

Archaeology Wales

Hendre Waelod, Cwm Nantcol Llanbedr

Archaeological Desk Based Assessment



By
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Archaeology Wales

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Non – Technical Summary

In December 2017, Archaeology Wales was commissioned by Tudor Jones, on behalf of their clients Mrs & Mrs Hefin Lloyd to carry out an Archaeological Desk-Based Assessment and site visit to determine the archaeological potential of land near Hendre Waelod farm, Cwm Nantcol, Llanbedr, LL45 2PL. The assessment has been undertaken as part of the submission of a planning application for the proposed installation of 20kw Hydro-electric scheme in include intake weir, buried pipeline, turbine building, outflow and buried grid connection to run between NGR SH 63038 25982 and SH 63128 25170. The associated Planning Application No. is NP5/62/395.

The site lies within the Ardudwy Landscape of Outstanding Historic Interest HLW (Gw) 2, and crosses two Historic Landscape Character Areas (HLCAs) associated with the registered Landscape, namely HLCA 16 Upper mountain slopes Moelfre and Mynydd Llanbedr (PRN 18249) and HLCA 17 Cwm Nantcol (PRN 18250). There will be no impact on HLCA 16, the introduction of new Turbine House and associated development works is considered to have a Minor impact on HLCA 17.

No Conservation Area, Historic Park & Garden, Scheduled Ancient Monument or listed building will be directly or indirectly affected by the proposed development.

Five new sites have been recorded within the proposed development area during the course of the assessment. Towards the southern end of the scheme two stone-walled enclosures (HW04 & HW05) of uncertain date are recorded, but will not be impacted upon by the proposed development. A sheepfold (HW01), of post-medieval date and considered to be of Low (Local) archaeological value, lies close to the pipeline route. Proximity suggests there may be a potential Minor impact on this site. Towards the northern end of the pipeline, and close to the location of the proposed turbine house, two post-medieval barns (HW02 & HW03) have been identified, considered to be of Low (Local) archaeological value. The proximity of the development, and the introduction of a new turbine building within the setting of these features, is considered to have a Minor to Moderate impact.

The pipeline route also passes through a number of traditional stone field boundary walls, considered to be of Low (Local) archaeological value. These will be reinstated subsequent to development, this is considered to have a Minor impact on these features. A general low potential for Prehistoric remains, medieval and post-medieval agricultural remains, and late post-medieval mining remains has been identified. Prehistoric and mining remains are considered to be of Medium (Regional) archaeological value, the medieval and post-medieval agricultural remains are considered to be of Low (Local) archaeological value. Due to the low potential, the proposed development is considered to have a Negligible impact.

It is recommended that archaeological sites HW01, HW04 and HW05 are identified to site contractors, and potentially fenced off during construction works to ensure they remain undisturbed. It is also suggested that an archaeological watching brief may be required on development works around the two barns HW02 and HW03 to ensure they remain undisturbed and to record any associated features revealed through groundworks. Mitigation measures to reduce the visual impact of the turbine house have already been included within the proposed development details, including the size, finish and noise effect of the building, therefore no further mitigation is suggested. It is also recommended that field boundary walls are reinstated in a manner appropriate to the traditional character of these boundaries.

1 Introduction

- 1.1 In December 2017 Archaeology Wales (AW) was commissioned by Tudor Jones, on behalf of their clients Mr & Mrs Hefin Lloyd, to carry out an archaeological Desk-Based Assessment of the proposed installation of 20kw Hydro-electric scheme, including an intake weir, buried pipeline, turbine building, outflow and buried grid connection, at Hendre Waelod, Cwm Nantcol, Llanbedr, LL45 2PL, to run between NGR SH 63038 25982 and SH 63128 25170 (Figures 1 - 2, AW Project Number 2580).
- 1.2 This assessment has been prepared as part of the submission of a planning application. The associated Planning Application No. is NP5/62/395, and the local planning authority is the Snowdonia National Park Authority (SNPA).
- 1.3 The purpose of the Desk-Based Assessment, which is detailed in the following report, is to provide SNPA with the information they have requested in respect of the proposed development, the requirements for which are set out in Planning Policy (revised edition 9, 2016), Section 6.5 and Technical Advice Note (TAN) 24: The Historic Environment (2017). The recommendation for this Desk-Based Assessment has come from Gwynedd Archaeological Planning Service (GAPS), in their capacity as archaeological advisors to SNPA, the detail of which is laid out in a letter from GAPS to SNPA, dated 13th December 2017. The work is to highlight and assess the impact upon standing and buried remains of potential archaeological interest and to ensure that they are fully investigated and recorded if they are disturbed or revealed as a result of subsequent activities associated with the development.
- 1.4 The proposed Hydro-electric scheme would abstract water from the Hendre Waelod stream. A small 1m wide weir with intake chamber and elver pass facility would be installed within the stream (at SH 63128 25170), with a plunge pool immediately downstream to take any excess water. A buried 160mm diameter pipe would then carry the water for approximately 900m down the hillside to a turbine house to the north (at SH 63038 25982), with discharge pipe feeding back into the water course via a stone-built outfall. The turbine house would measure 3.5m square, and at most 3.5m high, clad in local stone with a pitched steel box profile roof. Ground levels will be raised slightly to cover the thrust box and pipe entry. A power cable would connect the turbine house to an existing electric post at SH 63075 25865. Access to the site would be along existing public footpaths, along the development corridor, and at the northern end across a pasture field (Figure 3).

2 Site Description

- 2.1 The site is located alongside the Hendre Waelod stream. The Hendre Waelod stream lies on north-facing slopes of Moelfre in semi-enclosed upland some 4.5km to the east of Llanbder, and within the Snowdonia National Park.
- 2.2 The land comprises rough moorland with outcrops of stone, and field boundaries of dry-stone walling dividing the landscape, which are used primarily for sheep grazing. The upper, southern end of the proposed development lies in an area of large, relatively open enclosures. The northern end of the proposed development lies within smaller enclosures of rough pasture on lower ground within the Cwm Nantcol valley. The stream itself is relatively narrow, draining off the north side of the Moelfre

hillside into the Afon Cwm Nantcol to the north. Hendre Waelod farmstead lies *circa* 500m to the west, surrounded by enclosed fields of semi-improved pasture.

- 2.3 The underlying geology comprises mudstones of the Hafotty Formation on the high ground at the southern end of the hydro-scheme, with sandstones and mudstones of the Rhinog Formation on the lower ground at the northern end of the scheme. Devensian Diamicton has built up over the bedrock (BGS 2017).

3 Methodology

- 3.1 The primary objective of this desk-based assessment is to assess the impact of the development proposals on the historic environment. This will help inform future decision making, design solutions and potential mitigation strategies. The aim is to make full and effective use of existing information in establishing the archaeological significance of the site, to elucidate the presence or absence of archaeological material, its character, distribution, extent, condition and relative significance.
- 3.2 The work includes a comprehensive assessment of regional context within which the archaeological evidence rests and aims to highlight any relevant research issues within national and regional research frameworks.
- 3.3 This report provides information of sufficient detail to allow informed planning decisions to be made which can safeguard the archaeological resource. Preservation *in situ* has been advocated where at all possible, but where engineering or other factors could result in the loss of archaeological deposits, preservation by record has been recommended.
- 3.4 This assessment considers the following:
- a) The nature, extent and degree of survival of archaeological sites, structures, deposits and landscapes within the study area through assessment of various readily available primary sources:
- Collation and assessment of all relevant information held in the regional HER at Gwynedd Archaeological Trust within a 1km radius of the penstock route;
 - Collation and assessment of the impact on all Designated archaeological sites within a 1km radius;
 - Assessment of all available excavation reports and archives including unpublished and unprocessed material affecting the site and its setting.
 - Assessment of aerial photographic (AP) and satellite imagery evidence;
 - Assessment of archive records held at the County Archive;
 - Records held by the developer e.g. bore-hole logs, geological/geomorphological information, aerial photographs, maps, plans, ztv data;
 - Map regression analysis using all relevant cartographic sources e.g. all editions of the Ordnance Survey County Series, Tithe and early estate maps (as available);
 - Place-name evidence;
 - Historic documents (e.g. charters, registers, estate papers).

b) The significance of any remains in their context both regionally and nationally and in light of the findings of the desk based study.

3.5 In assessing the value of archaeological assets, and the potential impacts upon them by the proposed development, the terms and guidance used in the Design Manual for Roads and Bridges, Volume 11, Section 3 (Highways England 2007) has been utilised. Values are given as:

- Very High (World Heritage Sites and other sites of international importance);
- High (Scheduled Monuments, undesignated assets of schedulable quality, assets of National importance that can contribute significantly to acknowledged national research objectives);
- Medium (Designated or undesignated assets of Regional importance that contribute to regional research objectives);
- Low (assets of local importance, assets compromised by poor preservation or poor survival of contextual associations);
- Negligible (assets with little or no surviving archaeological interest);
- Unknown (the importance of the resource has not been ascertained).

The magnitude of the potential impact on the archaeological assets (which can be either positive or negative), is given as:

- Major (change to most or all key archaeological materials, such that the resource is totally altered; comprehensive changes to setting);
- Moderate (changes to many key archaeological materials, such that the resource is clearly modified; considerable changes to setting that affect the character of the asset);
- Minor (changes to key archaeological materials, such that the asset is slightly altered; slight changes to setting);
- Negligible (very minor changes to archaeological materials, or setting);
- No Change

3.6 This work conforms to the Standard and Guidance for Archaeological Desk-Based Assessment, as produced by the Chartered Institute for Archaeologists (CIfA 2014).

4 Archaeological and Historical Background

4.1 *Previous Archaeological Studies*

4.1.1 Two previous archaeological investigations are recorded by the regional HER within the study area. The main investigation was an aerial mapping project, examining aerial photographs across the area and recording potential archaeological sites (Dutton 1996). The project examined Ordnance Survey vertical aerial photographs obtained in the 1980s, supplemented by images from the RCAHMW, which encompassed the Moelfre area, although the new sites identified lay largely to the south of the proposed development site.

- 4.1.2 The other recorded investigation was a site visit undertaken to PRN 7491. However, this particular site does not appear to lie within the study area.
- 4.1.3 Parts of the study area do however include sites that have been included in numerous regional studies. These include studies of Prehistoric Hut Groups (Smith 1994), Prehistoric Funerary and Ritual Sites (Smith 2001, Smith & Steele 2005) and Medieval and Post-Medieval Agricultural Features (Kenney 2014). These reports have been consulted as general background detail for the area.
- 4.1.4 No previous archaeological assessments or investigations have been undertaken on the site of the proposed development.

4.2 *The Historic Landscape (Figure 4)*

- 4.2.1 The proposed development site lies within the Ardudwy Landscape of Outstanding Historic Interest HLW (Gw) 2, which is listed in the Register of Landscapes of Outstanding Historic Interest, published by Cadw, CCW & ICOMOS in 1998. This landscape has been subdivided into a series of Historic Landscape Character Areas (HLCAs). The proposed development spans two of these areas, namely HLCA 16 Upper Mountain Slopes Moelfre and Mynydd Llanbedr (PRN 18249) and HLCA 17 Cwm Nantcol (PRN 18250).
- 4.2.2 The weir and the majority of the pipeline route lies within HLCA 16. This is described as a large area of mountainous upland, based on the areas of Moelfre and Mynydd Llanbedr (to the north). Although now largely devoid of settlement, upland survey work has identified a large number of archaeological features indicating some sort of occupation and exploitation of these remote areas over the last three of four millennia. Key historic landscape characteristics include relict stone-built archaeological remains and drystone field walls. These stone walls, varied in period and type, and often slight in nature, are the main characteristic. Survey work has however also identified features such as prehistoric cairns, standing stones, hut circles and enclosures, along with long huts, clearance cairns, building foundations, sheepfolds, mining remains and peat cuttings, amongst others.
- 4.2.3 The pipeline route from close to the road northwards, including the location of the turbine house, lies within HLCA 17. This encompasses one of two river valleys that cut from the west into the Ardudwy uplands. It is centred on the Afon Cwmnantcol, which flows along a narrow, flat-bottomed valley with steep, rocky sides. Prehistoric sites are rare in the valley, which is dominated archaeologically by sub-medieval and post-medieval farmsteads and enclosed land. Curvilinear field boundaries appear to indicate areas of 16th century encroachment, and the sub-medieval house of Maesygarneidd lies at the end of the valley. On the south side Twllnant and Hendre Waelod represent large 18th or 19th century farms (although Hendre Waelod also appears to have its origins in the 16th century). The farmhouses in this area are generally impressive and substantial stone-built structures, surrounded by enclosed farmland. The area is described as largely untouched by the 20th century.
- 4.2.4 The proposed development site does not lie within any Conservation Areas, nor do any lie within a 1km radius of the site.
- 4.2.5 The site does not lie within any registered Historic Parks & Gardens, nor do any lie within the search area around the site.

4.3 *Scheduled Ancient Monuments (Figure 4)*

- 4.3.1 Scheduled Ancient Monuments are sites considered to be of national importance and have statutory protection under the Ancient Monuments and Archaeological Areas Act 1979. No Scheduled Ancient Monument lie within the boundary of the proposed development area.
- 4.3.2 No Scheduled Ancient Monument lies within the applied search area. The closest Scheduled Ancient Monuments include a Hut Circle Settlement East of Caer-Cynog (ME180) 1.7km to the north, a Settlement and Field System at Bron y Foel Uchaf (ME162) 2km to the west, and a Hut Group and Enclosures on the SW Slope of Moelfre 1.7km to the southwest.

4.4 *Listed Buildings (Figure 4)*

- 4.4.1 No listed buildings lie within the boundary of the proposed development area.
- 4.4.2 No listed building lies within the applied search area. The closest listed buildings include a grade II listed field barn at Pen-isa'r cwm (LB 82000) 1.3km down the valley to the west, and the grade II listed field cow house (LB 81999) and farm complex at Maes-y-garnedd (LBs 4768, 81990, 81995 & 82011) 1.5km up the valley to the northeast.

4.5 *Known Archaeological Remains and Historical Development (Figure 5; Appendix I)*

- 4.5.1 There are 21 sites listed on the HER within 1km of the proposed development site, none of which lie within the proposed development area. The closest recorded sites being two Manganese Mines (PRNs 20618 & 21855) that lie 200m to 300m to the west of the development. The full catalogue provided by Gwynedd Archaeological Trust for sites recorded within 1km is included to the rear of this report (Appendix I).
- 4.5.2 There are also a number of sites listed on the National Monuments Record (NMR) maintained by the Royal Commission of Ancient and Historical Monuments Wales (RCAHMW) within the same search area. None of these sites lie within the proposed development area. Many of these NMR sites are duplicated on the HER records, but eight additional sites are noted, recording upland features to the south, along with additional post-medieval mining remains and buildings.
- 4.5.3 No records of artefacts or coins are recorded within the Portable Antiquities Scheme database (www.finds.org.uk) within the proposed development area or within the wider search area.
- 4.5.4 The recorded archaeological sites are briefly described below, according to period, where they are incorporated into a summary of the historical development of the area.

Prehistoric: Palaeolithic (c.450,000 – 10,000 BC), Mesolithic (c.10,000 – 4400 BC), Neolithic (4400 BC – 2300 BC), Bronze Age (2300 BC – 700 BC) & Iron Age (700 BC – AD 43)

- 4.5.5 Within the wider landscape a number of features indicate the upland areas were settled and exploited during the Prehistoric periods. Such features include hut circles and settlement sites, funerary and ritual standing stones and burial cairns, and other features including burnt mounds, cairns and earthworks. Largely described as generally prehistoric in date, many would appear to characteristic of Bronze Age activity, with areas of settlement also dating to the later Iron Age period. These sites are largely clustered on the uplands of Moelfre and within the Ysgethin valley to the south, and further down the Cwm Nantcol valley to the west, with later Iron Age settlement in particular on the southern slopes of Moelfre. Many of these sites have been identified through the use of aerial photography (Dutton 1996).
- 4.5.6 There are some sites within the study area that date to this period, although they are few in number. PRN 2918 represents a large stone cairn on the summit of Moelfre. A number of prehistoric sites are then spread across the uplands to the south that includes a small platform, possibly representing a grave site (PRN 9936). A possible stone setting PRN 3890 to the northeast is thought more likely to represent a natural feature. These prehistoric sites are largely restricted to the uplands within the study area, although an incised stone PRN 924 is said to have been found ¼ mile to the south-southeast of Hendre Waelod within the valley.
- 4.5.7 Based on the number and nature of prehistoric sites within the study area itself there would appear to be a relatively low potential for prehistoric archaeological sites, however given the larger numbers that have become apparent though more detailed surveys in upland areas surrounding the study area the potential is probably better represented as low to moderate.

Roman (AD 43 – c. AD 410)

- 4.5.8 The later Iron Age settlement that has been recorded on the southern slopes of Moelfre is considered likely to have continued into the Roman period (Smith 1994). This would also appear to be the general impression of many of the Iron Age sites in the regions as direct Roman influence appears to have been limited.
- 4.5.9 There is little indication of Roman-period activity in the study area and overall the potential for Roman archaeological remains within the proposed development area is considered to be very low.

Early Medieval (c. AD 410 – AD 1086) & Medieval (1086 – 1536)

- 4.5.10 During the post-Roman, early-medieval period this area lay within the early medieval kingdom of Gwynedd, with its semi-legendary origin by Cunedda in the 5th century. Merionydd may have been a kingdom by the 6th century, associated with Gwynedd (Davies 1993). There is little recorded history or evidence of activity within the area during this period. Potential early-medieval settlement sites are recorded at Llanenddwyn to the southwest, and Llandanwg to the west, both of which lie on the coastal lowlands. Further inland some isolated and widely dispersed buildings are

recorded of potential early medieval date, but there are currently no records of early medieval sites within the study area.

- 4.5.11 During the medieval period there is increasing evidence of the exploitation of the more remote rural locations. Clusters of long hut remains are evident, particularly on the western slopes of Moelfre, and to the east of Foel Ddu to the north. The RCAHMW record some possible medieval long hut sites within the study area to the southeast of the proposed development. On the eastern summit of Moelfre, and high ground around 700m to the southeast of the proposed weir location, lie possible enclosures and settlement sites (NPRNs 89018, 89071 & 89819), including a long hut site (NPRN 89016). The numerous sheepfolds that lie throughout this landscape are difficult to date closely, but it is possible some may have their origins within the medieval period, and PRNs 2935 & 2936 are labelled in the HER as medieval in date.
- 4.5.12 Generally there would appear to be a very low potential for early medieval archaeological remains, however the spread of medieval settlement throughout the area would suggest a greater potential for medieval archaeological remains within the proposed development area.

Post-Medieval (1536 – 1899) & Modern (1900 – present day)

- 4.5.13 The majority of the recorded archaeological sites within the study area date to the post-medieval period. An expansion of rural settlement into these remoter upland areas seen during the medieval period appears to have been consolidated and expanded during the early post-medieval period along the Cwm Nantcol Valley. Some enclosures within the more fertile lower valley slopes are thought to be evidence of 16th century enclosure (HLCA description-Area 17), and the farmstead of Hendre Waelod itself (PRN 12386) appears to have been established by the end of the 16th century according to a date of 1593 inscribed on an associated slab.
- 4.5.14 Agricultural enclosure and settlement has continued to expand until the 18th or early 19th century, and by the mid-19th century much of the settlement and enclosure pattern visible today had been established. Further farmsteads, including a chapel (NPRN 8466) were built within the lower valley, Hendre Waelod itself being rebuilt in the early 19th century.
- 4.5.15 Dispersed barns are noted on the lower slopes, with a large number of sheepfolds and shelters established on the more exposed higher slopes and uplands. Generally cattle would graze the lower slopes, and the barns were presumably used in association with this. The valley slopes and upland areas would largely be grazed by sheep, certainly from the 18th century onward. Large numbers of cattle and sheep are noted on the slopes of Snowdon by the late 18th century (Kenney 2014). Three sheepfolds (PRNs 6403, 18991 & 18992) are recorded on the HER on the summit of Moelfre to the south of the proposed development, although a larger number clearly exist throughout the area, including in closer proximity to the proposed development. The uplands of northwest Wales were well known for the hafod/hendre system of transhumance. Livestock would be taken up into the hills in the spring to graze, to leave the more fertile lowlands chance to grow crops undisturbed. Some people would stay with the livestock to tend to them, staying in temporary (seasonal) upland accommodation. This system started in the medieval period, but it was still

recorded in the Snowdonia area as late as the 18th century. Some of these seasonal **dwelling**s may later have been converted as more temporary shepherd's shelters. The sheepfolds that dot the landscape would have had a number of functions. Types of sheepfolds have also been listed (Johnson 1998) as multicellular sorting folds, washing folds, drying folds, cynefin folds (where new sheep were kept and looked after to introduce them to their new upland homes), lamb pens, milking pens and fox traps. In Merionethshire sheep would spend much of lives on the mountains, and these sheepfolds would have provided shelter during the potentially harsh weather. Gathering and sorting folds tended to be larger and more complex, with some of the other types being very simple and often extremely small. Flocks were gathered at specific times. The first gathering was in late March, when ewes would be gathered, checked, sorted and brought down to lowland pastures to lamb. This would also often require small folds to be built on the lower fields to keep a close eye on the lambing. Shearing would often take place on the uplands, prior to which the sheep would be washed, so many of these folds were located close to water. Sheep would also be gathered to check for diseases, often in subdivided folds. In some areas sheepcotes, roofed structures, were built for the sheep to be kept in during the winter, but this practice was not common in northwest Wales, but walled enclosures on dry land were built as a simple form of shelter. The reuse of earlier sites as later sheepfolds is not uncommon, and many sheepfolds may originally have been dwellings. This has led to the fossilisation in some parts of medieval, and occasionally even prehistoric field boundaries in sheepfolds.

- 4.5.16 During the 19th century the valley also saw a spread of mining activity, extracting manganese silicate. Manganese was first worked in Wales in 1835 (Down 1980 & Linton 2018), and these first workings, of a very thin manganese bed, occurred in the Cwm Nantcol valley. The initial operations appear largely to have been open-cast or near surface extractions, extracting oxidised ore to be sent for making bleaching powder. The open-casting could be fairly extensive, chasing the seams, but these early mines soon closed down (by 1840). Interest revived however in the mid-1880s when it was discovered that manganese could improve the properties of steel. During this period adits began to be driven into former open-cast areas. However, the poor quality and general inaccessibility of local manganese ores (coupled with cheaper imports) meant this later boom was also soon over, with mines closing during the 1890s. There was a brief revival of manganese mining in North Wales around the two World Wars, but it is not clear if this affected activity in the Cwm Nantcol valley. Some, such as Cilcychwyn Mine to the north (PRN 21755, a continuation of Foel Wen mine PRN 20490), in operation from 1889 to 1892, may have been accessed by lightly-laid railways with ancillary features including a smithy in the vicinity. Other features could include waste tips, retaining walls, dressing and storage areas. Two manganese mines (Hendre PRN 20618 & Moelfre 21855) are recorded closer to the proposed development area. Hendre operated between 1889 and 1904, with Moelfre in operation from 1886 through until 1913. Both changing ownership on a number of occasions.
- 4.5.17 An 18th century stone bridge (PRN 11734) to the northeast indicates that the road crossing the line of the proposed development is at least 18th century in origin, and is likely to be an older route. A nearby peat stand (PRN 4190) highlights that peat extraction was also underway during this period.

- 4.5.18 Although no specific sites have previously been recorded within the proposed development area, given the nature of agricultural and industrial development in the area during the post-medieval period there is a moderate potential that archaeological features relating to such activity may exist within this area.

5 Map Regression (Figures 6 & 7)

5.1 *Ordnance Survey original surveyors drawings, Harlech 1819*

- 5.1.1 One of the earliest maps to depict the site in any detail is the early 19th century Ordnance Survey drawings. This area was mapped in 1819 by Robert Dawson, however it reveals little of interest within the proposed development area. The general hillside of Moelfre is shown, along with the stream, crossed by the road that gives access to Hendre Waelod and Glan Rhaiadr to the west, and 'Cilachwŷn' and Y Graig isaf to the east. No further specific features are marked within or around the proposed development area.

5.2 *Tithe map Llanenddwyn Parish, 1841 (Figure 6)*

- 5.2.1 The tithe map records the site in more detail, showing for the first time a representative depiction of the field boundaries and buildings in the local area. The stream, alongside which the proposed hydro scheme runs, is not however depicted on the map. Both stream and proposed development run through a large straight-sided enclosure described in the accompanying tithe apportionments as an **'allotment' of pasture, 55 acres in total, belonging to Glan Rhaiadr farm. At this time** the land was owned by The Honourable Edward Lloyd-Mostyn, although it was farmed by Griffiths Williams. No specific features of interest are indicated within this field.
- 5.2.2 To the north the proposed development passes into smaller field enclosures, with most of these field boundaries surviving through to the present day. The pipeline passes through the pasture fields of **Cae Ucha, then Cae'r Lloiau and finally** through the meadow of Cae Erwarth, all under the same ownership and occupation as the allotment to the south. The current road, which was visible on previous maps and therefore presumably in existence at the time of the tithe map, is not marked, but **would run along the northern edge of Cae Ucha. At the northern edge of Cae'r Lloiau** the proposed route passes close to a small structure (subsequently referenced as HW02), which given the name of the field is likely to represent a small outlying cow barn. A second structure (subsequently referenced as HW03) lies a short distance to the north, just beyond the proposed location of the turbine house.

5.3 *Ordnance Survey County Series 1st Edition 1889, 1:2500 (Figure 7)*

- 5.3.1 The detailed Ordnance Survey map of the later 19th century shows a landscape that is remarkable similar to the present day. The southern end of the pipeline lies in a landscape of large, straight-sided enclosures of rough, rocky ground, dotted with sheepfolds. A footpath runs up the eastern side of the Hendre Waelod stream, still depicted on current maps. The route then passes close to a sheepfold (subsequently referenced as HW01) alongside the stream, again still marked on current mapping.

5.3.2 Towards the northern end the field enclosures become smaller, although the ground within is still marked as relatively rough ground. The road is shown as an open-sided trackway. The possible cow barn (HW02) alongside the pipeline route appears to have been abandoned by this time, but the building to the north (HW03) is still in use. This latter building lies alongside a path or trackway that runs east-west along the base of the valley between Glan-rhaiadr and Cil-cychwyn farms. Further afield the landscape is predominantly an agricultural one, with a settlement pattern of dispersed farmsteads, and a large number of sheepfolds dotted regularly throughout the landscape.

5.4 *Ordnance Survey County Series 2nd Edition 1901, 1:2500*

5.4.1 No discernible change is noted on this map.

5.5 *Ordnance Survey County Series 1953-4, 1:10,560*

5.5.1 No discernible change is noted on this map

5.6 *Ordnance Survey Plan 1974-5, 1:2500*

5.6.1 No discernible change is noted on this map, with the exception of the building to the north (HW03) of the proposed turbine house location. This building appears to have been abandoned, and the footpath or trackway that ran alongside it is no longer depicted.

6 Aerial Photographs and Lidar (Figures 8 & 9)

6.1 *Aerial Photos*

6.1.1 Aerial photographs have formed an important element of the study of archaeological features in the local area (eg Dutton 1996). Ordnance Survey vertical aerial photographs up until the 1980s have been examined. As part of this study photographs taken by the RAF in the mid-1940s and 1960s have also been examined, along with modern satellite imagery from 2006 to the present day.

6.1.2 It is the modern satellite imagery that has produced the clearest images of the proposed development site (see Figure 8 for example), allowing some new features to be identified, although these feature do not lie within the proposed development area.

6.1.3 To the east of the upper (southern) end of the pipeline route lies a possible series of small stone enclosures (HW04) at SH 6317 2524. There appears to be three enclosures, sub-rectangular and sub-square in layout, and each measuring between 5m to 6m in length, 3m to 5m in width. They would appear to be relatively ephemeral, a lack of shadow suggests they survive at ground level only.

6.1.4 A short distance to the north, again to the east of the pipeline route, lies another stone-walled enclosure (HW05) at SH 6319 2536. This would appear to have possible curvilinear standing walls, and possibly double-celled, and in total measuring around 10m by 4m. These enclosures lie in an area of multiple sheepfolds, and may

therefore be related, although many of the sheepfolds in the immediate vicinity tend to be more rectilinear in layout.

- 6.1.5 A more typical sheepfold is visible (and also marked on mapping) to the northwest on the stream-line (HW01), and the two barn structures (HW02 & HW03) at the northern end of the development area are also clearly visible. Modern satellite imagery indicates the northernmost barn (HW03) is roofed and still in use.
- 6.1.6 No further features of archaeological interest are noted within the proposed development area. Further afield remains of the manganese mines are clearly visible to the west, presumably following a seam up the hillside, and numerous sheepfolds and field walls are also clearly visible in the surrounding landscape.

6.2 Lidar

- 6.2.1 Lidar data at 1m DTM is available for around two-thirds of the site area (Figure 9). The general landform and present enclosure pattern is clearly defined on the Lidar results, including the presence of the barns towards the northern end of the route, but no further features of specific interest are depicted within the proposed development area.
- 6.2.2 Further afield a series of linear marks in a field to the east (SH 6323 2571) do not correspond to known field boundaries, but would suggest deliberate cuttings. Dependent on the ground conditions these may represent drainage features, or possible peat extraction. To the west a curvilinear feature (SH 6282 2570) also does not appear to correspond to known field boundaries, but is likely associated with a sheepfold at its southern end. On the lower-lying ground to the northwest a series of linear features are also shown (SH 6323 2571) that do not appear to correspond to known boundaries. The east – west linear is likely however to represent a former trackway visible on historic mapping, the other features may represent various drainage features. None of these features appear to extend into the proposed development area, but they do indicate that the Lidar data is representing features not immediately apparent from other sources.

7 Site Visit (Photos 1 – 27)

- 7.1 A site visit was undertaken on the 10th January 2017. Conditions were bright and cold, with good visibility. The full extent of the proposed development area was examined, as was the surrounding landscape as far as it was reasonably accessible. All archaeological sites previously identified adjacent to the proposed development site were also visited.
- 7.2 The southern end of the pipeline and location of the weir lies on the northern edge of an area of relatively level land to the north of the summit of Moelfre (Photos 1-4). This is an area of tussocky rough grassland with outcropping rocks and areas of peaty ground. To the west a sheepfold has been built into the corner of the field, which along with the field walls is of dry stone construction and in relatively good condition. This feature lies outside the proposed development area. The field wall passes in a continuous line over the stream, and the proposed development will pass through this field wall.

- 7.3 This relatively level ground continues for a short distance to the north of the field wall, with the stream running along a relatively prominent cutting, the pipeline route lying off to the east. HW04 lies within this relatively level area to the east of the pipeline route, however when examined only natural stone outcrops and scree could be observed (Photos 5-6). There were no indications of built enclosures in this area.
- 7.4 Beyond this the ground begins to slope down to the north. HW05 occupies sloping ground to the east of the pipeline route (Photos 7-8). The tumbled remains of a stone-walled enclosure were visible. The walls were of dry-stone construction, with large boulders used on the lower slopes, and smaller stones used upslope. The walls stood to 0.8m high in places, and formed a sub-rectangular area at the downslope, northern end, with a more irregular enclosure at the northern end. The interior was overgrown, the site had clearly been abandoned for some time, but it had the appearance of a small shelter or shepherds hut, or possibly a very small animal shelter.
- 7.5 Sheepfold (HW01) comprised a square enclosure formed by dry-stone walls of unshaped large local stone (Photos 9-10). A large enclosure lay on the north side, part straddling the stream, with a smaller, better preserved rectangular stone-walled enclosure along its southern edge. The sheepfold appears to have been built to aid in the washing and sorting of the sheep, but has since been abandoned with stretches of the larger northern enclosure wall tumbled.
- 7.6 The pipeline route then continues down the slope to pass through another dry-stone built field boundary wall, supplemented by post-and-wire fencing. To the west the wall is built over the line of the stream, with the adjacent footpath carried across the stream on stone blocks. The stream itself runs through an artificial, stone-lined channel at this point to carry under the wall. Beyond the wall the pipeline route passes through rough vegetation between the stream and a parallel field wall to the east (Photos 11-12).
- 7.7 The route of the pipeline crosses the road, and passes through a part-tumbled dry-stone field boundary wall to the north of barn (HW02). This barn survives as dry-stone construction to gable height, measuring 7m by 4.5m, orientated approximately north-south (Photos 13-19). A small ventilation slot lies high and central in the southern gable wall, with a doorway in the northern gable wall. This doorway has since been blocked with stone, with a smaller sheep opening left at the base. No roof structure survives, the building would appear to represent a small cow barn, later modified for use as a sheepfold. An attached dry-stone wall runs off to the east of the building, with a further dry-stone wall attached to the northern gable, forming a small enclosure area immediately in front of the entrance to the building, before turning to run off to the west. The proposed pipeline runs close to the existing structure, and passes through the existing associated dry-stone field wall to the west. There is however a gap in the wall (a former field gateway) at this point, through which the pipeline may pass.
- 7.8 The proposed turbine house is located to the north, in relative proximity to an extant barn (HW03). This barn lies on the opposite side of the stream, and therefore should not be directly affected. It comprises a slightly larger building measuring 10m by 6m, and up to 4m in height (Photos 19-26). It is of dry-stone construction, but some of the stones have been squared and faced and fit closely together. There is a large

rectangular window opening in the southern gable wall, with a stone lintel. A stone-blocked doorway lies midway along the western wall, with an open doorway centrally placed in the northern gable wall. A roof of corrugated metal sheets sits on a simple A-frame construction of roughly shaped timber. This sits on the side walls, held together with wooden pegs. The roof is partly missing at the northern end. The adjacent stream is traversed by large unworked stone blocks, providing access between the two barns.

- 7.9 The access for the pipeline is along the pipeline corridor and established public footpaths. Towards the northern end of the route new access routes will pass through an existing gateway and cross the largely tumbled remains of a former field boundary adjacent to the stream. To the north a power supply cable to the proposed turbine location will pass through a part-tumbled low dry-stone field wall before crossing the stream.
- 7.10 No new features were identified within the proposed development area, or in the vicinity of the proposed development, that had not previously been identified during associated research and described above.

8 Impact Assessment

8.1 *Assessment of Archaeological Potential and Importance*

- 8.1.1 As highlighted in section 4.5 there is a general low to moderate potential for prehistoric archaeological sites, medieval and post-medieval agricultural features and late post-medieval mining activity to exist within the proposed development area. However, further research as part of this assessment, including a site visit, has identified no such features within the proposed development area itself, and therefore the potential for previously unrecorded sites is considered more likely to be low. Should any remains of Prehistoric activity or, given its rarity and regional representativeness, post-medieval manganese mining, then these remains would likely be considered to be of Medium (Regional) archaeological value. Given the large number of relatively well-preserved medieval and post-medieval agricultural remains in the area, any further remains that may exist within the proposed development area would be considered to be of Low (Local) archaeological value.
- 8.1.2 No previously recorded archaeological sites have been identified within the proposed development area. However, this assessment has identified five sites of archaeological interest that lie in close proximity to, and may therefore be affected by, the proposed development, described below.
- 8.1.3 Towards the southern end lies possible small stone-walled enclosures (HW04). These no longer appear to survive above ground, therefore their function and date remains unclear. This lack of survival would suggest these features can be considered to be of Low (Local) archaeological value.
- 8.1.4 Nearby lie further small stone-walled enclosures (HW05), possibly representing a small shelter, shepherd hut or small animal enclosure. Presumably post-medieval in date, but potentially medieval, as this would also appear significantly different from the typical larger sheepfolds visible across this landscape, therefore this is considered to be of potential Medium (Regional) archaeological value.

- 8.1.5 A dry-stone built post-medieval sheepfold (HW01) lies on the stream line adjacent to the proposed development area. This is representative of a large number of sheepfolds in the area, and is therefore considered to be of Low (Local) archaeological value.
- 8.1.6 Towards the northern end of the proposed development area lies a small post-medieval, part-ruinous, cow barn (HW02). Similar, albeit better preserved examples of such cow barns have been listed and protected within the Cwm Nantcol valley (eg LB 82000 & 81999), therefore this less well-preserved example is considered to be of Low (Local) archaeological value.
- 8.1.7 To the north lies a slightly larger, and potentially slighter later, barn (HW03), which is still in use. This is also considered to be of Low (Local) archaeological value.
- 8.1.8 The proposed development, which includes the pipeline route and access trackways, traverses a number of extant dry-stone wall field boundaries. These field boundaries are an important feature of the local landscape, and are considered to be of Low (Local) archaeological value.

8.2 Previous Impacts

- 8.2.1 The proposed development area largely crosses enclosed and semi-enclosed rough pasture. There is no indication that these areas have been intensively managed or developed, and appear relatively unchanged since recorded on 19th century map sources. Previous impacts would therefore appear to be minimal, suggesting good preservation of the potential archaeological resource.

8.3 Potential Impacts of the Proposed Development

- 8.3.1 The proposed development would abstract water from the Hendre Waelod stream via a small weir with intake chamber and elver pass facility within the stream (at SH 63128 25170), a buried 160mm diameter pipe would then carry the water for approximately 900m down the hillside to a turbine house to the north (at SH 63038 25982), with discharge pipe feeding back into the stream. A supply cable would connect the turbine house to an existing overhead powerline a short distance to the south. Access for the development would be along existing footpaths and the development corridor, with a new connecting route from the road to the pipeline corridor towards the northern end. Any of the following activities associated with the proposed development could therefore expose, damage or destroy archaeological remains:

- Enabling works, such as the construction of access roads, parking areas, storage areas, and associated services;
- Landscaping and terracing works, including the removal of field boundaries (or sections of);
- Surface stripping and levelling;
- Pipeline installation excavations;
- Foundation excavations for the turbine house;
- Excavations for grid connection and power supply cables;
- Any other ground disturbing works

- 8.3.2 The proposed development also has the potential to generate indirect effects on archaeological sites, such as altering the visual setting or tranquillity of the sites and landscapes.

Historic Landscapes

- 8.3.3 The site lies within the Ardudwy Landscape of Outstanding Historic Interest HLW (Gw) 2, and crosses two Historic Landscape Character Areas (HLCAs) associated with the registered Landscape.
- 8.3.4 The weir and the majority of the pipeline route passes through HLCA 16 Upper mountain slopes Moelfre and Mynydd Llanbedr (PRN 18249). The proposed development will be largely not visible and of such a scale as to have No Impact upon this HLCA.
- 8.3.5 The northern end of the pipeline and turbine house lies within HLCA 17 Cwm Nantcol (PRN 18250). Archaeologically this area is dominated by its post-medieval farmsteads and field enclosures. The area is also described as largely untouched by the 20th (and presumably 21st) century. No characteristic elements will be removed, the presence of the turbine house will introduce a modern element into the landscape. The building is however small, and clad in local stone to blend into adjacent structures and the local character. Given the scale of the development therefore it is considered to have a Minor impact on HLCA.
- 8.3.6 No Conservation Area or Historic Park & Garden will be directly or indirectly affected by the proposed development.

Scheduled Ancient Monuments

- 8.3.7 No Scheduled Ancient Monument (SAM) will be directly or indirectly affected by the proposed development.

Listed Buildings

- 8.3.8 No listed buildings will be directly or indirectly affected by the proposed development.

Non-designated Archaeological Sites

- 8.3.9 As discussed in section 8.1, there are five specific sites of potential archaeological interest identified in proximity to the proposed development area, as well as traditional field boundaries within the proposed development area, that may be impacted upon by the proposed development.
- 8.3.10 A sheepfold HW01 has been identified adjacent to the proposed development area. The full extent of the sheepfold appears to be represented above ground, and this lies outside the proposed development boundaries and should not therefore be directly impacted upon. The pipeline will be buried and therefore not visible, and will not prevent access to this feature. However, proximity (within 10m) to the

development suggests there may be a potential Minor impact on this site through groundwork disturbances and the general passage of machinery and equipment.

- 8.3.11 At the northern end of the route lies a former cow barn HW02. The proposed development lies immediately adjacent to the structure, and although it should not be removed, there is the potential for disturbance through vehicle movements and groundworks in its immediate vicinity. The introduction of the turbine house will also affect the immediate setting of this feature, by introducing a new built element between it and a nearby traditional barn (HW03). There is therefore considered to be a potential Minor to Moderate impact on this site.
- 8.3.12 As mentioned, to the north lies a further barn HW03. This building, which is still in use, lies beyond the proposed development area, and therefore should not be directly affected, however proposed groundworks associated with the construction of the turbine house and outfall have the potential to cause disturbance to this building. As with barn HW02, the introduction of new building adjacent to this site will adversely affect the setting of this feature. There is therefore considered to be a potential Minor to Moderate impact on this site.
- 8.3.13 A possible enclosure HW04 has been identified close to the southern end of the development area. However, there are few above ground remains, and the site lies outside the limit of any groundworks, including access arrangements. There is therefore considered to be No Impact on this site.
- 8.3.14 A further enclosure HW05 has been identified to the north, this time with upstanding remains. This site lies outside the limit of any groundworks, including access arrangements. There is therefore considered to be No Impact on this site.
- 8.3.15 The pipeline route, and access arrangements, pass through a number of traditional dry-stone wall field boundaries. Although area of walling may temporarily be removed, these will be appropriately reinstated after groundworks are complete. There is therefore considered to be a Minor impact upon them.
- 8.3.16 A general potential for Prehistoric remains, medieval and post-medieval agricultural remains, and late post-medieval mining remains has been highlighted, but after further assessment such potential appears very limited within the proposed development area. Therefore the impact on such potential sites is considered to be Negligible.

9 Conclusions

9.1 *Impacts on Designated Assets*

- 9.1.1 The site lies within the Arduwy Landscape of Outstanding Historic Interest HLW (Gw) 2, and crosses two Historic Landscape Character Areas (HLCAs) associated with the registered Landscape, namely HLCA 16 Upper mountain slopes Moelfre and Mynydd Llanbedr (PRN 18249) and HLCA 17 Cwm Nantcol (PRN 18250). There will be no impact on HLCA 16, the introduction of new Turbine House and associated development works is considered to have a Minor impact on HLCA 17.
- 9.1.2 No Conservation Areas or Historic Park & Garden will be directly or indirectly affected by the proposed development.
- 9.1.3 No Scheduled Ancient Monument will be directly or indirectly affected by the proposed development.
- 9.1.4 No listed building will be directly or indirectly affected by the proposed development.

9.2 *Impacts on Non-designated Assets*

- 9.2.1 No previously recorded archaeological sites lie within the proposed development area, but five new sites have been identified during the course of the assessment. Two of which, both stone-walled enclosures of uncertain date (HW04 and HW05), will not be directly or indirectly affected by the proposed development.
- 9.2.2 The remaining sites include a post-medieval sheepfold (HW01), considered to be of Low (Local) archaeological value. This site should not be directly or indirectly affected, but proximity to the proposed development indicates a potential Minor impact.
- 9.2.3 Towards the northern end of the proposed development lie two barn sites, one partly ruinous but standing to gable height (HW02) and one still partly-roofed (HW03). These sites are considered to be of Low (Local) archaeological value. The proposed development passes in close proximity to these sites, highlighting a potential direct impact upon the remains, and the introduction of a new Turbine House between the barns will also have an indirect impact upon their setting. There is therefore considered to be a Minor to Moderate impact upon both these sites.
- 9.2.4 The pipeline route passes through several extant field boundary walls, considered to be of Low (Local) archaeological value. Any removed sections will be reinstated, therefore the proposed development is considered to have a Minor impact upon them.
- 9.2.5 A general potential for Prehistoric remains, Medieval and post-medieval agricultural remains and late post-medieval mining remains is highlighted. Potential Prehistoric remains and late post-medieval mining remains are considered to be of Medium (Regional) archaeological value, with medieval and post-medieval agricultural remains considered to be of Low (Local) archaeological value. Further assessment of the proposed development site however reduces this potential to low, therefore the potential impact of the proposed development is considered to be Negligible.

Table 1: Sites of archaeological interest affected by the proposed development

Reference	Site Name	Site Type	Value	Magnitude of Impact
HLCA 17	Cwm Nantcol	Registered Historic Landscape Character Area	High	Minor
HW01	Hendre-Waelod Stream	Sheepfold	Low	Minor
HW02	Hendre-Waelod Stream	Cow Barn	Low	Minor to Moderate
HW03	Hendre-Waelod Stream	Barn	Low	Minor to Moderate
Field Boundaries	-	Traditional dry-stone field boundary walls	Low	Minor
General archaeological potential	-	Prehistoric activity, Medieval/post-medieval agricultural activity, late post-medieval mining	Low	Negligible

9.3 Mitigation

- 9.3.1 In order to ensure that identified archaeological sites towards the southern end of the proposed development, namely HW04 and HW05, remain unaffected by the proposed development the groundwork contractors should be made aware of all archaeological assets in the vicinity. Should any access arrangements utilise public footpaths in this area it may be necessary to fence off or demarcate these sites to ensure they remain undisturbed. Similarly it may be necessary to fence off remains of the sheepfold HW01 to ensure that groundworks or any potential associated activity within the vicinity does not damage or otherwise adversely affect remains of this feature.
- 9.3.2 At the northern end of the scheme care must be taken to ensure remains of the two barn structures, HW02 and HW03, are unaffected by development works. It may be necessary to undertake an archaeological watching brief during construction works in this area to ensure that these structures, and any associated features revealed through groundworks, are adequately recorded and protected during the development.
- 9.3.3 Subsequent to initial consultations between the developer and the local planning authority the proposed turbine house has been designed, in terms of scale, external finish and noise pollution, to reduce its indirect impact on the setting of the existing barn structures and the surrounding landscape. Therefore no further mitigation measures are proposed to reduce the impact of the proposed turbine house.

- 9.3.4 Care must also be taken to ensure that traditional field boundaries, in the form of dry-stone walling, are reinstated in a manner appropriate to the traditional character of these boundaries.

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General

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- Smith, G & Steele, N 2005 *Pan-Wales Prehistoric Funerary and Ritual Sites Survey: Trial data synthesis* Gwynedd Archaeological Trust Report No. 579

Online resources

- British Geological Survey 2018 *Geology of Britain Viewer* - (accessed 08/01/18)
- Linton, D - <http://hendrecored.org.uk/Merioneth-Mangense> (accessed 12/01/18)

Maps

- Anon 1841 *Llanenddwyn Parish Tithe Map & Apportionments*
- Dawson, R 1819 *Ordnance Survey Original Surveyors Drawings: Harlech*
- Ordnance Survey 1889 County Series Map First Edition 1:2500
- Ordnance Survey 1901 County Series Map Second Edition 1:2500
- Ordnance Survey 1953-4 County Series Map 1:10560
- Ordnance Survey 1974-5 Plan 1:2500

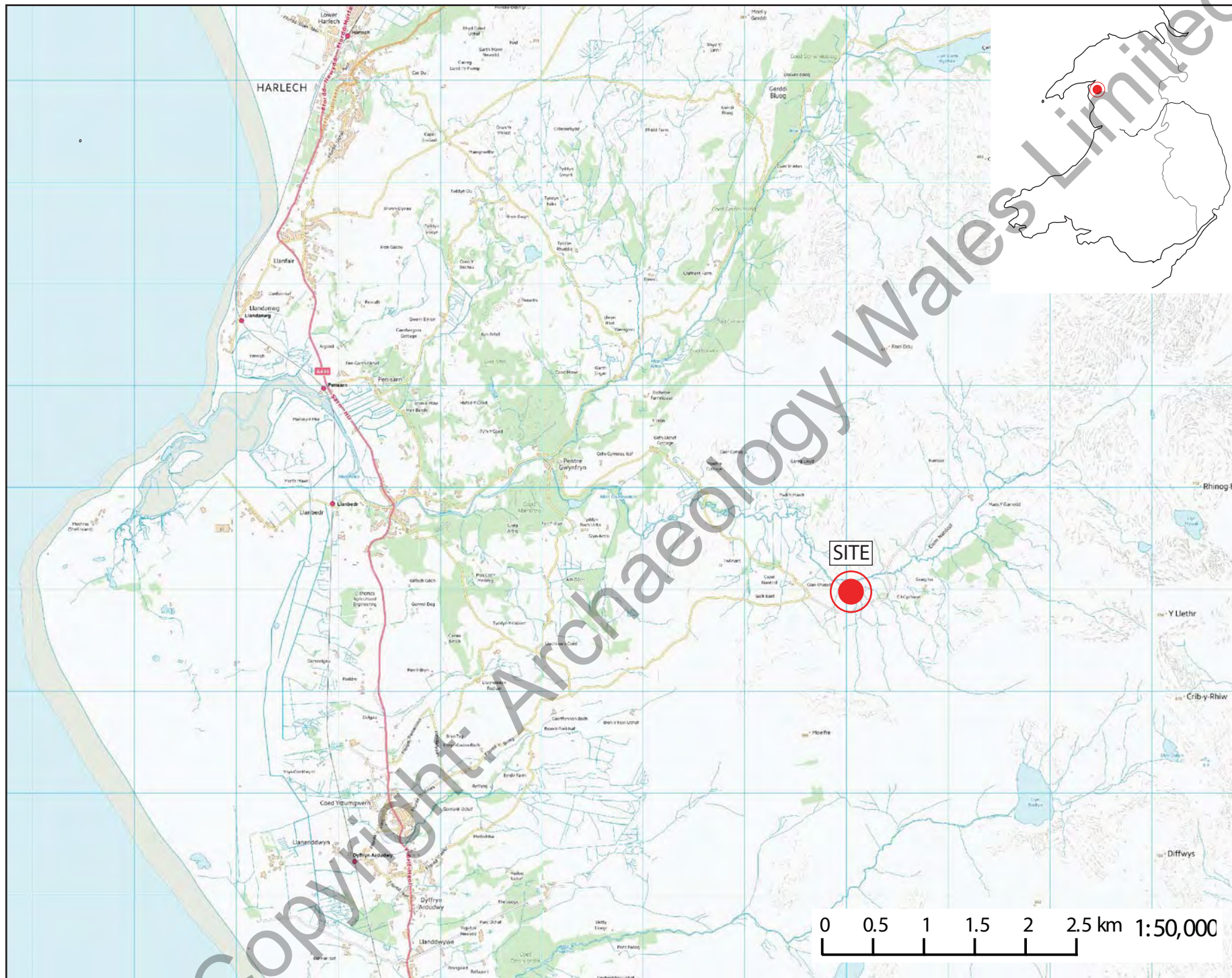


Figure 1: Location map,
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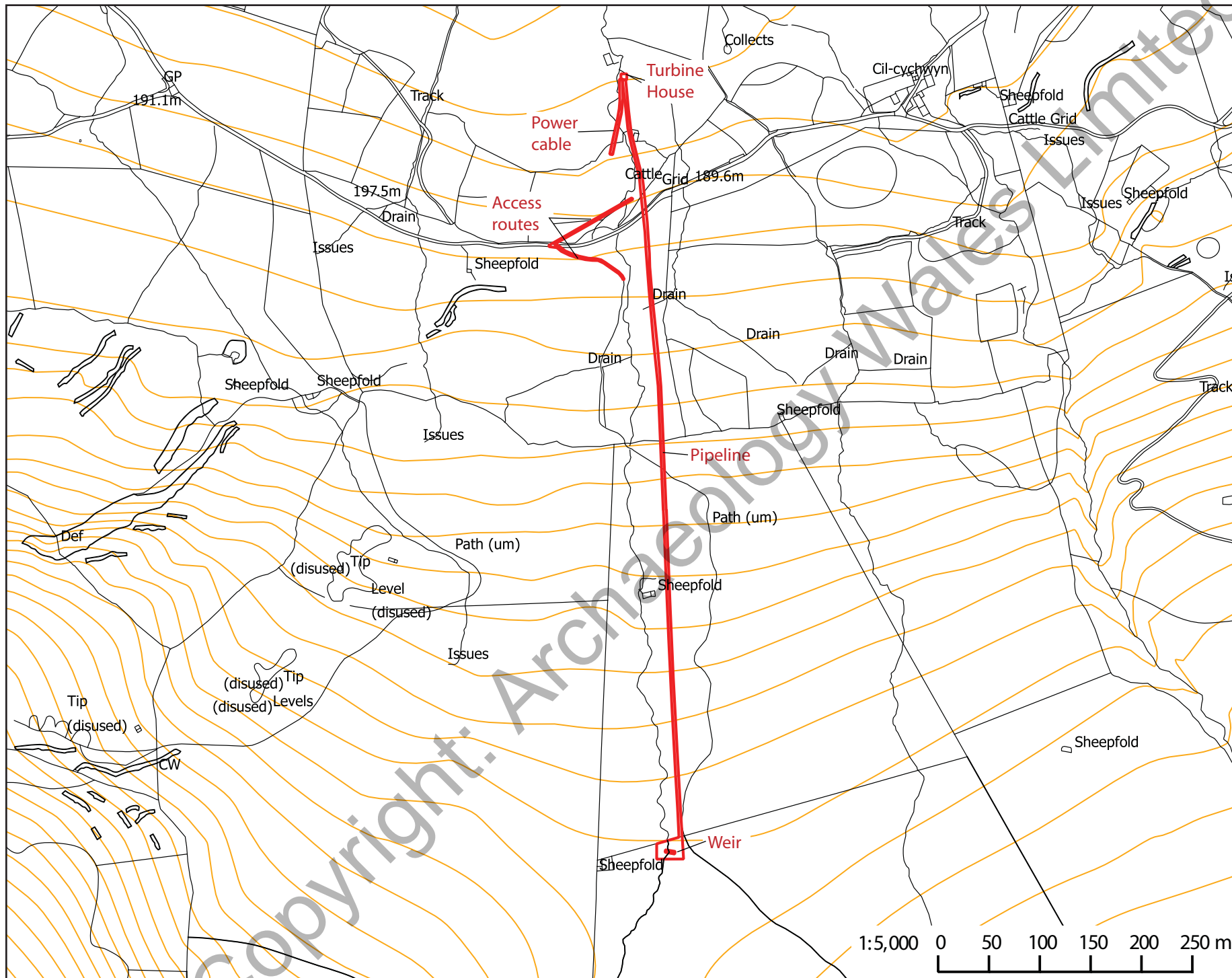
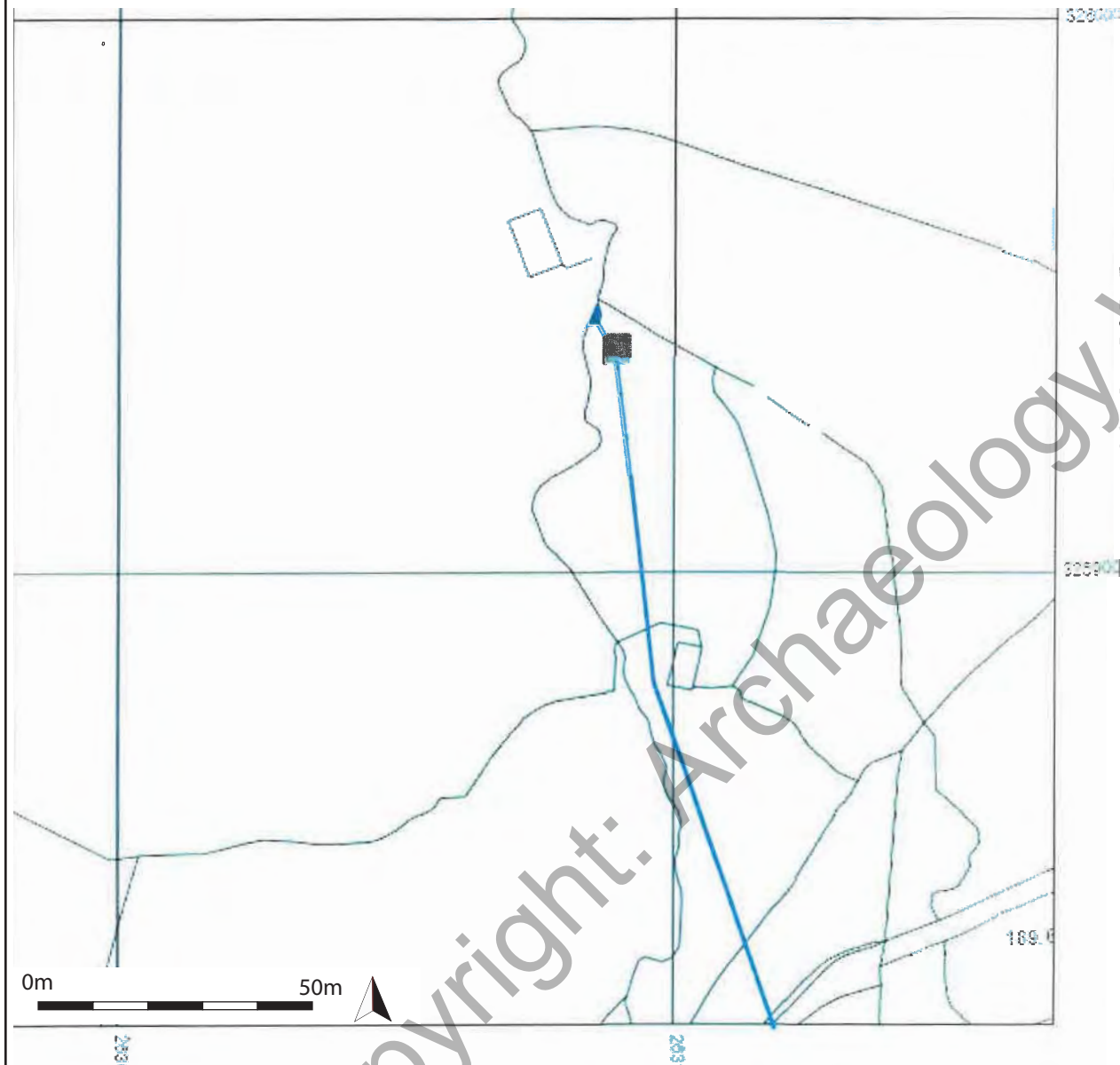


Figure 2: Location map.
Site outlined in red.
1:5000 @ A4

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Notes

Preliminary drawing for consenting purposes only not for construction

Construction :
Inner building skin - concrete blocks & clad outside with local stone.
20° pitched insulated steel box profile roof (100mm) RAL colour

Doors to be noise attenuated

Ventilation louvres to be fitted with baffle boxes for noise attenuation

Floor level - 171 m AOD

Ground to be raised and landscaped to cover thrust block & pipe entry to same

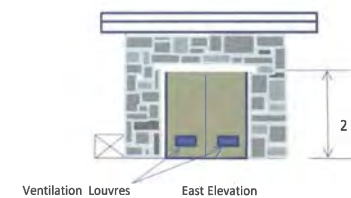
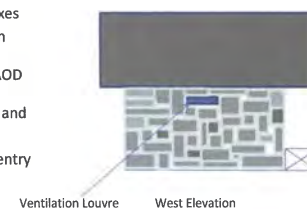
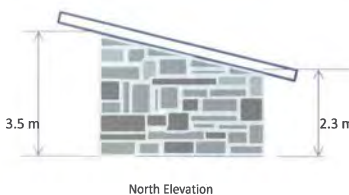
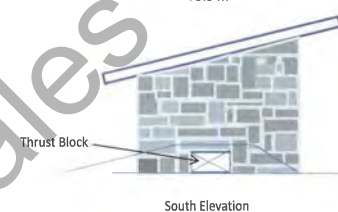
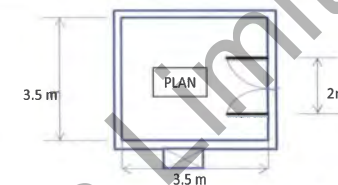
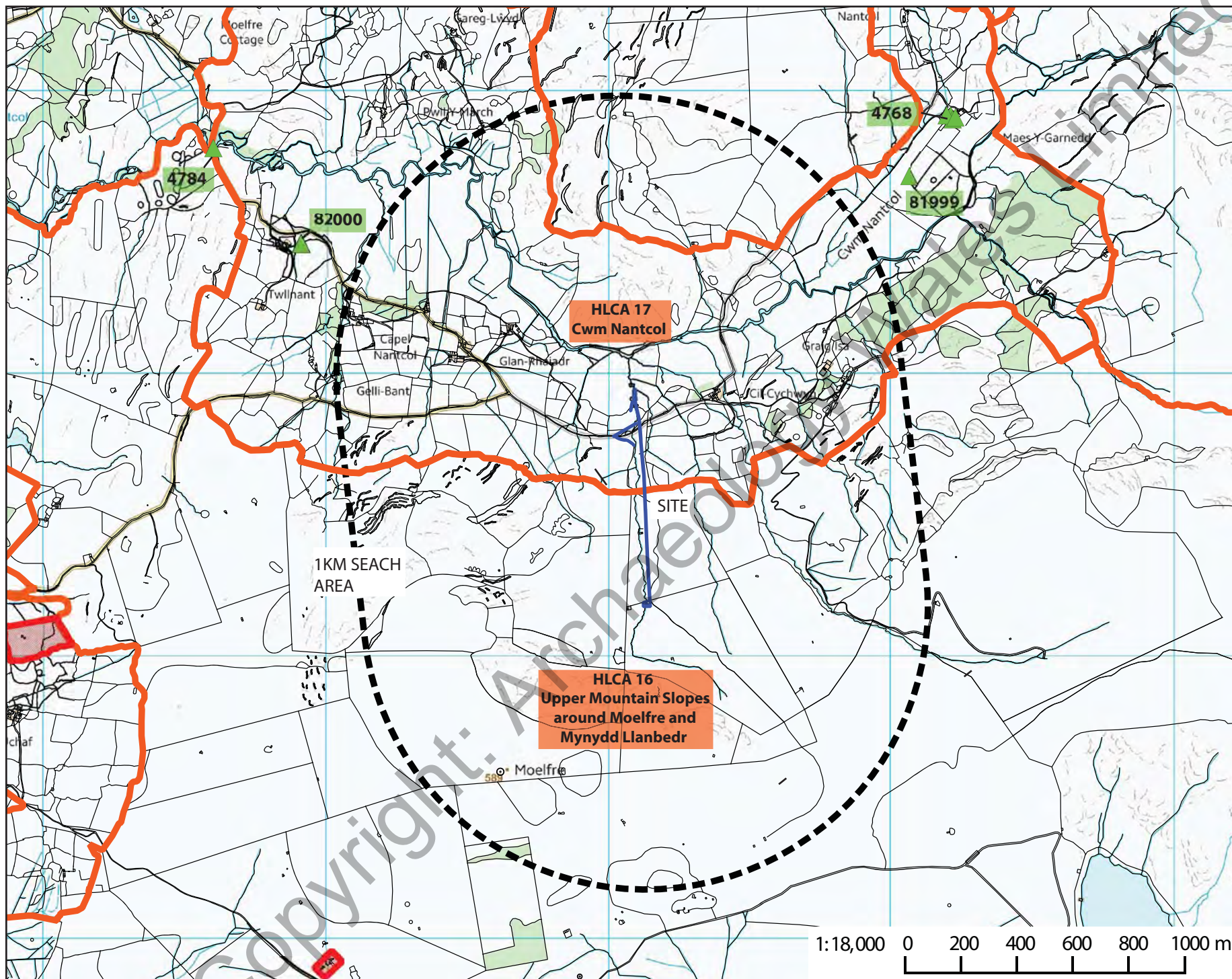


Figure 3: Illustrative proposed development plan of the northern end, showing the detail of the turbine house. Original plan provided by the client, drawn by TJ 17/06/17 (plan) and 20/06/17 (drawings).

Plan 1:1250 @ A4
Turbine House drawings not reproduced to scale.

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Historic Landscape Character Area

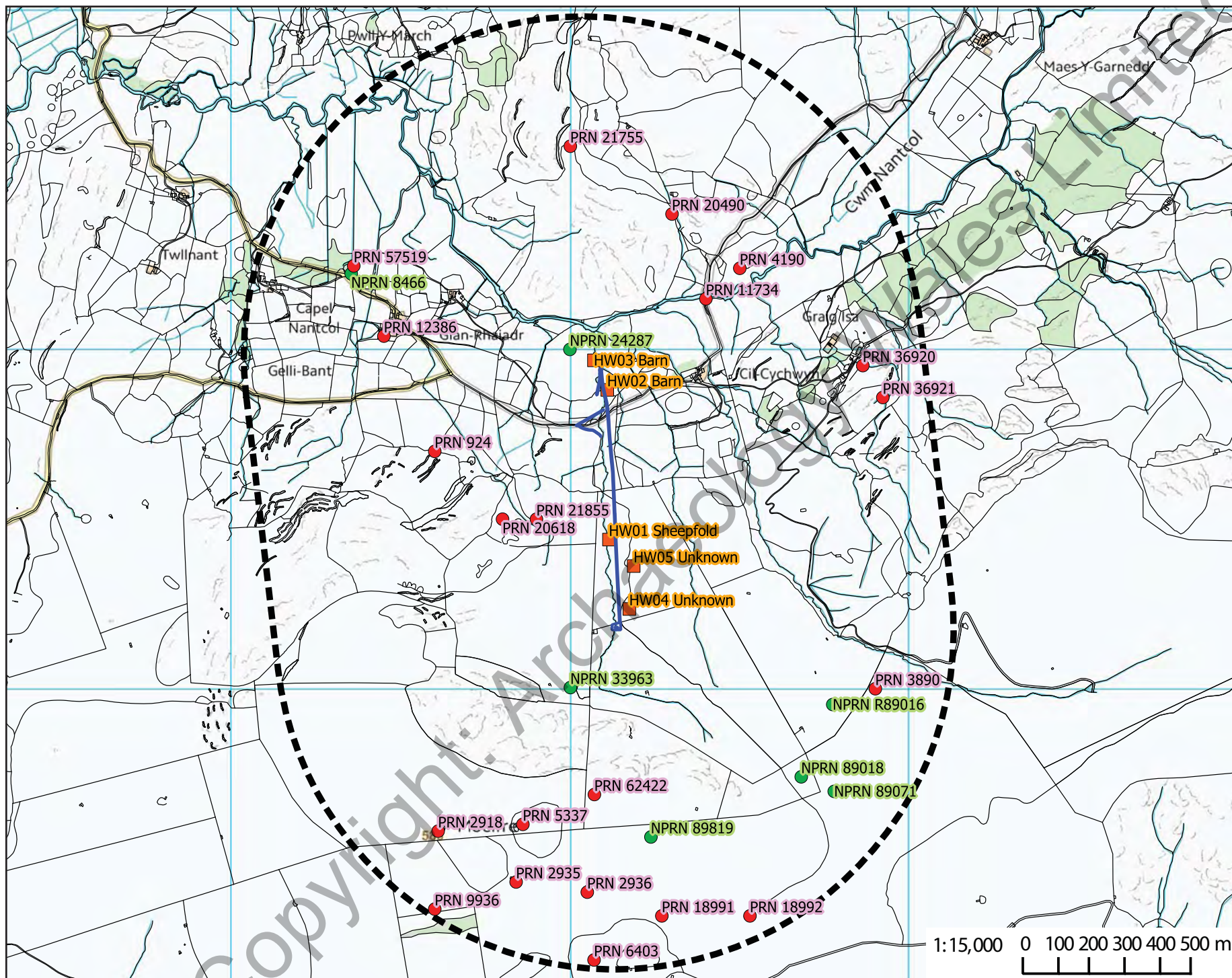
Scheduled Ancient Monument

Listed Building

Figure 4: Designated archaeological sites and landscapes within a 1km search area around the proposed development site. All sites mentioned in the text are labelled by their relevant references.

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- Site recorded on the HER
- Site recorded on the NMR
- Site identified during assessment

Figure 5: Non-designated archaeological sites recorded on the HER, NMR and within this assessment within a 1km search area, labelled by reference numbers given in the main text.
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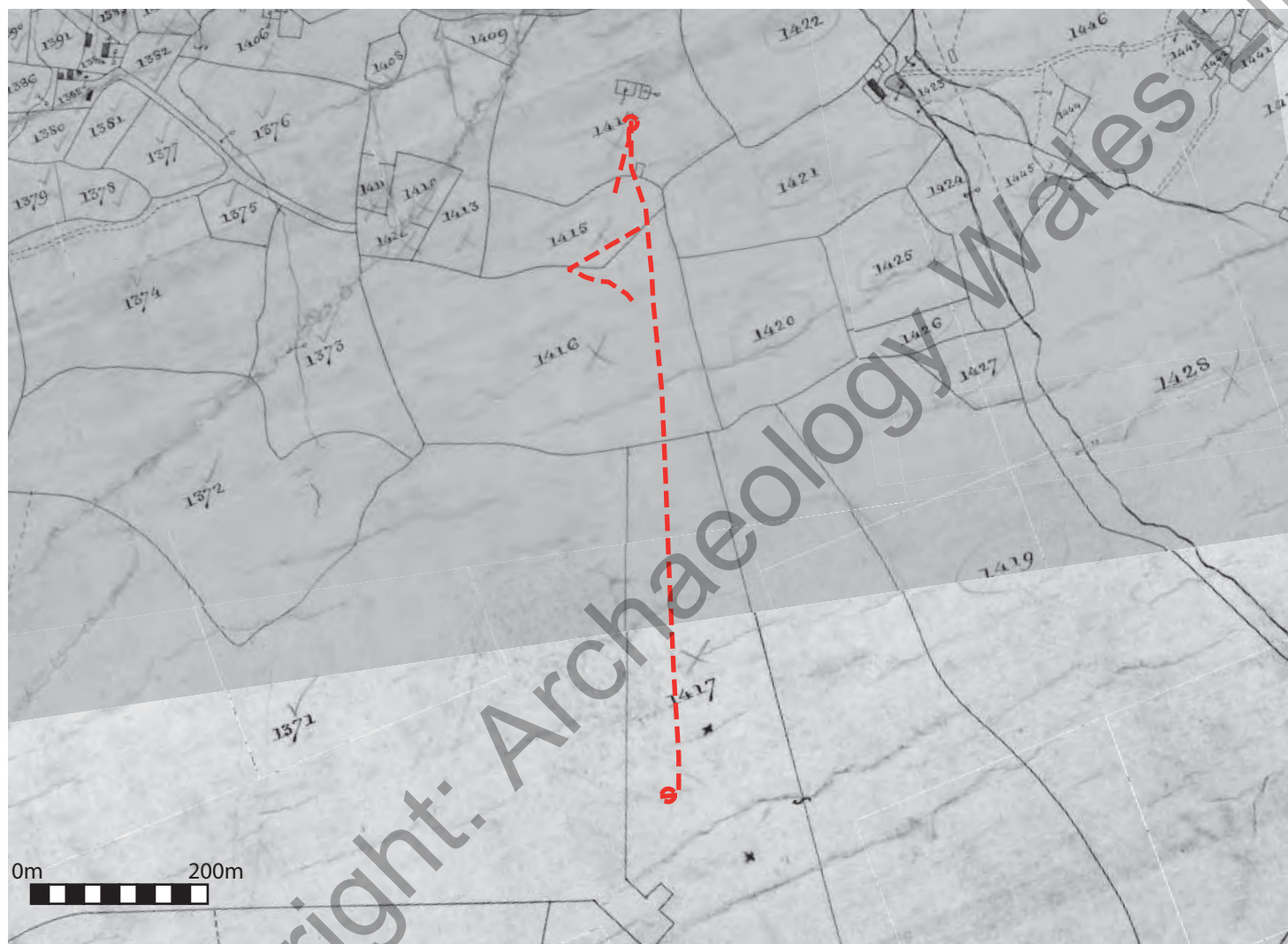


Figure 6: Extract from the Llanenddwyn parish tithe map of 1841. Approximate location of development site marked in red.

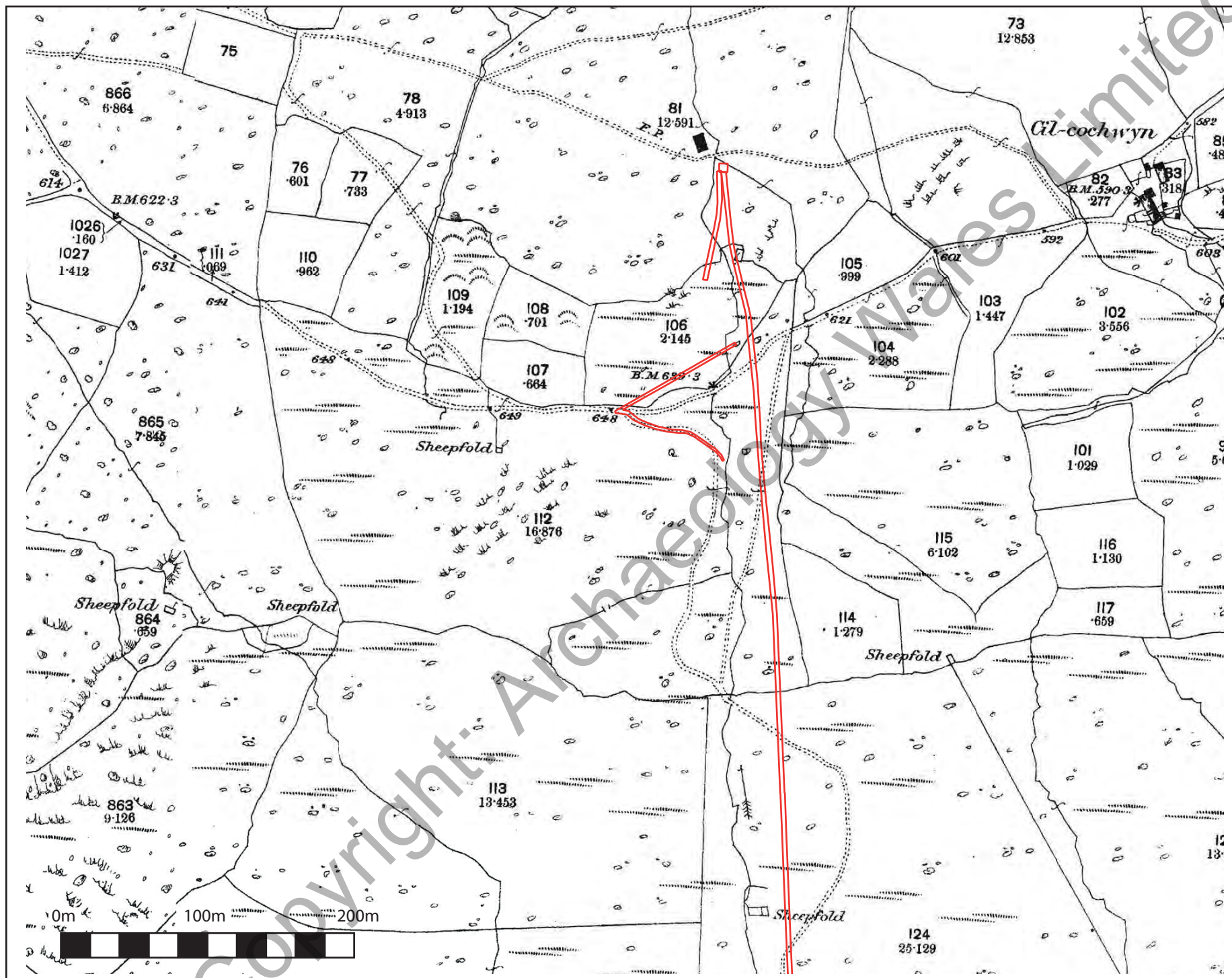


Figure 7: Extract from the Ordnance Survey 1st edition 1:2500 map of 1889. Approximate location of development site marked in red.

NB. No features of interest marked on the remainder of the development site to the south.



Figure 8: Aerial image from Google Earth, 2006, showing new sites identified within the assessment. Approximate location of proposed site marked in red.

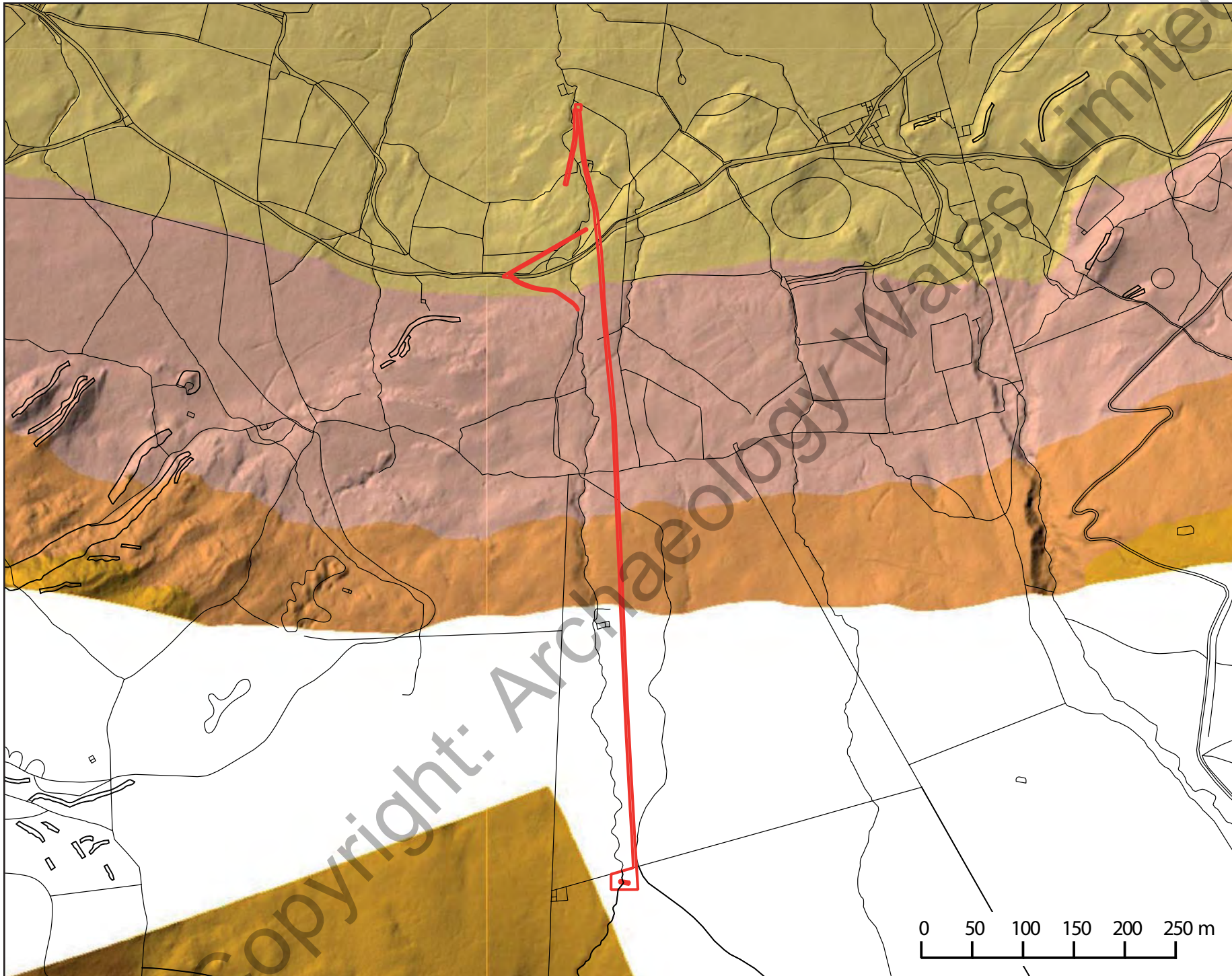


Figure 9: Lidar data at 1m DTM. Location of development site marked in red.

1:5000 @ A4



Photo 1: Location of proposed weir and start of the pipeline route. View north. 1m scale.



Photo 2: A sheepfold lying to the west of the proposed weir location (unaffected by the proposed development). View West. 1m scale.



Photo 3: Stone field boundary wall at the southern end of the proposed development area, which will be crossed by the pipeline route. View northeast. 1m scale.



Photo 4: General view of southern end of the Hendre Waelod stream with the summit of Moelfre behind. The pipeline route will cross the field boundary wall to the left of the stream. View south.



Photo 5: Location of HW04, a possible enclosure visible on aerial photos, but not visible at ground level. View northwest. 1m scale.



Photo 6: General view along pipeline route (marked by canes), with Hendre Waelod stream to the left. View north.



Photo 7: Stone-walled enclosure HW05. View ESE. 1m scale.



Photo 8: Stone walled enclosure HW05. The cutting of the Hendre Waelod stream can be seen towards the centre right of the photo, beyond the enclosure. View northwest. 1m scale.



Photo 9: Sheepfold HW01, straddling the line of the Hendre Waelod stream to the right. The pipeline route passes to the left of the enclosure. View south. 1m scale.



Photo 10: General view of pipeline route down into the valley. View north, taken from adjacent to the sheepfold HW01.



Photo 11: Stone field boundary wall to the north of HW01 that will be crossed by the pipeline route. The route then continues through the lighter coloured rough ground beyond the wall. View north.



Photo 12: The footpath access through the wall illustrated in Photo 11, with the stone crossing the Hendre Waelod stream. View northwest. 1m scale.



Photo 13: General view of cow barn HW02, looking up the Cwm Nantcol valley. View northeast. 1m scale.



Photo 14: Cow barn HW02. View NNW. 1m scale.



Photo 15: Eastern side wall of Cow Barn HW02. View west. 1m scale.



Photo 16: External face of northern gable wall of Cow Barn HW02. The central blocked doorway and sheep access visible. View south. 1m scale.



Photo 17: General view of Cow Barn HW02 showing attached dry-stone walling running off to the west. The pipeline route should pass through the visible opening in the wall. View southeast. 1m scale.



Photo 18: Dry-stone walling attached to the east side of the Cow Barn HW02. View WNW. 1m scale.



Photo 19: General view encompassing both barns HW02 and HW03, looking down the pipeline route which would pass to the left of the foreground barn, to a new turbine house in front of the rear barn. View north. 1m scale.



Photo 20: Northern gable wall of barn HW03. View NNW. 1m scale.



Photo 21: View of barn HW03, with blocked doorway visible in the side wall, and missing roof sections to the north. View northeast. 1m scale.



Photo 22: The northern gable wall of barn HW03, with its open doorway entrance. View southeast.



Photo 23: Internal roof structure of barn HW03. View NNW.



Photo 24: View of proposed turbine house location (marked by cane) in front of barn HW03.
View northwest.



Photo 25: View of barn HW03, with location of proposed turbine house to the right of the stream. A cable trench will run from the turbine house to the electricity post in the foreground. View NNE.



Photo 26: General view down the proposed pipeline route from the roadway towards barns HW02 and HW03. View north.



Photo 27: General view from the roadway up the proposed pipeline route towards Moelfre in the background. View south.

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APPENDIX I: HER Gazetteer

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GWYNEDD ARCHAEOLOGICAL TRUST

HISTORIC ENVIRONMENT RECORD

ENQUIRY REPORT - CORE RECORDS

Enquiry reference number: GATHER890

Prepared by: Derby, S., Gwynedd Archaeological Trust

Produced for: Philip Poucher, Archaeology Wales

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Search Criteria:

1km radius of linear route located near Hendre Waelod, Llanbedr – between SH6303825982 and SH6312825170.

PRN 11734

NAME Pont Cerig;pont Cerrig, Llanbedr

NGR SH6340026150

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, BRIDGE, Sitetype ranking: 1

SUMMARY

DESCRIPTION That part in Deudraeth Road. 18th century. Stone. 1 span. Segmental arches. Plain parapets.

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS Listed Building LB II

ASSOCIATED EVENTS

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Royal Commission on Ancient and Historic Monuments , Rc Buildings Records, ENDEX <1>

PRN 12386

NAME Hendre Waelod, Cwm Nantcol

NGR SH6245026040

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, BUILDING, Sitetype ranking: 1

SUMMARY

DESCRIPTION Built 1818 on site of earlier house, inscribed slab 1593. <1>

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS Listed Building LB II

ASSOCIATED EVENTS

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Royal Commission on Ancient and Historic Monuments , Rc Buildings Records, ENDEX <1>

PRN 18991

NAME Sheepfold, Moelfre

NGR SH6327024330

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE MULTIPERIOD, SHEEPFOLD, Sitetype ranking: 1

SUMMARY

DESCRIPTION (OS Detail). Round shelter/fold c.6m diameter on mountain slope. AP adds short wall c.6m long along S side. Possible windbreak?. (Kenney, 2014)

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: None Recorded RELATED EVENT PRN: 44846 YEAR: 2014

STATUS None Recorded

ASSOCIATED EVENTS

GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , , Report No. 1162

, ,

PRN 18992

NAME Sheepfold, Moelfre

NGR SH6353024330

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE MULTIPERIOD, SHEEPFOLD, Sitetype ranking: 1

SUMMARY

DESCRIPTION (OS Detail) 2 sub-square sheepfolds on the slopes of Moelfre, that to W c.9mx7m, that to E c.14mx5m. (Kenney, 2014)

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: None Recorded RELATED EVENT PRN: 44846 YEAR: 2014

STATUS None Recorded

ASSOCIATED EVENTS

GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , , Report No. 1162

, ,

PRN 20490

NAME Foel Wen Manganese Mine, Llanbedr

NGR SH63302640

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, MANGANESE MINE, Sitetype ranking: 1

SUMMARY

DESCRIPTION Manganese mine with wall paintings. <1>

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT40413 Gwynedd Metal Mines Survey 1998

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

1993 , PRN 20490, <1>

Down, C. G. 1980 , The Manganese Mines of North Wales, p 36 <2>

Gwyn, D. 1998 , Gwynedd Metal Mines Survey, G1468.01 R291 <3>

Richards, A. J. 1991 , A Gazeteer of the Welsh Slate Industry, PP 31-2 <4>

Lewis, M. J. T. 1987 , The Slate Quarries of North Wales in 1873, P 89 <5>

1983 Manganese Mines of the Harlech Dome, Gwynedd, Grosvenor Caving Club Newsletter, No. 4 <6>

PRN 20618

NAME Manganese Mine, Hendre

NGR SH62802550

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, MANGANESE MINE, Sitetype ranking: 1

SUMMARY

DESCRIPTION

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT40413 Gwynedd Metal Mines Survey 1998

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Ap Owain, S. & Crew, P. , Snp Industrial Record, NO.622707 <1>

1983 Manganese Mines of the Harlech Dome, Gwynedd, Grosvenor Caving Club Newsletter, No. 4 <2>

Down, C. G. 1980 , The Manganese Mines of North Wales, p 39 <3>
Gwyn, D. 1998 , Gwynedd Metal Mines Survey, G1468.01, R291 <4>

PRN 21755

NAME Cilcychwyn Mine, Llanbedr

NGR SH63002660

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, MANGANESE MINE, Sitetype ranking: 1

SUMMARY

DESCRIPTION General: a typical Meirionydd manganese mine, forming a long shallow trench, a continuation of Foel Wen Mine (PRN: 20490). Geology: a thin and steeply dipping deposit of manganese silicate in the Cambrian strata of the Harlech dome. History: at work from 1889 to 1892. Workings: opencast running from SH63062698 (effectively a continuation south of Foel Wen Mine). Processing: no evidence. Power: apparently unmechanised. Transport: a contour path constructed in places below the working areas is built up with stone-work embankments in places, and may have been built for a very lightly-laid railway. A curious feature of this area is the number of fishbelly wrought-iron rails to be found, presumably bought second-hand from the Ffestiniog Railway for one or other of these mines. A roadway suitable for a sled leads down to the parish road by Pont Cerrig at SH63422628. Ancillary: a possible smithy was identified, in a very dilapidated state, at SH63362633. Domestic: no evidence. Workings: opencast. Transport: a rail system is recorded.

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT40413 Gwynedd Metal Mines Survey 1998

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Gwyn, D. 1998 , Gwynedd Metal Mines Survey, G1468.01, R291 <1>
Down, C. G. 1980 , The Manganese Mines of North Wales, p 38 <2>

PRN 21855

NAME Moelfre Mine, Llanbedr

NGR SH62902550

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, MANGANESE MINE, Sitetype ranking: 1

SUMMARY

DESCRIPTION

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT40413 Gwynedd Metal Mines Survey 1998

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Gwyn, D. 1998 , Gwynedd Metal Mines Survey, G1468.01, R291 <1>

PRN 2918

NAME Cairn, Moelfre

NGR SH62612458

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Prehistoric, CAIRN, Sitetype ranking: 1

SUMMARY

DESCRIPTION This site is not mentioned by Bowen and Gresham in their list of round cairns (History of Merioneth 1967) and RCAHM refers to it as 'the spot marked 'Carn' on their Ordnance sheet', with a group of structures connected with sheep husbandry around it. Some small circular enclosures are visible on APs at the published position. This cairn, which sits on the summit of Moelfre, 1932ft, is 15m diameter, 3m high on the W side where the ground falls away, 1.8m high in the E and has a depression 1m deep in the centre. It is mutilated in the N and E by sheepfolds, the material for which probably came from the cairn. Surveyed at 1:10,000. <1> <2> An oval cairn, measuring approx 18m x 16m. The interior has been heavily robbed for a shelter wall, exposing a flat slab 1.5m x 1m, possibly a cist cover and apparently in situ. A possible satellite cairn, small and sub-rectangular, with a short length of 0.5m high wall facing the SE side is attached to the main cairn on the NE side. <3> Whatever this site might have been or whether indeed it had any sepulchral significance or origins at all is impossible to tell. It is a large pile of stones and slabs, loosely heaped up but with considerable evidence of recent and modern disturbances - the 'middle' is completely dug away while the 'edges' have been altered by small pens or shelters. It cannot be accepted as an archaeological site on surface evidence alone. <5> As previously described. The straight walling at the N. side is neat and probably a shelter wall associated with the sub-rectangular enclosure at the E. which is presumably a small fold. The 'flat slab' described previously, exposed in the central shelter hollow is almost certainly just exposed bedrock. This is a 'modified outcrop' cairn so that at the S/SW side it appears almost 6m high but only about 2m high from the other sides. The S/SW quadrant is the main prospect - over Craig y Dinas and Hengwm (Smith 2001).

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT40529 Prehistoric Funerary and Ritual Monuments: Meirionnydd 2001

GAT40527 Pan-wales Prehistoric Funerary and Ritual Sites Survey: Trial Data Synthesis 2005

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Smith, G. 2001, Survey of Prehistoric Funerary and Ritual Monuments in Wales: Meirionnydd, 2000-2001, , , , GAT Report No. 415

Report: Smith, G., and Steele, N. 2005, Pan-Wales Prehistoric Funerary and Ritual Sites Survey: Trial Data Synthesis, , , , GAT Report No. 579

Royal Commission on Ancient and Historic Monuments 1921 , Merioneth, P100 NO284 (ii) <1>

Ordnance Survey 1973 , SH62SW 20, <2>

Crew, P. 1980 , Archaeology in Wales, GP. 1, P27 <3>

Royal Air Force 1958 , F22 58/RAF/2649 5.12.58 0106-7, <4>

Kelly, R. S. 1979 , Ardudwy Survey, PLAN 14 <5>

PRN 2935

NAME Sheepfold, Moelfre

NGR SH62842443

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Medieval, SHEEP FOLD, Sitetype ranking: 1

SUMMARY

DESCRIPTION Sheepfold, possibly related to No.1 (PRN 2933). <1> <2>

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: RELATED EVENT PRN: 40337
YEAR: 1996

STATUS None Recorded

ASSOCIATED EVENTS

GAT40337 Aerial Mapping Project: Two Pilot Areas in Meirionnydd 1996

GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Dutton, L. A. 1996, Aerial Mapping Project: Report on Two Pilot Areas in Meirionnydd, , , , GAT Report No. 205a

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , , Report No. 1162

Royal Air Force 1958 , F22 58/RAF/2649 0105-6, <1>

Ordnance Survey 1958 , SH62SW (M), <2>

PRN 2936

NAME Sheepfold, Moelfre

NGR SH63052440

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Medieval, SHEEP FOLD, Sitetype ranking: 1

SUMMARY

DESCRIPTION Sheepfold, possibly related to PRN 2922. <1> <2>

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: RELATED EVENT PRN: 40337
YEAR: 1996

STATUS None Recorded

ASSOCIATED EVENTS

GAT40337 Aerial Mapping Project: Two Pilot Areas in Meirionnydd 1996
GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Dutton, L. A. 1996, Aerial Mapping Project: Report on Two Pilot Areas in Meirionnydd, , , GAT Report No. 205a

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , Report No. 1162

Royal Air Force 1958 , F22 58/RAF/2649 0105-6, <1>

Ordnance Survey 1973 , SH62SW (M), <2>

PRN 36920

NAME Sluice, Graig Isaf, Llanbedr

NGR SH6386325953

COMMUNITY Llanbedr

PERIOD AND TYPE POST MEDIEVAL, SLUICE, Sitetype ranking: 1

SUMMARY

DESCRIPTION Sluice at Graig Isaf with some distance away to ESE . No other evidence of mill. (Evans and Burnett, 2013)

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: None Recorded RELATED
EVENT PRN: 44907 YEAR: 2013

STATUS None Recorded

ASSOCIATED EVENTS

GAT44907 Medieval and Post-Medieval Mills. Scheduling Enhancement 2012-13, Meirionnydd. Part 01: Report and Gazetteer. 2013

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Evans, R., and Burnett, A. 2013, Medieval and Post-Medieval Mills. Scheduling Enhancement 2012-13, Meirionnydd. Part 01: Report and Gazetteer., , , Report No. 1124

, ,

PRN 36921

NAME Sluice, S Graig Isaf, Llanbedr

NGR SH6392225859

COMMUNITY Llanbedr

PERIOD AND TYPE POST MEDIEVAL, SLUICE, Sitetype ranking: 1

SUMMARY

DESCRIPTION Sluice with pond. No other evidence of mill. (Evans and Burnett, 2013)

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: None Recorded RELATED
EVENT PRN: 44907 YEAR: 2013

STATUS None Recorded

ASSOCIATED EVENTS

GAT44907 Medieval and Post-Medieval Mills. Scheduling Enhancement 2012-13, Meirionnydd. Part 01: Report and Gazetteer. 2013

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Evans, R., and Burnett, A. 2013, Medieval and Post-Medieval Mills. Scheduling Enhancement 2012-13, Meirionnydd. Part 01: Report and Gazetteer., , , Report No. 1124

, ,

PRN 3890

NAME Stone Setting (Possibly Natural), North-East of Moelfre

NGR SH63902500

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Unknown, NATURAL FEATURE, Sitetype ranking: 1

SUMMARY

DESCRIPTION Stone groups found to be natural features. Traces of peat cutting. <1>

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Kelly, R. S. , PRN 3890, <1>

PRN 4190

NAME Pont Cerrig, Possible Burial Mound or Peat Mounds

NGR SH63502624

COMMUNITY Llanbedr

PERIOD AND TYPE Medieval, PEAT STAND, Sitetype ranking: 1

Unknown, PEAT STAND, Sitetype ranking: 2

SUMMARY

DESCRIPTION (SH 63502624) Just NNE of the bridge, in boggy ground at the foot of rocky slopes is a close set group of six mounds, two circular and four sub-rectangular, similar to those recorded near Llyn y Gadair. <1> Possible burial mounds. <2> At SH 635263, on N side of Afon Cwm Nantcol, NE of Pont Cerrig. Group of 5 mounds in low lying marshy ground. Typically 6m x 4m, 0.75m high. Composed entirely of peat. All disturbed by sheep. <3>

EVIDENCE**CONDITION INFORMATION**

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT42951 Fw 26 Survey 1988

GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , , Report No. 1162

Crew, P. 1980 , Archaeology in Wales, VOL. 20, P 28 NO 22 <1>

Ordnance Survey 1981 , SH62NW 13, <2>

Boyle, S. 1988 GAT Project G0018, FW 26, NOTEBOOK <3>

PRN 5337

NAME Enclosure, Moelfre

NGR SH62862460

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Unknown, ENCLOSURE, Sitetype ranking: 1

SUMMARY

DESCRIPTION

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

GEONEX 1992 , 95/93/112 (RUN 38), <1>

PRN 57519

NAME Building, N of Nant-col School

NGR SH6236126247

COMMUNITY Llanbedr

PERIOD AND TYPE POST-MEDIEVAL, BUILDING, Sitetype ranking: 1

SUMMARY

DESCRIPTION Site identified using early Ordnance Survey Maps (McGuinness, 2014)

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED
EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT44558 Glastir Private Woodland Management Polygonisation 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Data Import: McGuinness, N. 2014, Glastir Private Woodland Management Polygonisation, , , ,

, ,

PRN 62422

NAME Ardudwy, Landscape

NGR SH6307124688

COMMUNITY -

PERIOD AND TYPE MULTIPERIOD, LANDSCAPE, Sitetype ranking: 1

SUMMARY Landscape description of Ardudwy

DESCRIPTION The Rhinog Mountains form a rugged chain of mountains south of the Snowdonian massif, extending from the estuaries of the Rivers Dwyryd and Glaslyn in the north to the estuary of the river Mawddach in the south. Their craggy outlines dominate the surrounding landscape with Y Llethr, the highest summit, reaching a height of 754m above OD. To the west, their gentler, seaward-facing flanks are dissected by glacial valleys occupied by the Rivers Artro, Cwmnantcol and Ysgethin. The lower slopes drop to the coast where the cliff lines of a former coastline lie land-locked behind two extensive areas of coastal flats and sand dunes at Morfa Harlech and Morfa Dyffryn. Ardudwy has retained a natural integrity as a territory, probably since prehistoric times, because topography has strongly constrained both access and settlement in the area. It also has an exceptional wealth of relict archaeological remains, from the prehistoric period to the recent past, reflecting recurrent human activity in an area with juxtaposed resources of lowland and upland and, not least, the easy availability and survival of stone as a building material. Much of the area has already been studied by both historians and field archaeologists, but the potential to further study settlement evolution and land use changes in detail is enormous. Submerged peat and forest deposits, with some potential for producing Mesolithic cultural material, are periodically exposed by the tides along the foreshore at Morfa Dyffryn. On the land, the key features of the succeeding Neolithic period are a cluster of burial chambers, including a well-preserved pair sited close together at Carneddau Hengwm. Concentrations of Bronze Age ritual and funerary monuments occur in a number of places, but principally along, or near to, ancient trackways which straddle the area from the coast over the mountains to the east. The concentration of monuments in the north along the Fonllech Hir trackway and its continuation past Moel Goedog and across Bryn Cader Faner is particularly notable. The area has several, generally small, but nevertheless representative, examples of Iron Age hillforts evenly distributed on the higher slopes and spurs throughout the district. These forts are often nodal points in extensive relict systems of huts, fields and enclosures surviving on the surrounding slopes. There are remarkable, still traceable, systems at Moel Goedog and Muriau Gwyddelod in the north, and at Cors y Gedol in the south. On the higher slopes, isolated clusters of huts with smaller paddocks or enclosures occur in frequent numbers. A similarly extensive pattern is evident in the medieval period with groups of rectangular buildings scattered among, often quite large and extensive, field systems on the lower slopes, and dispersed clusters of slighter structures and smaller paddocks or folds on the higher slopes. Their remains are often superimposed upon, or incorporated into, some of the earlier, late prehistoric patterns. The Cors y Gedol and Egryn areas are particularly rich in such remains, although none has been excavated and precise dating is lacking. In the medieval period, Ardudwy was a commote in the ancient kingdom of Dunoding, with the manor or maerdref containing the prince's court and administrative offices at Ystumgwern. After the English conquest, however, Ystumgwern was supplanted by the creation of the Edwardian castle-borough of Harlech, once with access to the sea, but now land-locked by the Morfa. Changes wrested in the landscape at this time can be plotted with more accuracy using historical documentary sources, and in the wake of the English conquest, it seems that impoverished economic conditions, the breakdown of the Welsh system of landholding and its replacement with a capitalist land market brought about the creation of a new order of late medieval gentry estates in the area such as Cors y Gedol, whose growth and expansion have been charted in some detail. The process of estate expansion and consolidation continued into the post-medieval period, in many cases with the illegal enclosure of common land, and several of the stonewalled fields and settlements at middle and higher elevations in the area belong to this period. At the same time, many of the older sites which had been temporary summer settlements, or hafotai, in a long-established system of seasonal transhumance between lowland and upland, became permanent settlements. As early as the 13th century, Nantcol seems to have been used as summer pasture for the maerdref of Ystumgwern, and in 1326, the inhabitants of Llanaber were recorded as having moved to the mountains with their animals in May. The enclosure of the Ardudwy landscape culminated in a final district-wide period of enclosure initiated in the 19th century by landowners with Parliamentary Enclosure Acts. The higher slopes and summits are criss-crossed with high stone (ffridd) walls, with some notable sections raised precariously across seemingly impossible gradients as a result of their lines being drawn on maps by absentee surveyors. The ridges behind Llanaber in the south are particularly remarkable in this respect. Morfa Harlech and Morfa Dyffryn on the coast were also drained and enclosed at this time. In 1840, the Cors y Gedol Estate ranked second in Merioneth to that of Nannau, comprising some 6490ha in 161 separate holdings, having doubled in size since 1808. As larger areas of the district became permanently enclosed, sheep farming increased to supply the expanding woollen industry. The old Drovers'

routes and pack horse trails, such as Roman Steps through Cwm Bychan, were abandoned, and the building of turnpike roads in the late 18th century and the coastal railway line in 1867 saw their final demise. The area is not without its industrial remains such as the number of water powered 19th century woollen mills, whilst manganese was quarried at a number of sites, some of which have associated structural and other remains. Harlech in ancient Ardudwy features as one of the courts of Bendigeidfran, son of Llyr, and roost to Rhiannon's Birds in one of the four branches of the early Welsh Mabinogi tales. A short distance away at Lasynys, Eil is Wynne, the Sleeping Bard, dreamt and conjured up an equally potent imagery to describe corruption in the Church at the turn of the 17th-18th centuries in his most famous work, Gweledigaethu y Bardd Cwsc. (Cadw, 1998).

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Cadw 1998, Landscapes of Historic Interest in Wales Part 2:1: Landscapes of Outstanding Historic Interest, Bilingual, , , , HER Library Record No. 1839

, ,

PRN 6403

NAME Sheepfolds, Moelfre

NGR SH63072420

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE POST-MEDIEVAL, SHEEP FOLD, Sitetype ranking: 1

SUMMARY

DESCRIPTION

EVIDENCE DOCUMENTARY EVIDENCE

CONDITION INFORMATION

CONDITION: NOT KNOWN CONDITION RATING: NOT RECORDED DESCRIPTION: RELATED EVENT PRN: 40337
YEAR: 1996

STATUS None Recorded

ASSOCIATED EVENTS

GAT40337 Aerial Mapping Project: Two Pilot Areas in Meirionnydd 1996

GAT44846 Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study: Part 1: Report and Gazetteer 2014

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

Report: Dutton, L. A. 1996, Aerial Mapping Project: Report on Two Pilot Areas in Meirionnydd, , , , GAT Report No. 205a

Report: Kenney, J. 2014, Medieval and Post-Medieval Agricultural Features in North-West Wales. Report on Scheduling Enhancement Study. Part 1: Report and Gazetteer. , , , , Report No. 1162

, ,

PRN 924

NAME Llanbedr Incised Stone, Findspot (alleged)

NGR SH62602570

COMMUNITY Llanbedr

PERIOD AND TYPE Prehistoric, FINDSPOT, Sitetype ranking: 1

SUMMARY

DESCRIPTION The findspot (of the Llanbedr incised stone) PRN 4782, is said to be 1/4 of a mile SSE of Hendre Waelod in Cwm Nant Col and 62602570. <1>

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT44557 Early Celtic Societies in North Wales 2010

ASSOCIATED ARTEFACTS

FIND: 1 Stone Incised Stone COLLECTION: None recorded DESCRIPTION: Alleged findspot

SOURCES

Database: Waddington, K. 2010, Early Celtic Societies in North Wales, , , ,

Book: Waddington, K. 2013, The Settlements of Northwest Wales: From the Late Bronze Age to the Early Medieval Period, , , , HER Library Record No. 2377

Gresham, C. A. 1967, History of Merioneth, PP.23-24 + FOOTNOTE <1>

PRN 9936

NAME Grave, Possible, South-East of Moelfre

NGR SH62602435

COMMUNITY Dyffryn Ardudwy

PERIOD AND TYPE Unknown, GRAVE, Sitetype ranking: 1

SUMMARY

DESCRIPTION c.3m x 2m perpendicular to slight slope, flattened ovoid pattern of small flat slabs, more like a small platform than a wall, lying on a slight shelf in the SE side of Moelfre just above the main line of surviving conifers in an old plantation. Possibly a simple grave. Too small for a hut platform, not a collapsed shelter or cairn. <1>

EVIDENCE

CONDITION INFORMATION

CONDITION: None Recorded CONDITION RATING: None Recorded DESCRIPTION: None Recorded RELATED EVENT PRN: YEAR:

STATUS None Recorded

ASSOCIATED EVENTS

GAT43529 Prn 9936 Gat Site Visit 2000

ASSOCIATED ARTEFACTS

FIND: None recorded COLLECTION: None recorded DESCRIPTION: None recorded

SOURCES

: , , , , ,

Smith, G. 2000 , Prn 9936, <1>

Key to Abbreviations and Terms

GAT: Gwynedd Archaeological Trust; **HER:** Historic Environment Record; **PRN:** Primary Reference Number, each site and event is given a unique PRN; **NAME:** The common name given to the site; **NGR:** Ordnance Survey National Grid Reference; **COMMUNITY:** The community council in which the site is located; **PERIOD:** The period to which the site belongs; **TYPE:** Describes the site type e.g. CASTLE; **SITE TYPE RANKING:** Indicates the preferred site type interpretation, Rank 1 being the highest; **SUMMARY:** A short, unreferenced site summary written by HER staff; **DESCRIPTION:** Detailed site notes compiled from various sources; **EVIDENCE:** The physical remains of a site, or the means by which a site has been identified; **CONDITION INFORMATION:** The condition of the site at the time of assessment; **STATUS:** The legal status of the site, e.g. Scheduled Ancient Monument; **ASSOCIATED EVENTS:** The details of archaeological investigations relating to the site, e.g. EXCAVATION; **ASSOCIATED ARTEFACTS:** Describes any finds associated with the site; **SOURCES:** The bibliographic references relating to the site

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Archaeological data from the Gwynedd Historic Environment Record, supplied by Gwynedd Archaeological Trust in partnership with Local Authorities, Cadw and partners of HEDS, GAT, 2016.

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APPENDIX II: Written Scheme of Investigation

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WRITTEN SCHEME OF INVESTIGATION

FOR AN ARCHAEOLOGICAL DESK-BASED ASSESSMENT AT Hendre Waelod, Llanbedr

Prepared for:

Mr & Mrs Hefin Lloyd

Planning Reference Number: NP5/62/395

Project No: 2580

December 2017



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Figure 1. Site location

Figure 2. Detailed plan of the site, showing areas of proposed investigation

Summary

This Written Scheme of Investigation (WSI) details the proposal for an archaeological Desk Based Assessment and Site Visit associated with the proposed installation of 20kw Hydro-electric scheme near Hendre Waelod, Llanbedr, LL45 2PL between NGR SH 63038 25982 and SH 63128 25170. It has been prepared by Archaeology Wales Ltd for Mr & Mrs Hefin Lloyd as part of the submission of a planning application. The associated Planning Reference No. is NP5/62/395.

The site lies within the Ardudwy Registered Landscape of Outstanding Historic Interest. Post-medieval mining remains are recorded in the area, but the presence of medieval and prehistoric remains in the wider landscape suggests a greater potential for archaeological remains within the vicinity of the proposed development. As a result Gwynedd Archaeological Planning Service, in its capacity as archaeological advisors to the local planning authority, have recommended that an archaeological Desk Based Assessment and Site Visit of the development site is undertaken.

All work will be undertaken in accordance with the standards and guidelines of the Chartered Institute for Archaeologists (2014).

1. Introduction and planning background

This WSI details the proposal for an archaeological Desk Based Assessment and Site Visit to be undertaken in association with the proposed installation of 20kw Hydro-electric scheme in include intake weir, buried pipeline, turbine building, outflow and buried grid connection at Hendre Waelod, Llanbedr, LL45 2PL to run between NGR SH 63038 25982 and SH 63128 25170 (Figure 1 and 2). The associated Planning Application No. is NP5/62/395.

The proposed development lies within the Ardudwy Registered Landscape of Outstanding Historic Interest, which contains extensive relict evidence of recurrent land use and settlement from prehistory to the recent past. The relatively few recorded sites currently recorded in the vicinity of the proposed development are largely associated with post-medieval mining, although medieval and prehistoric sites are known in the wider landscape indicating a greater potential for unrecorded sites in the vicinity of the scheme, and with aerial photograph suggesting possible features in the immediate vicinity.

This WSI has been prepared by Philip Poucher, Project Manager, Archaeology Wales Ltd (henceforth - AW) at the request of Mr & Mrs Hefin Lloyd.

The methodology set out in this WSI has been agreed with Gwynedd Archaeological Planning Service (GAPS) in its capacity as archaeological advisors to the Snowdonia National Park Authority (henceforth – SNPA). GAPS has recommended that an archaeological Desk Based Assessment and Site Visit of the development site is undertaken prior to the determination of a planning application to assess the impact of the proposed development on the archaeological resource.

The recommendations made by GAPS are set out in a letter to SNPA dated 13th December 2017.

All work will conform to the Standard and Guidance for Archaeological Desk Based Assessment (CIfA 2014) and be undertaken by suitably qualified staff to the highest professional standards. AW is a Registered Organisation with the CIfA.

2. Development Details & Site Description

The proposed development would abstract water from the Hendre Waelod stream. A small weir with intake chamber and elver pass facility would be installed within the stream (at SH 63128 25170), a buried 160mm diameter pipe would then carry the water for approximately 900m down the hillside to a turbine house to the north (at SH 63038 25982), with discharge pipe feeding back into the water course.

The Hendre Waelod stream lies on north-facing slopes in the semi-enclosed upland some 4.5km to the east of Llanbder, and within the Snowdonia National Park. The land comprises rough moorland with outcrops of stone, and field boundaries of dry-stone walling dividing the landscape. The stream is relatively narrow, draining off the hillside into the Afon Cwmnantcol to the north. Hendre Waelod farmstead lies *circa* 500m to the west, surrounded by enclosed fields of semi-improved pasture.

The underlying geology comprises mudstones of the Hafotty Formation on the high ground at the southern end of the hydro-scheme, with sandstones and mudstones of the Rhinog Formation on the lower ground at the northern end of the scheme. Devensian Diamicton has built up over the bedrock (BGS 2017).

3. Objectives

The primary objective will be to assess the impact of the development proposals on the historic environment by means of a Desk Based Assessment and Site Visit. This will help inform future decision making, design solutions and potential mitigation

strategies. The aim will be to make full and effective use of existing information in establishing the archaeological significance of the site, to elucidate the presence or absence of archaeological material, its character, distribution, extent, condition and relative significance.

The work will include a comprehensive assessment of regional context within which the archaeological evidence rests and will aim to highlight any relevant research issues within national and regional research frameworks.

The work will result in a report that will provide information of sufficient detail to allow informed planning decisions to be made which can safeguard the archaeological resource. Preservation *in situ* will be advocated where at all possible, but where engineering or other factors result in loss of archaeological deposits, preservation by record will be recommended.

4. The proposed archaeological work

The aim of the work will be to establish and make available information about the archaeological resource existing on the site. The work will include the following elements:

- Desk Based Assessment (Stage 1)
- A site visit (Stage 2)
- The production of an illustrated report (Stage 3)

5. Method Statement for a Detailed Desk Based Assessment (Stage 1)

The assessment will consider the following:

a) The nature, extent and degree of survival of archaeological sites, structures, deposits and landscapes within the study area through assessment of various readily available primary sources:

1. Collation and assessment of all relevant information held in the regional HER at Gwynedd Archaeological Trust, within a 1km radius of the penstock route.
2. Collation and basic assessment of the impact on all Designated archaeological sites (Scheduled Ancient Monuments, Listed Buildings, Historic Parks & Gardens, landscapes, Conservation Areas) within 1km from the edge of the aforementioned

area

3. Assessment of all available excavation reports and archives including unpublished and unprocessed material affecting the site and its setting.
4. Assessment of all relevant extant aerial photographic (AP) evidence. This will include those held by the regional HER and the Central Register of Air Photography for Wales, in Cardiff.
5. All sources indexed in the County Archive
6. Records held by the developer e.g. bore hole logs, geological/geomorphological information, aerial photographs, maps, plans
7. Map regression analysis using all relevant cartographic sources e.g. All editions of the Ordnance Survey County Series, Tithe and early estate maps (as available).
8. Place name evidence
9. Internet sourced satellite imagery
10. Historic documents (e.g. Charters, registers, estate papers).

b) The significance of any remains in their context both regionally and nationally and in light of the findings of the desk based study.

6. The Site Visit (Stage 2)

The site visit will be a visual walked search of the entire development area. The ground surface will be visually inspected for all earthworks, structures and finds. The location of any environmental archaeological deposits, or areas which may have a potential for such deposits, will also be taken into account along with the more **traditional 'visible' archaeology**.

All located sites or finds will be accurately fixed by means of GPS. Each individual find or site location will have an accurate NGR reference attached. Where a close cluster of related features is identified a single NGR for the centre of the cluster will be used, and each constituent feature separately described in the text.

The character, function, condition, vulnerability, potential dating and relationship to other features of each identified site or find will be described fully. The importance of the site or find will be assessed in terms of local, regional or national significance.

A sketch survey of each identified site layout will be made with accompanying metric measurements

Written, drawn and photographic records of an appropriate level of detail will be maintained throughout the course of the project. Digital photographs, including metric scales, will be taken using cameras with resolutions of 14 mega pixels or above. Photographs will be taken in RAW format.

Illustrations will be drawn to a scale of 1:50, 1:20 and 1:10 as required, and these will be related to Ordnance Survey datum and published boundaries where appropriate.

7. The production of an illustrated report and the deposition of the site archive (Stage 3)

A report will be produced which synthesises the results of stages 1 and 2 and thereby assesses the total archaeological resource within the development area.

The results will be presented in such a way that data and supporting text are readily cross-referenced. The regional HER Officer will be contacted to ensure that any sites or monuments not previously recorded in the HER are given a Primary Record Number (PRN) and that data structure is compatible with the HER. The historical development of the site will be presented in phased maps and plans comprising clearly, the outline of the site.

Within the report an attempt will be made to indicate areas of greater or lesser archaeological significance and the sites will be ranked in level of overall archaeological importance (locally, regionally and nationally).

All relevant aerial photographs and historic maps will be included and be fully referenced. Any site photographs included in the report will be appropriately captioned and clearly located on a suitably scaled site plan.

The report will be used to inform future decision making regarding further stages of archaeological work (Field Evaluation, Watching Brief etc), the development construction and processes used.

The report will specifically include the following:

1. a copy of the design brief
2. a location plan
3. all identified sites plotted on an appropriately scaled plan of the proposal site
4. a gazetteer of all located sites and finds with full dimensional and descriptive detail including grid reference and period

Copies of the report will be sent to: Mr & Mrs Hefin Lloyd (via their agent Tudor Jones), GAPS, and for inclusion in the regional HER. Digital copies will be provided in pdf format if required.

Any further stages of archaeological work, after the submission of the report for stages one and two outlined above, will be the subject of an additional GAPS curatorial brief against which a further AW specification will be drawn up.

The site archive

A project archive will be prepared in accordance with the National Monuments Record (Wales) agreed structure and be deposited with the National Monuments Records, held and maintained by the RCAHMW, Aberystwyth, on completion of site analysis and **report production. It will also conform to the guidelines set out in 'The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017'** (National Panel for Archaeological Archives in Wales 2017). The digital archive will be deposited with the NMR.

Although there may be a period during which client confidentiality will need to be maintained, the report and the archive will be deposited not later than six months after completion of the work.

Other significant digital data generated by the survey (ie AP plots, EDM surveys, CAD drawings, GIS maps, etc) will be presented as part of the report on a CD/DVD. The format of this presented data will be agreed with the curator in advance of its preparation.

8. Staff

The project will be managed by Philip Poucher (AW Project Manager) and the Desk Based Assessment and Site Visit undertaken by suitably experienced staff members (Archaeology Wales). Any alteration to staffing before or during the work will be brought to the attention of GAPS and the client.

Additional Considerations

9. Health and Safety

9.1. Risk assessment

Prior to the commencement of the site visit AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with *The Management of Health and Safety Regulations 1992*. A copy of the risk assessment will be kept on site and be available for inspection on request. A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

9.2. Other guidelines

AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual *Health and Safety in Field Archaeology (2002)*.

10. Insurance

AW is fully insured for this type of work, and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

11. Quality Control

11.1. Professional standards

AW works to the standards and guidance provided by the *Chartered Institute for Archaeologists*. AW fully recognise and endorse the Chartered Institute for **Archaeologists'** *Code of Conduct*, *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* and the *Standard and Guidance for archaeological desk based assessment* currently in force. All employees of AW, whether corporate members of the Chartered Institute for Archaeologists or not, are expected to adhere to these Codes and Standards during their employment.

11.2. Project tracking

The designated AW manager will monitor all projects in order to ensure that agreed targets are met without reduction in quality of service.

12. Arbitration

Disputes or differences arising in relation to this work shall be referred for a decision **in accordance with the Rules of the Chartered Institute of Arbitrators'** *Arbitration Scheme for the Institute for Archaeologists* applying at the date of the agreement.

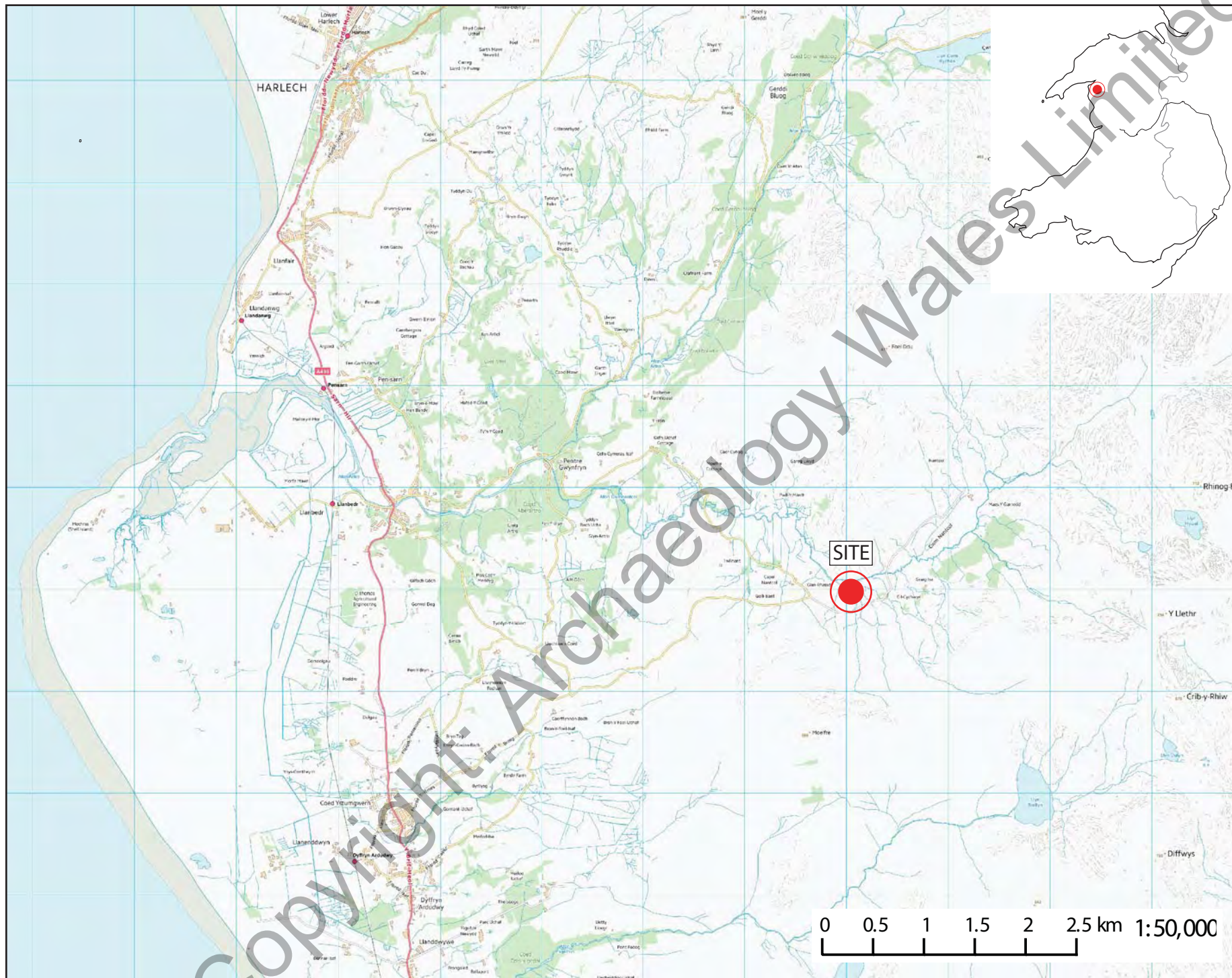


Figure 1: Location map,
1:50,000 @ A4

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Hendre Waelod Stream – Proposed Hydroelectric Scheme Penstock Route

Figure 2: Proposed route of the scheme (in red).

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APPENDIX III: Archive Cover Sheet

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ARCHIVE COVER SHEET

Hendre Waelod, Cwm Nantcol, Llandbedr

Site Name:	Hendre Waelod, Cwm Nantcol, Llandbedr
Site Code:	HWCN/17/DBA
PRN:	-
NPRN:	-
SAM:	-
Other Ref No:	HW01, HW02, HW03, HW04 & HW05
NGR:	SH 63038 25982 to SH 63128 25170
Site Type:	Hydro Electric scheme through enclosed rough pasture
Project Type:	Desk Based Assessment
Project Manager:	Philip Poucher
Project Dates:	December 2017-January 2018
Categories Present:	-
Location of Original Archive:	AW
Location of duplicate Archives:	RCAHMW, Aberystwyth
Number of Finds Boxes:	-
Location of Finds:	-
Museum Reference:	-
Copyright:	AW
Restrictions to access:	None

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