	
Maglicible/	context and setting.	No paragriphs shapes in the setting of a
Negligible/ Neutral	No impact from changes in use,	No perceptible change in the setting of a
Neutrai	amenity or access.	building or feature.
	No change in the ability to	
	understand and appreciate the	
	resource and its historical context	
I D C 1	and setting.	D : : 1 : :
Low Beneficial	Land use change resulting in	Decrease in visual or noise intrusion on
	improved conditions for the	the setting of a building, archaeological
	protection of archaeological	site or monument.
	remains or understanding/	Improvement of the wider landscape
	appreciation of a historic building	setting of a building, archaeological site
	or place	or monument.
Medium	Landuce change resulting in	Significant reduction or removal of
Beneficial	Land use change resulting in	visual or noise intrusion on the setting of
Deliciteiai	improved conditions for the	a building, archaeological site or
	protection of archaeological	
	remains, or understanding/	monument; and
	appreciation of a historic building or place, including through	Improvement of the wider landscape
		setting of a building, archaeological site
	interpretation measures (heritage	or monument
	trails, etc).	Improvement of the cultural heritage
	Removal of harmful alterations to	amenity, access or use of a building,
	better reveal the significance of a	archaeological site or monument.
	building or structure, with no loss	
III ala	of significant fabric.	Expertional automatement C. 1. 111
High	Arrest of physical damage or decay	Exceptional enhancement of a building
Beneficial	to a building or structure;	or archaeological site, its cultural
	<u> </u>	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

	International	Neutral	Moderate or Large	Large or	Very Large
	International	Neutrai	Wioderate of Large	_	very Large
				Very Large	
	National	Neutral	Moderate or Slight	Moderate or	Large or Very
				Large	Large
				Large	Darge
4.	Regional	Neutral	Slight	Moderate	Moderate or
ne					Large
					· ·
Archaeological Value	Local	Neutral	Neutral or Slight	Slight	Moderate or
<u> </u>	Local	1 (Catrar	l teatrar or singin	Siigiit	Slight
80					Slight
log	Nagligible	Neutral	Neutral or Slight	Neutral or	Clicht
186	Negligible	Neutrai	Neutral of Stight		Slight
<u> </u>				Slight	
Ā					
		None	Low	Medium	High
		Magnitude of impact			

7.0 SITE GAZETTEER – PHYSICAL IMPACTS

The field walkover discovered 8 sites of archaeological and historic interest within the 40.0m wide assessment corridor, as listed below, and aerial photography was used to identify a series of land improvement drainage gullies identified as feature 9.

In accordance with Paragraph 128 of the National Planning Policy Framework, Welsh Office Circular 60/96, Planning Policy Wales, and the Heritage Bill (Wales) 2015 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 9 and the location and orientation of photographs are shown on figure 10.

1. Bridleway	PRN: 61632
Figure: 9 and 10	Plate: 3
NGR: SH 79429 28821 – SH 79807 27900	Period: Post-medieval

A bridleway measuring 3.0m in width and constructed from a rough metalled surface runs from the property of Dol-cyn-Afon in the northwest to the forestry plantation in the southeast. The bridleway is first depicted on the Llanfachreth tithe map of 1846 (figure 5) and is shown on the first, second and fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8). The bridleway is likely to be of post-medieval date and constructed to link the farms in the northwest with the land southeast of Nant Helyg.

The proposed development will require the penstock to be trenched within the bridleway in the southeast, and the new cable to be trenched within its entirety. It is considered that the development will have a low adverse direct physical impact during the construction phase resulting in a Neutral or Slight adverse significance of effect, and as such no further assessment or mitigatory measures are proposed aside from reinstatement upon the conclusion of works.

Category of importance: Local

Level of impact: Low adverse direct physical (limited to construction phase)

Significance of effect: Neutral or Slight adverse (limited to construction phase)

Recommendations for further assessment: None

Recommendations for further mitigatory measures: None / reinstatement



Plate 03: Trackway (feature 1), from the west. Scale 1.0m.



2. Relict field wall	PRN: 61633
Figure: 9 and 10	Plate: 4
NGR: SH 79442 28615 – SH 79733 28501	Period: Post-medieval

A relict field wall measuring 1.0m in width by 0.3m in height runs for approximately 314.0m across the hill slope from northwest to southeast. The wall has gone out of use and now exists as a low rise in the landscape of stones covered with sedge grasses. The boundary is not depicted on the tithe map of 1846 or on the first edition 6" Ordnance Survey map of 1891 (figures 5 and 6), but is shown on the second edition 6" map of 1901 (figure 7) suggesting that it had been constructed at the turn of the 20th Century as part of increased land division.

The proposed penstock route will pass directly across the course of the boundary, however there is no trace of the wall at this location, presumably having respected the earlier trackway. As such it is not expected that the scheme will have any direct or indirect impact upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None



Plate 04: Relict field wall (feature 2), from the west. Scale 1.0m.



3. Possible peat drying platform	PRN: 61634
Figure: 9 and 10	Plate: 5
NGR: SH 79639 28491	Period: medieval / Post-medieval

An elongated earthen mound located approximately 4.0m to the south of the proposed penstock route, and measuring 6.0m in length, 3.0m in width by 1.25m in height is possibly a peat drying platform. The surrounding land appears to have been levelled, probably as part of the cutting of peat, and it is likely that the clods were dried on this platform. Peat drying platforms were in use from medieval times and continued into the post-medieval period.

The platform does not lie within the proposed route of the penstock and as such it is not expected that there will be any physical or non-physical impacts upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None



Plate 05: Possible peat drying platform (feature 3), from the west. Scale 1.0m.



4. Relict field boundary	PRN: 61635
Figure: 9 and 10	Plate: 6
NGR: SH 79640 28470 – SH 79608 28450	Period: medieval / Post-medieval

A relict field boundary measuring 1.0m in width by 0.3m in height runs for approximately 38.0m up the hill slope from northeast to southwest. The boundary has gone out of use and now exists as an earthen bank in the landscape. It runs parallel with feature 5 and is almost certainly related to it, possibly enclosing the area. It is possible that the boundary represents a division between areas of peat cutting.

The boundary is not depicted on the tithe map of 1846 (figure 5) or on the first, second or fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8). This would therefore suggest that the feature is associated with peat cutting activity rather than land division.

The boundary does not lie within the proposed route of the penstock and as such it is not expected that there will be any physical or non-physical impacts upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None



Plate 06: Relict field wall (feature 4), from the northwest. Scale 1.0m.



5. Relict field boundary	PRN: 61636
Figure: 9 and 10	Plate: 7
NGR: SH 79674 28478 – SH 79622 28441	Period: medieval / Post-medieval

A relict field boundary measuring 1.0m in width by 0.3m in height runs for approximately 38.0m up the hill slope from northeast to southwest. The boundary has gone out of use and now exists as an earthen bank in the landscape. It runs parallel with feature 4 and is almost certainly related to it, possibly enclosing the area. It is possible that the boundary represents a division between areas of peat cutting.

The boundary is not depicted on the tithe map of 1846 (figure 5) or on the first, second or fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8). This would therefore suggest that the feature is associated with peat cutting activity rather than land division.

The proposed penstock route will pass directly across the course of the boundary, however there is no trace of the feature at this location, presumably having respected the earlier trackway. As such it is not expected that the scheme will have any direct or indirect impact upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None



Plate 07: Relict field wall (feature 5), from the northwest. Scale 1.0m.



6. Possible peat drying platform	PRN: 61637		
Figure: 9 and 10	Plate: 8		
NGR: SH 79672 28468	Period: medieval / Post-medieval		

An elongated earthen mound located approximately 4.0m to the south of the proposed penstock route, and measuring 6.0m in length, 3.0m in width by 1.25m in height is possibly a peat drying platform. The surrounding land appears to have been levelled, probably as part of the cutting of peat, and it is likely that the clods were dried on this platform. Peat drying platforms were in use from medieval times and continued into the post-medieval period. The feature is not depicted on the tithe map of 1846 (figure 5) or on the first, second or fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8).

The platform does not lie within the proposed route of the penstock and as such it is not expected that there will be any physical or non-physical impacts upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None

Recommendations for further mitigatory measures: None



Plate 08: Possible peat drying platform (feature 6), from the west. Scale 1.0m.



7. Quarry scoop	PRN: 61638
Figure: 9 and 10	Plate: 9
NGR: SH 79671 28439	Period: Post-medieval

A quarry scoop measuring 6.0m in length, 3.0m in width by 2.0m in depth is located approximately 5.0m to the south of the proposed penstock route. The date of the quarry scoop is unclear although it is likely to have been utilised as a source of stone for the construction of field walls or possibly part of the property of Dol-cyn-Afon, therefore being post-medieval in date. The feature is not depicted on the tithe map of 1846 (figure 5) or on the first, second or fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8).

The scoop does not lie within the proposed route of the penstock and as such it is not expected that there will be any physical or non-physical impacts upon the feature.

Category of importance: Local

Level of impact: None

Significance of effect: Neutral

Recommendations for further assessment: None

Recommendations for further mitigatory measures: None



Plate 09: Quarry scoop (feature 7), from the north. Scale 1.0m.



8. Relict field boundary	PRN: 61639
Figure: 9 and 10	Plate: 10, 11 and 12
NGR: SH 79760 28376 – SH 79095 28576	Period: Post-medieval

A substantial relict field boundary measuring 2.5m in width by 1.0m in height runs for approximately 780.0m across the hill slope from east to west. The boundary is of an earthen bank construction and lies to the immediate north of a stream that empties into the Nant Helyg in the east. It is likely that this earthen bank was constructed from the upcast material from the excavation of a dyke which now carries the stream, in an attempt to drain the surrounding land.

The boundary is not depicted on the tithe map of 1846 (figure 5) but is shown on the first, second and fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8). Field boundaries are not always shown on tithe maps, with some just showing ownership boundaries, however the Llanfachreth tithe appears to show individual field plots. This would therefore suggest that the feature, although unusual in its large scale, is of post-medieval date.

The proposed penstock route will pass directly across the course of the boundary through a small gap in the bank. However, the bank still exists at a lower level and it is considered that the development will have a low adverse direct physical impact during the construction phase resulting in a Neutral or Slight adverse significance of effect. As such no further assessment or mitigatory measures are proposed aside from reinstatement upon the conclusion of works.

Category of importance: Local

Level of impact: Low adverse direct physical (limited to construction phase)

Significance of effect: Neutral or Slight adverse (limited to construction phase)

Recommendations for further assessment: None

Recommendations for further mitigatory measures: None / reinstatement



Plate 10: Earthen bank (feature 8), from the northeast. Scale 1.0m.





Plate 11: Earthen bank (feature 8), from the east. Scale 1.0m.





Plate 12: Partial gap in earthen bank (feature 8), from the east. Scale 1.0m.



9. Drainage gullies	PRN: 61640
Figure: 9 and 10	Plate: N.A.
NGR: SH 79729 28432	Period: Post-medieval

A series of parallel drainage gullies identified partially during the site visit and partially from aerial photographs run from southeast to northwest across the hill slope, both towards the north and south of the proposed scheme.

The gullies are not depicted on the tithe map of 1846 (figure 5) or on the first, second and fourth edition 6" Ordnance Survey maps of 1891, 1901 and 1949 respectively (figures 6, 7 and 8) but are unlikely to have been of a high enough importance to represent. It is likely that these features represent a phase of post-medieval land improvement in order to drain the waterlogged lower hill slopes. The gullies are considered to be of negligible importance.

The proposed penstock route will pass directly across several of the gullies and it is considered that the development will have a low adverse direct physical impact during the construction phase resulting in a Neutral significance of effect. As such no further assessment or mitigatory measures are proposed.

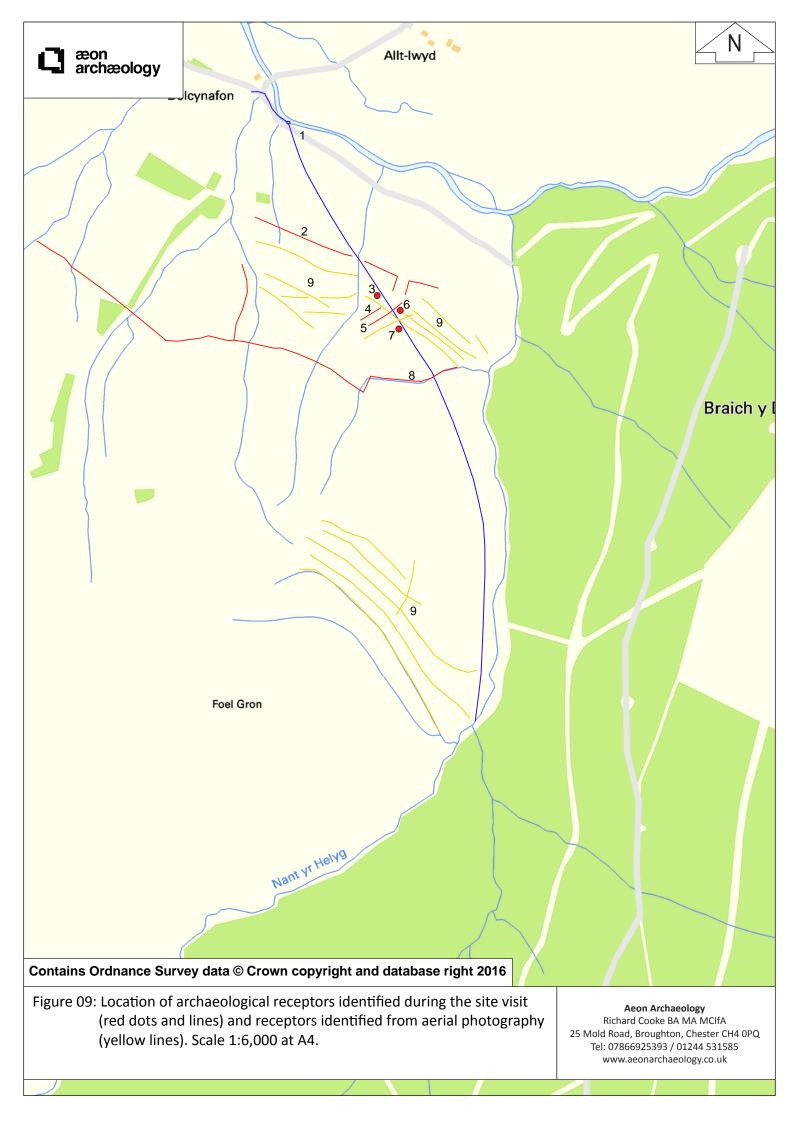
Category of importance: Negligible

Level of impact: Low adverse direct physical (limited to construction phase)

Significance of effect: Neutral

Recommendations for further assessment: None

Recommendations for further mitigatory measures: None



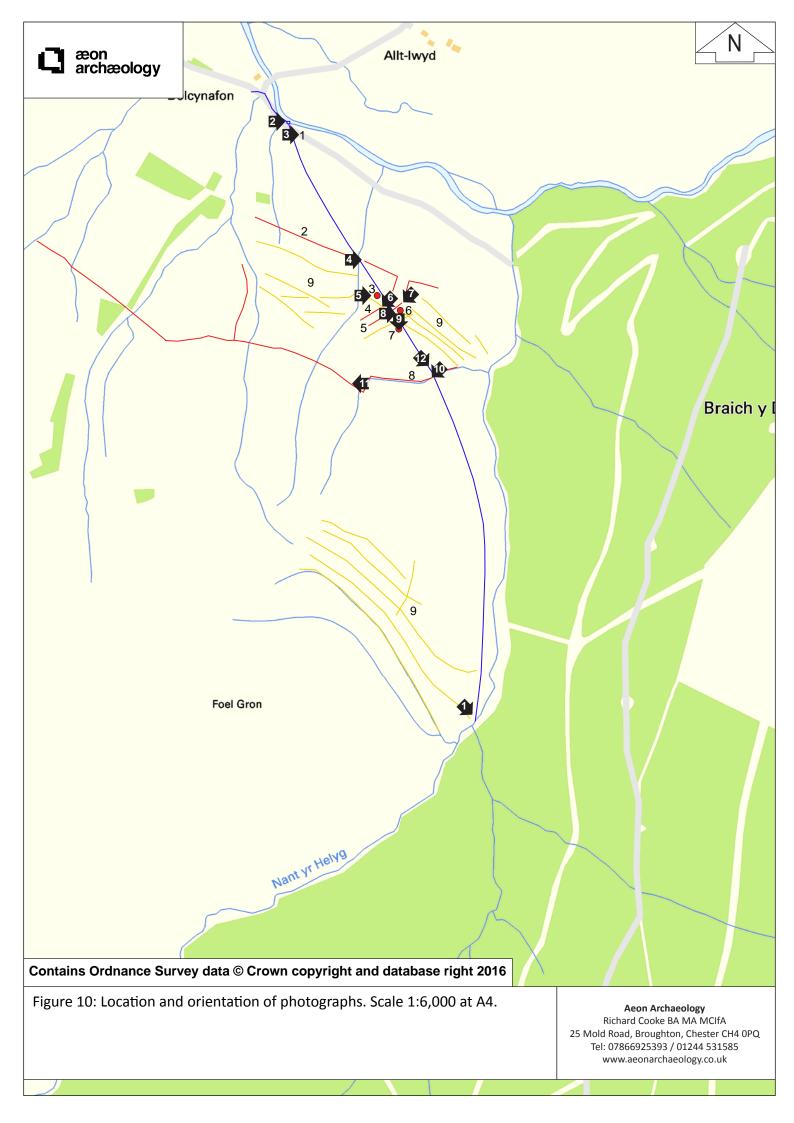


	Table 2: Summary of archaeological features. GREEN = no action required; RED= Action required				red; RED= Action required	
Nu mb er	Name	Importance	Impact	Significance of effect	Further Assessme nt	Mitigation Recommendations
PHY	SICAL DIRECT AND INDIREC	T IMPACTS				
1	Bridleway	Local	Low adverse direct physical (limited to construction phase)	Neutral or Slight adverse (limited to construction phase)	None	None / reinstatement
2	Relict field wall	Local	None	Neutral	None	None
3	Possible peat drying platform	Local	None	Neutral	None	None
4	Relict field boundary	Local	None	Neutral	None	None
5	Relict field boundary	Local	None	Neutral	None	None
6	Possible peat drying platform	Local	None	Neutral	None	None
7	Quarry scoop	Local	None	Neutral	None	None
8	Relict field boundary	Local	Low adverse direct physical (limited to construction phase)	Neutral or slight adverse (limited to construction phase)	None	None / reinstatement
9	Drainage gullies	Negligible	Low adverse direct physical (limited to construction phase)	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 three sites of archaeological importance (features 1, 8 and 9) during the construction phase. All of these features are post-medieval in date and are considered to be of *local* importance thus resulting in a *neutral or slight adverse* significance of effect.

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 Site Specific Recommendations

The proposed scheme will directly impact upon only three archaeological features, a bridleway (feature 1), a field boundary (feature 8), and a series of drainage gullies (feature 9). All of these features are likely to be of post-medieval date and as such are considered to be of *local* importance. The photographs and descriptions provided within this report should be considered commensurate with a basic archaeological record level and as such no further recommendations are made for assessment or mitigatory measures for these features.

8.4 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. Moreover, the majority of the archaeological features recorded on the regional Historic Environment Record and National Monuments Record are agricultural features of post-medieval date.

There are no registered World Heritage Sites, Archaeological Areas, Scheduled Ancient Monuments, Registered Parks and Gardens, Listed Buildings, or Registered Historic Landscapes wholly or partly within in the Assessment Site. Therefore, this assessment confirms that the Site does not contain any designated heritage assets for which there would be a presumption in favour of preservation in situ and against development. There are no known undesignated archaeological assets within the Site.

The archaeological potential for the Prehistoric and Roman periods has been identified as low, but this is based on the available information, rather than an absolute value derived from adequate data. There is also an exception to this in that there is an increased potential for prehistoric burnt mounds, particularly in proximity to Nant Helyg and the intake location, as well as the potential for preserved palaeo-environmental remains within the underlying peat deposits.

The assessment did identify areas of peat cutting and drying in close proximity to the penstock route which could be of medieval date, however these do not lie within the proposed penstock route and are unlikely to have any preserved buried associated remains. As such the potential for buried archaeological remains dating to the medieval period is considered to be low.

The potential for unknown sub-surface archaeological remains dating to the post-medieval period is also considered to be low.

On the basis of the evidence presented in this assessment the proposed development on the Site would not be contrary to any local or national policy.

This Assessment enables an informed, sustainable and responsible approach to the development of a new micro hydro scheme at Nant Helyg, Abergeriw. The information provided meets the expectations of NPPF and Heritage Bill (Wales) 2015 in that the applicant has described the significance of known archaeological assets that may be affected by proposed development. It is considered that the level of detail provided is proportionate to the assets' importance and provides sufficient information to understand the potential impact of the proposal on the significance of archaeological remains and therefore, there is sufficient information on which to make determination of the planning application.

On the balance of evidence, the archaeological interest at the Site is realistically limited to a low potential for as yet unknown remains of the prehistoric, Roman, medieval and later periods. The exception to this is the moderate potential for buried prehistoric burnt mounds and preserved organic palaeoenvironmental remains within the peat deposits and in proximity to the river. Any such remains are likely to be focussed in the southern half of the Site, and in the absence of any data confirming the presence/absence of preserved remains or any other more recent activity which may have compromised archaeological survival, the precautionary principle requires an assumption that some archaeological remains are present at the Site.

Ultimately, therefore, and without prejudice to the findings of any future archaeological, or other investigations at the Site, it is considered that the archaeological interest at the Site could be safeguarded by the imposition of a suitably worded condition on consent, should it be forthcoming for the application. The condition should require the applicant, or the successors in title, to record and advance understanding of the significance of any archaeological assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. This recommendation is in line with the relevant provisions in NPPF and the Heritage Bill (Wales) 2015.

9.0 SOURCES

OS Maps

1st edition 6 inch Ordnance Survey Map of 1891.

2nd edition 6 inch Ordnance Survey Map of 1901.

4th edition 6 inch Ordnance Survey Map of 1949.

OS 1:10 000 Series sheet SH 72NE, SH 72SE, SH 72SW, and SH 72NW.

Sources

British Geological Survey website. www.bgs.ac.uk.

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

The Chartered Institute for Archaeologists, 2014. 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 3)

PRN	Name	Type	Broadclass	Period
6190	Boundary Banks, Cwm yr Allt Lwyd	Boundary bank	Unassigned	Unknown
9410	Nant Yr Helyg Foot Bridge	Footbridge	Transport	Unknown
9411	Cefn Braich-y-ddually Sheepfol	Sheep fold	Agriculture and Subsistence	Unknown
9412	Cefn Braich-y-ddually Sheepfold	Sheep fold	Agriculture and Subsistence	Unknown
9413	Cefn Braich-y-ddually Sheepfold	Sheep fold	Agriculture and Subsistence	Unknown
9414	Cefn Braich-y-ddually Sheepfold	Sheep fold	Agriculture and Subsistence	Unknown
9415	Cefn Braich-y-ddually Sheepfold	Sheep fold	Agriculture and Subsistence	Unknown
9416	Cefn Braich-y-ddually Sheepfold	Sheep fold	Agriculture and Subsistence	Unknown
9417	Cefn Braich-y-ddually Sheepfold	Wall	Agriculture and Subsistence	Unknown

NMR Monument Points within 1.0km of the proposed development area (figure 4)

NPRN	Name	Broadclass	Туре	Period
415152	Braich y dduallt, sheep fold	Agriculture and Subsistence	Sheep fold	Post medieval
415153	Cwm yr alt lwyd, trackway	Agriculture and Subsistence	Trackway	Post medieval
523891	Ffridd yr allt-lwyd, peat cutting i	Industrial	Peat cutting	Post medieval
523892	Allt-lwyd, sheep fold	Agriculture and Subsistence	Sheep fold	Post medieval
523893	Allt-lwyd, longhouse	Agriculture and Subsistence	Longhouse	Medieval
523894	Allt-lwyd, structure	Agriculture and Subsistence	Structure	Medieval
523895	Ffridd bach, sheep fold iv	Agriculture and Subsistence	Sheep fold	Post medieval
523922	Ffridd yr allt-lwyd, peat cutting ii	Industrial	Peat cutting	Post medieval
541012	Moel gron, sheep fold	Agriculture and Subsistence	Sheep fold	Post medieval
541080	Braich y dduallt, sheep fold	Agriculture and Subsistence	Sheep fold	Post medieval
541081	Braich y dduallt, cottage	Domestic	Cottage	Post medieval
541118	Cwm yr allt lwyd, earthwork bank iii	Monument by form>	Boundary bank	Post medieval
541119	Cwm yr allt lwyd, earthwork bank iv	Monument by form>	Boundary bank	Post medieval
541120	Rhobell big, boundary wall	Monument by form>	Boundary wall	Post medieval
541121	Rhobell big, quarry	Industrial	Quarry	Post medieval
541126	Cwm yr allt lwyd, earthwork	Industrial	Level (possible), spring (possible)	Unknown
541127	Dolcynafon, structure	Agriculture and Subsistence	Sheep fold (possible)	Post medieval
541128	Dolcynafon, earthwork bank ii	Monument by form>	Bank (earthwork)	Post medieval
541129	Dolcynafon, earthwork bank i	Monument by form>	Boundary bank	Post medieval
541130	Moel gron, earthwork bank	Monument by form>	Bank (earthwork)	Post medieval
541131	Nant yr helyg, ruin	Domestic	Cottage (possible), long hut (possible)	Post medieval
541132	Rhobell ganol, stone pile	Agriculture and Subsistence	Clearance cairn (possible)	Unknown
541144	Braich y dduallt, structure	Domestic	Long hut (possible)	Post medieval

541240	Rhobell y big, trackway	Transport	Trackway	Post medieval
541241	Rhobell y big, earthwork bank	Monument by form>	Bank (earthwork)	Post medieval

