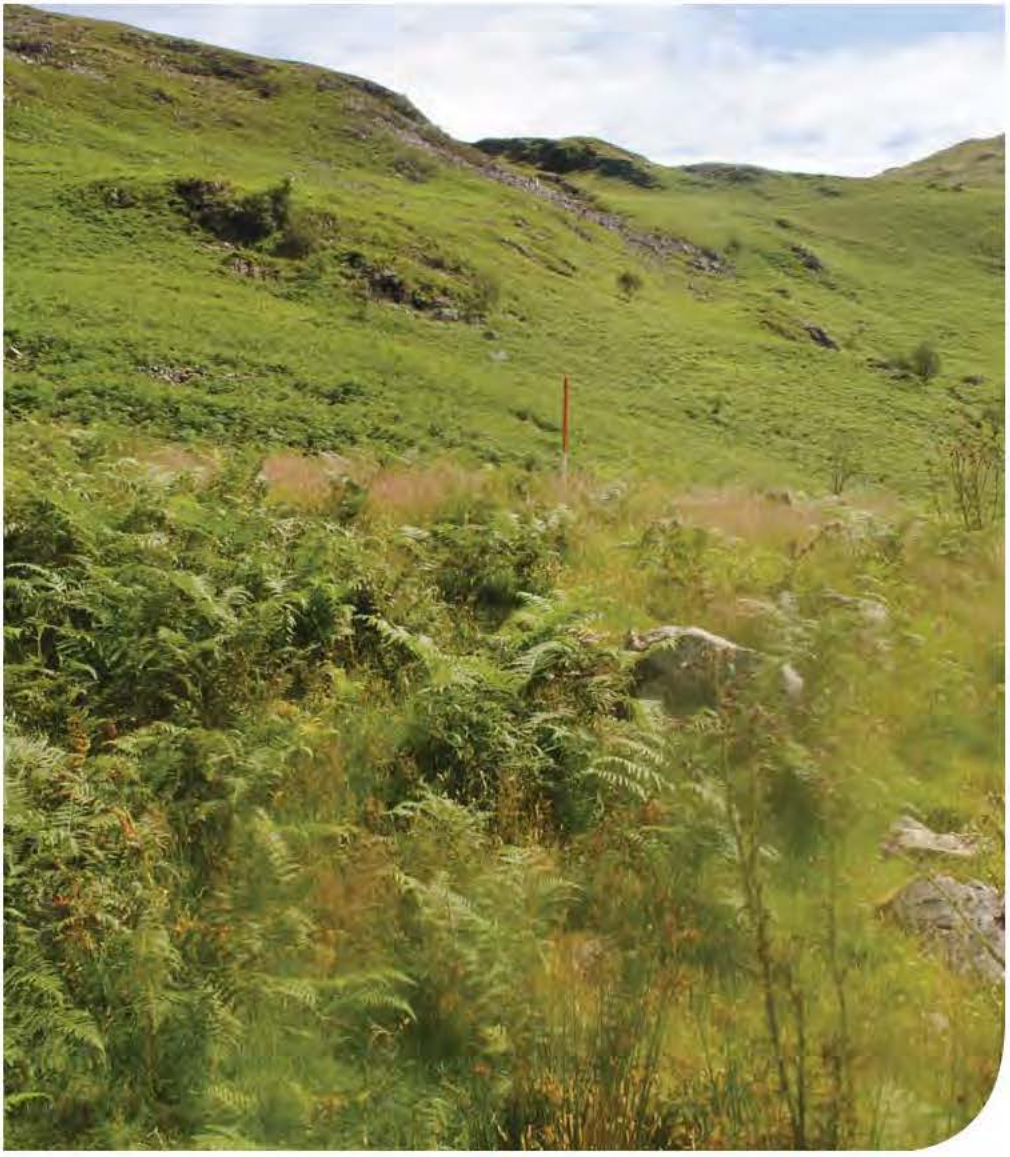
Proposed Hydro Electricity Scheme; Afon Cadair, Tynyfach, Llanfihangel Y Pennant, Gwynedd

Archaeological Assessment



Ymddiriedolaeth Archaeolegol G wynedd
Gwynedd Archaeolo gical Trust

Proposed Hydro Electricity Scheme Afon Cadair, Ty'n y Fach, Llanfihangel Y Pennant, Gwynedd

Archaeological Assessment

Project No. G2050

Report No. 1064

Prepared for : Morben Hydro

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PROPOSED HYDRO-ELECTRICITY SCHEME: AFON CADAIR, TYNYFACH, LLANFIHANGEL Y PENNANT

ARCHAEOLOGICAL ASSESSMENT

GAT Report No. 1064

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ARCHAEOLOGICAL ASSESSMENT

SUMMARY

An archaeological assessment has been carried out in advance of construction of a water pipeline, intakes, powerhouse and associated works required for a proposed hydro-electricity scheme in the valley of the Afon Cadair, Llanfihangel y Pennant, Meirionnydd. The proposed development will extract water from the Afon Cadair at NGR SH68201148 and a tributary of the Afon Cadair at NGR SH 68401070. Two pipelines, which merge close to where the tributary meets the Afon Cadair, will carry the water down to the proposed power house at NGR SH67530959, north of Tyn-y-fach farm and close to the ruined Tyn-y-Ddol. The assessment was requested by the Snowdonia National Park as part of the development control process. The assessment involved consideration of archaeological or historical features that would be affected directly by the proposed scheme as well as features within 500m of the scheme that might be affected indirectly. It also considered all such known features within 1km of the scheme, regarded as the study area, which would have a bearing on the interpretation of the area affected by the proposed development or on its potential for the occurrence of non-visible archaeological features. The assessment comprised consultation of existing records, maps, documents, aerial photographs and a field search.

The documentary and field search identified 23 archaeological or historic features that lay within the construction area or within 1km of it.

Six areas of varying archaeological potential were identified, two (or possibly three depending on construction methodology) requiring a intensive archaeological watching brief, and three an intermittent one. The remaining sites required avoidance, and it was considered that a sensitive design of the power house was required as it is proposed to be situated close to two Listed Buildings.

There were no hedges in the study area so the Hedgerow Regulations 1997 were not relevant to the assessment.

1 INTRODUCTION

Gwynedd Archaeological Trust was asked by *Morben Hydro* to update an archaeological assessment carried out for *Renewable Consulting Ltd*. in advance of the construction of a new water turbine pipeline, over 2km in length. The proposed development will extract water from the Afon Cadair at NGR SH68201148 and a tributary of the Afon Cadair at NGR SH68401070. Two pipelines, which merge close to where the tributary meets the Afon Cadair, will carry the water down to the proposed power house at NGR SH67530959, north of Tyn-y-Fach farm and close to the ruined cottage of Tyn-y-Ddol and Pont Pennant. The pipe trench is expected to be about 900mm wide and up to 900mm deep. The excavation area for the power house base is expected to cover an area of 12.5 by 8.5m (Dave Roberts; email dated 18th July 2012).

The initial assessment was carried out by GAT in 2008 (Smith, G. 2008 GAT Report **756**), however, modifications to the southern section of the route required that the report was updated in July 2012. This resulted in the identification of six new potential sites, and the modification of recommendations to sites that were to be further away from the proposed new pipeline route.

The route of the proposed pipeline follows an existing footpath running north, east of Tynyfach for about 540m before joining a farm track for about 600m but crossing enclosed improved or partly improved pasture or open upland for the remainder. The existing trackway part of the route has all

been disturbed by modern improvements. The agricultural use of the area has been little changed since at least the early 19th century and most of the buildings and field pattern are of a historic nature. The greatest interest of the area is in its proximity and relationship to Castell y Bere, one of the centres of authority of Llywelyn Fawr in the early 13th century.

1.1 Acknowledgements.

Thanks go to John and Richard Lewis of Ty'n y Fach for permission to carry out the walkover survey in 2008, and Richard and Ann Lewis for permission in 2012.

2 SPECIFICATION AND PROJECT DESIGN

The archaeological assessment was requested and monitored by Snowdonia National Park archaeologist who provided a brief for the work Ref **A-D/018** (Appendix 3), and carried out according to an accepted design for such work, as set down in the Welsh national planning guidance (Planning Policy Wales 2002), Welsh Office Circular 60/96 (planning and the Historic Environment: Archaeology) and the Institute of Field Archaeologists Standard and Guidance for Archaeological Desk-based Assessment (2001 & 2008). The basic requirement was for a desktop study and field search of the proposed area, in order to assess the impact of the proposals on any archaeological features within the area concerned. The importance and condition of known archaeological remains were to be assessed, areas of archaeological potential and new sites to be identified. Measures to mitigate the effects of the construction work on the archaeological resource were to be suggested.

Gwynedd Archaeological Trust's proposals for filling these requirements were as follows:

- Desktop study
- Field walkover
- Initial report

The work was carried out on the basis of information supplied by Renewable Power Consulting Ltd drawings 001, 101 and 501, and *Morben Hydro* Cadair overall ver3 May 2011.

3 METHODS AND TECHNIQUES

3.1 Desk top study

This comprised the consultation of maps, documents, photographs, computer records, written records and reference works, which form part of the Gwynedd Historic Environment Record (HER), located at GAT, Bangor. Records were also consulted at the Meirionnydd Archives, Dolgellau and the National Monument Record held by the Royal Commission on Ancient and Historic Monuments of Wales at Aberystwyth. Information about listed buildings was consulted by means of Cadw records held in the Gwynedd HER and by consultation of CARN (Core Archaeological Index), which is the online index of the Royal Commission on Ancient and Historic Monuments, Wales.

Sites, buildings and find spots recorded on the Gwynedd HER and the NMR Coflein database were identified (Fig. 1).

The earliest record of property divisions and land ownership were identified on the Tithe map and Tithe Schedule for Llanfihangel y Pennant, 1838, kept at the Meirionnydd Archives, Dolgellau.

Three buildings of national importance lie within the study area: the farmhouse of Gwastadfryn (a listed building Grade II; Cadw Record No. 23167), the ruins of Ty'n y Ddol cottage (Grade II listed

building; Cadw Record No. 23166 and Pont Pennant (Grade II listed building; Cadw Record No.23163).

The study area lies within the Snowdonia National Park and within the Dyffryn Dysynni landscape of special historic interest (Cadw 2001, 74-8). This landscape is important for its concentration of prehistoric sites around the coast, for the presence of an Early Medieval ecclesiastical presence at Tywyn, of a commotal centre in the lower valley and later of the Castle of Bere close to the study area. The lower valley was also the focus of two important gentry estates of Peniarth and Ynysmaengwyn, from the 15th century.

3.2 Field Search

The field search was carried out on 25th September 2008, and again on 24th July 2012 when the revised route was walked. The whole of the route was walked in both directions recording any observed features on the line of the route or within 500m of it (250m either side), numbering features or areas of archaeological potential from north to south. Features in the vicinity of the pipeline route or the associated buildings need to be assessed because the exact line of the route has not been marked on the ground and the extent of the working easements along the pipeline or around the intakes and powerhouse are not known.

The whole of the route was accessible and the conditions were dry and good for the survey on both days. The land is all open and visibility good in the most part.

The archive will be filed with GAT as Project No. **G2050**.

3.3 Report

The available information was synthesised to give a summary of the archaeological and historic background and of the assessment and recommendations, as set out below. The separate features, their evaluation and recommendations are listed separately, and a summary of the overall assessment of the area is given at the end.

The criteria used for assessing the value of any features found is based upon those used by the Secretary of State for Wales when considering sites for protection as scheduled ancient monuments, as set out in the Welsh Office circular 60/96. The definitions of categories used for impact, field evaluation and mitigation are set out in Appendix 2.

Fig. 1 provides a location map for the study area in relation to the proposed development and of known archaeological or historic features. Fig. 2 provides a location map for features identified during the field study and these are located in greater detail on Figs 4-6.

4 ARCHAEOLOGICAL RESULTS

4.1 Topographic description

The study area is a steep-sided valley draining the south-west side of Cader Idris. The Cader Idris massif comprises part of a very extensive area of geological strata of Ordovician age, underlying much of north-west Wales and best known for its slates. Cader Idris itself is a remnant centre of vulcanicity that affected the surrounding fine sedimentary rocks including mudstones and shales producing harder intrusions and locally altered rocks such as slates and tuffs. These intrusions sometimes create dramatic cliffs and outcrops such as that of the sheer northern scarp of the mountain as well as areas of slate that were extensively quarried (Smith and George 1961).

The valley of the Afon Cadair is deeply cut with very steep sides and although the lower part is not upland in terms of altitude, lying between 60-200m OD, it is poor and rocky with a largely upland type of vegetation apart from a few fields of improved or partly improved pasture in the lower part of the valley.

The soils are poorly drained acid brown earths developed over fluvio-glacial till or rock. The lower parts of the valley around Gwastadfryn and the nearby valley sides are enclosed and improved pasture and classified as of Grade 4 - poor agricultural land, mainly suitable for grass pasture or occasional arable crops. The upper valley and surrounding upland are all classified as of Grade 5 - very poor agricultural land suitable only for permanent pasture or rough grazing (ADAS 1977, MAFF 1988).

4.2 Archaeological and historical background

Prehistoric Period

The mountainous area of Cader Idris has no chance finds to show that it was occupied or used in the Mesolithic or Neolithic periods. Research shows that natural forest cover once extended to at least 300m OD and some hunting activity would be expected. The low agricultural potential would not have made it favourable for early farmers although a scatter of finds of Neolithic stone axes around the coastal fringe and in the valleys of the Afon Dysynni and Mawddach show that the area was utilised if not necessarily permanently occupied. Excavations in northern Meirionnydd show that during the Early Bronze Age, from *c*. 2000 BC, extensive areas of the upland began to lose their forest cover, either through deliberate clearance or pressure of grazing (Chambers and Price 1988). This clearance resulted from an expanding population of which little direct evidence of settlement is known but which is demonstrated by the multiplicity of known Bronze Age funerary and ceremonial monuments such as burial cairns and standing stones. Some of these cairns occupy isolated but prominent hill tops far from any likely site of settlement such as those strung out along the Cader Idris ridge and that nearest to the study area on Carnedd Llwyd to the west (Fig. 1, 2886) and another possible one south of Pencoed, east of the study area (Fig. 1, 10177). Most, however, were concentrated in particular areas suggesting proximity to areas of settlement or comprising areas of special ceremonial significance. One area is on the slopes of Allt Llwyd, to the south west of the study area, overlooking the lower Dysynni Valley. The other is below the north-west slopes of the Cader Idris ridge overlooking the mouth of the Afon Mawddach and concentrated around the Cregennen Lakes. Both areas seem to have been linked by prehistoric tracks that originated at the mouth of the Dysynni, possibly because it was a sheltered anchorage. One track followed the coast via Llwyngwril, while the other ran over the mountains via Llanegryn, and is known as the Ffordd Ddu. The valley of the Afon Cadair could have been another prehistoric route but there are no finds or monuments along it to suggest that.

There are several examples of actual settlement of the Iron Age or Romano-British period in the areas bordering the Cader Idris uplands, mainly on the west-facing slopes with a few further inland

but only one possible platform for a roundhouse is known in the study area (Fig. 1, 10171), found during the detailed survey of upland around Pencoed, just to the east, carried out for the Royal Commission on Ancient and Historic Monuments in Wales (GAT 1993, 68-73).

Hillforts provide the most substantial surviving evidence of Iron Age activity and these, like the domestic settlement are concentrated around the coastal fringes with a few inland along the major valleys, one of which lies on a dramatic outcrop, Craig yr Aderyn, high up on the south side of the Dysynni Valley, south-west of Llanfihangel y Pennant. This isolated and inaccessible hillfort suggests the presence of a local community dependent on upland grazing because of the absence of land suitable for cultivation nearby. Examples of such settlement are found at Ty'n y Cornel above the Dysynni Valley and at Foel Cae'r Berllan just south of Llanfihangel y Pennant. Ty'n y Cornel is a scattered, unenclosed settlement of small roundhouses while Cae'r Berllan is a small sub-circular enclosed homestead. These indicate the types of settlement that might have been present in the Afon Cadair valley. By comparison with known examples elsewhere, some of the Iron Age settlement continued in the Roman period and excavation of one roundhouse at Cyfannedd Fawr above Fairbourne has produced Roman pottery (Crew 1981).

Medieval period

Occupation in this area in the Early Medieval period is unknown although a sub-rectangular enclosure above Arthog has produced some Roman pottery and may be a late Roman/Early Medieval high status settlement. Tywyn was a focus of early monastic settlement associated with relics of St Cadfan, becoming a wealthy and important 'mother church' for the region and famous for the presence there of an inscribed memorial stone of the 7th-9th century AD with the earliest known inscription in the Welsh language. The church of St Michael at Llanfihangel y Pennant was a dependent chapel of Tywyn. The present church building is no earlier than 13th century but it contains a font of 12th century date (Beverley Smith 2001, 330) and there is some evidence, as yet unproven, that it replaced an earlier church further to the north-west on the upper slopes of Ty'n y fach where there is a rectangular enclosure and a nearby feature known as 'the Parson's Well' (RCHMW 1921, 114).

Llanfihangel y Pennant was part of the commote of Tal-y-bont and was clearly a significant location and well settled by the early 13th century when the castle of Bere was built there by Llywelyn Fawr in about 1221 to control the southern borders of Gwynedd. It is suggested that the present church was built to serve the castle and replaced the earlier church described above (Beverley Smith 2001, 55-6). The construction of the castle here showed that the valley was a favoured location and there must have been contemporary domestic settlement nearby. This would have consisted of 'long huts' although examples have yet to be identified with certainty. Four 'townships' were recorded in this area in a taxation document of 1293 (Bowen 1971). Two were of up to 13 households at Pencoed and Uwchygarreg and two of up to 25 households at Y Bere and Pennant. The Pencoed township may be represented by the platforms and agricultural features (Fig. 1, 10169, 10170) found in Nant Pencoed during previous survey (GAT 1993). Castell y Bere was maintained by Edward I who granted it borough status, but it never seems to have developed and was later abandoned again after the revolt of Madog in 1295 (Cadw 2001, 76).

The route up the valley of the Afon Cadair was probably well-use in this period, providing the most direct route to the north connecting with the important crossing point of the Mawddach at Dolgellau as well as for summer pasturing of the Cader Idris upland, notably Hafoty Gwastadfryn at the head of the valley. Cattle pens and sheepfolds are the most evident features of upland land use.

Post-Medieval Period

The use of *hafodydd* and upland settlement continued into the Post-medieval period and several buildings, like Gwastadfryn, have at least 17th century origins. The oldest tombstone in the church is of 1663 (RCAHMW 1921, 114). The majority of the observable man-made features of the landscape

belong with and are unchanged from this Post-medieval period, including the houses, hay barns, cattle sheds, field walls and drainage ditches as shown by comparison of the present with the Ordnance Survey map of 1889 (Figs 4-6). The previous survey of the upland around Pencoed showed that a considerable number of features survive as yet unrecorded in this area (GAT 1993). In the mid 15th century much of the land in the area was held by the family from Peniarth, Bryncrug, including land at Llanfihangel y Pennant but at the time of the Tithe Apportionment of 1838 the study area was divided into just four properties, none part of the Peniarth estate (Fig. 3 and Table 1).

Table 1 Excerpt from the Llanfihangel y Pennant Tithe Schedule, 1838

Schedule No.	***Landowner***	***Occupier***	***Farm name***	***State of cultivation***	***Area***	***Value***
30	Tilley, Richard	David Roberts	Pennant	Arable and pasture	421ac	£8-1s
32	*Ditto*	*Ditto*	Pencoed	*Ditto*	420ac	£8-1s
31	Griffith, Edward Humphrey	David Williams	Gwastadvryn	*Ditto*	750ac	£15-11s
34	*Ditto*	Thomas Evans	Tyn'y vach	Arable, pasture and wood	326ac	£10-16s

These properties were mainly large areas of upland pasture and Gwastadfryn was the largest of these with 750 acres, a substantial property owned by Edward Humphrey Griffith, who was a member of Griffiths family of Plasnewydd, Denbighshire, who owned substantial lands in both Denbighshire and Merioneth and served for some time as the High Sheriff of the county of Merioneth (Plasnewydd MSS, Denbighshire RO DD/GR). Gwastadfryn is now amalgamated with Ty'n y Fach and farmed by the Lewis family since about 1900. The continuation of hill pasture as the main economic stay and the lack of potential for major improvement mean that many relict features survive as demonstrated by the present survey, below.

In addition to agricultural features there are four small slate quarries in the area. The GAT survey of Nant Pencoed also noted evidence of peat-cutting, which was probably widely practised for domestic use. Other examples of stone and peat extraction are likely to be found elsewhere in the area.

5 GENERAL ARCHAEOLOGICAL FIELD ASSESSMENT

Description (from north to south)

The site for Intake 1 is in the base of the rocky valley just above the point where the river begins to form a small gorge, crossed by a footbridge.

The pipeline route for 500m to the south of Intake 1 lies in the upper valley of the Afon Cadair, which is medium sloping and partly enclosed but generally unimproved pasture apart from some drainage ditches. On the slopes are some natural terraces that have more potential for early activity than the steeper slopes around (Fig. 13).

The pipeline route then continues for about 900m alongside a farm track that has been greatly improved in the recent past by machining out a substantial terrace on the hillside (Fig. 14). The track was formerly smaller and a more ancient track providing access to the farm of Pencoed. Part of the older track still survives as a footpath where the newer track has take a longer and more gradual route (Fig. 15).

A second intake, Intake 2 is situated in the valley of the Afon Pencoed to the east, where the intake is situated in a narrow rocky ravine. The pipeline route from it runs around the contour on a steep rocky valley side for about 300m to join the main pipeline. The steepness of the slope means that this area has very little potential for any early activity.

The main pipeline diverges from the side of the farm track 190m north of Gwastadfryn, adjacent to the remains of a possible medieval platform house (F14, Fig. 27). The route crosses an area of unimproved rough pasture to a small valley, which contains a small stream that is a tributary of the Afon Cadair. There are some rock outcropping to the north of this stream (Feature 19, Fig. 26), but this is not thought likely to be archaeological. The rising land to the north of the stream is rough unimproved pasture with small trees and a cover of ferns until it meets the track way to the south of the medieval homestead (Feature 14). To the south of the stream beyond the valley slope the route opens out into improved pasture fields. The pipeline route follows a former track at this point.

In the most northerly of these fields, the field slopes down a small but steep valley to a stream which is an east-west tributary of the Afon Cadair, where a cutting into the bank to reduce the steepness of the path can be seen on the south bank (NGR SH67800998; Feature 18, Fig. 24).

The centre of the middle one of the three pasture fields to the south of the stream contains a natural spring, which rises just to the east of the proposed pipeline route (Feature 20, Fig. 25). It would appear to be entirely natural, but it is possible that there might be some archaeological activity associated with it, in addition to the cultivation terraces which can be seen on the slopes in this area (NPRN 40418).

The pipeline route cuts across three improved and cultivated pasture fields on the line of a rough track (Fig. 28). The cultivation of these fields could have masked earlier features, but their slope and even surface does not suggest any clear evidence of such features and none was seen on aerial photographs. The fields are bounded by modern post and wire fences, on a medium east-west hill slope.

The route crosses a small wooded area of steeper unimproved hill slope before reaching the proposed power house location in a level pasture field to the north-east of Tynyfach farm (Feature 21, Fig. 30) part of the floodplain on the eastern bank of the Afon Cadair, at NGR SH67530959.

6 THE ARCHAEOLOGICAL SURVEY (Fig. 2)

The walk over survey identified 23 archaeological or historic features within the wider area of the development of which three were listed buildings six were areas of archaeological potential. The remainder were newly identified features or newly recorded existing agricultural features of a historic nature.

F1 Stack stand (Fig. 10): NGR SH 6821 1132
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change
Impact significance prior to mitigation: Neutral
Impact likelihood: None

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A small, sub-rectangular walled enclosure on the hillside about 80m east of the pipeline route. It is 8m by 4.5m internally, oriented approximately east-west up and down slope with a very irregular rubble-built wall 1m wide and up to 1.2m high with a wide entrance gap at the east (uphill) end. The downhill end is terraced considerably above the slope but the no attempt was made to terrace the interior into the slope to create a level floor. It is situated close to the uphill end of the cattle shed F2 and must be a stack stand for winter feeding into the end of the cattle shed. Shown on the first edition 1:2500 Ordnance Survey map 1889.

The structure can be avoided by construction.

F2 Cattle shed (Fig. 11): NGR SH 6819 1132
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change
Impact significance prior to mitigation: Neutral
Impact likelihood: None

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A substantially built, now roofless ruin, 11m by 5m internally with a wall 1m wide of rubble with trimmed quoins. Set approximately east-west up and down slope with a doorway at the west, downhill end. The downhill end is terraced above the slope and the uphill end is terraced into the slope and the interior is level. The west gable is complete but bulging and nearing collapse. The doorway has an oak lintel but has been blocked in with stone. A pile of roofing slates against the north wall are roughly trimmed with wide peg-holes. Some are narrow and single pegged, others double. The building lies only 3m west of the stack stand F1 and is clearly a winter cattle shed and would have had a window in the upper part of the uphill gable through which feed from the adjoining stack stand could be placed.

The structure can be avoided by construction.

F3 Walled field enclosure (Fig. 12): NGR SH 6813 1130 (C)
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Minor
Impact significance prior to mitigation: Low
Impact likelihood: Certain

Recommendations for mitigatory measures: Reinstatement

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Neutral

A walled field enclosure of sub-rectilinear outline. Close to and probably associate with the cattle shed F2. The west side is formed by the Afon Cadair, which was a water source for stock but was not a barrier so the field may have formed part of a large enclosure on the west side of the river. The enclosure is walled with a distinctive, quite low but neatly built, sturdy wall only 1m high and 0.8m wide, mainly still to original height. The low height suggests it was designed for cattle, not sheep. There is no evidence that the wall could have replaced an earlier wall or bank.

The turbine pipeline construction will involve removing part of the wall, which should be reinstated.

F4 Boulder weir: NGR SH 6810 1144
Period: Post-medieval
Category: Negligible

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Major
Impact significance prior to mitigation: Slight
Impact likelihood: Certain

Recommendations for mitigatory measures: None

Impact magnitude with mitigation: Major

Impact significance with mitigation: Slight

A line of large boulders lies across the river at just the point where the north wall of the enclosure F3 approaches the river. This seems likely to be a deliberate feature, perhaps designed to create a shallow place for cattle to cross the river. It has also created a still pool below the weir.

The construction of turbine Intake 1 might involve destruction of the weir, but it has little value in itself and no mitigation is needed.

F5 Old track, drain and activity area: NGR SH 6810 1121 (C)
Period: Post-medieval
Category: Negligible

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Neutral
Impact likelihood: Certain

Recommendations for mitigatory measures: None

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Neutral

The line of an old footpath marked on the 1889 1:2500 Ordnance Survey map, at that time crossing the river by a footbridge. There is still a footbridge, although it is now only a single log with a wire hand-rail. The line of the footpath can be seen continuing up the slope, marked by occasional stones placed on the top of outcrops. There are signs that the fairly flat area adjoining the river here has been used, perhaps for camps as stones have been cleared and a line of stones has been laid along the river

bank. The 1889 map shows the line of the footpath crossing the field enclosure F4, which suggests that the path predates the enclosure. A cut drainage ditch runs approximately parallel to the path diagonally down the hillside.

The turbine pipeline will follow the line of the track for some distance, but it is only a barely discernable line of clearing on the hillside and needs no mitigation.

F6 Field drainage ditches: NGR SH 6816 1115 (C)
Period: Post-medieval
Category: Negligible

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Neutral
Impact likelihood: Certain

Recommendations for mitigatory measures: None

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Neutral

A small number of drainage ditches on the hillside, attempting to improve the pasture. Visible on aerial photographs and on the ground, one shown on the 1889 1:2500 Ordnance Survey map, the rest probably of the same period.

These are minor agricultural features and no mitigation is required.

F7 Area of prehistoric burnt mound potential (Fig. 13): NGR SH 6811 1125 (C)
Period: Prehistoric?
Category: Unknown

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change to Moderate
Impact significance prior to mitigation: Neutral to Moderate.
Impact likelihood: Probable

Recommendations for mitigatory measures: Intensive watching brief

Impact magnitude with mitigation: No change to Moderate

Impact significance with mitigation: Neutral to Moderate

A more level area of natural terrace on the hillside where there are various irregular humps. These may be glacial features but there is a possibility, considering that this part of the hillside is fairly level, that there is burnt mound activity here that has been modified by ditching and cattle trampling.

An **intensive watching brief** should be carried out during trenching in this area. If archaeological features are found some detailed recording, sampling and radiocarbon dating may be needed.

F8 Field wall: NGR SH 6811 1113
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Minor
Impact significance prior to mitigation: Slight
Impact likelihood: Certain

Recommendations for mitigatory measures: Reinstatement

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Slight

A tall stone wall, 1.5m high of rubble forming part of a very large extensive enclosure of curvilinear outline. A ffridd wall to enclose sheep on the lower valley slope. Well maintained. There is no evidence that the wall could have replaced an earlier wall or bank.

The turbine pipeline construction will involve removing part of the wall, which should be reinstated.

F9 Track (Fig. 14): NGR SH 6806 1092 (C)
Period: Recent
Category: Negligible

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Moderate
Impact significance prior to mitigation: Neutral
Impact likelihood: Likely

Recommendations for mitigatory measures: None

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Neutral

The modern track from Gwastadfryn to Pencoed. Here mostly a 20th century feature, re-cut on a gentler slope from that shown on the 1889 1:2500 Ordnance Survey map. At its southern end it follows the line of an earlier track shown on the 1889 map but the re-cutting in modern times has removed all trace of the earlier track.

Now a totally modern feature, no mitigation needed.

F10 Track (Fig. 15): NGR SH 6807 1073
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Neutral
Impact likelihood: Likely

Recommendations for mitigatory measures: None

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Neutral

The original track to Pencoed as marked on the 1889 1:2500 Ordnance Survey map. About 3m wide originally, now continued just as public footpath, zigzagging up the hillside.

A historic track but will not be affected by the construction.

F11 Wall (Fig. 16): NGR SH 6809 1068 (C)
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Unknown
Impact significance prior to mitigation: Unknown
Impact likelihood: Unknown

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A short and detached length of massive dry stone wall, 1.5m high and 1.1m wide, neatly curving in plan, lies alongside the stream at the east side of the (modern steel girder) bridge across the Afon Pencoed. There is no wall at the west side, where there is a sheer-sided ravine. The original crossing of the river was by footbridge at this point and by a ford for stock lower down, as shown on the 1889 1:2500 Ordnance Survey map. The function of such a major piece of wall here is unknown. Its curving line and fairly level interior could indicate that it was once part of a sub-circular sheepfold that has since been largely removed but if so it was before the 1889 Ordnance Survey map.

F12 Wall (Fig. 17): NGR SH 6817 1065 (A)
Period: Medieval/Post-medieval
Category: Negligible

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Minor
Impact significance prior to mitigation: Slight
Impact likelihood: Certain

Recommendations for mitigatory measures: Basic Recording

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Slight

A very low, ruinous wandering wall joining outcrops on the steep south side of the valley of the Afon Pencoed, on the line of the pipe from Intake 2. It seems to be a vague attempt to keep grazing animals to the lower valley slopes. Its nature is quite different to the well-built 18-19th century walls,

suggesting it belongs with some Medieval use, of which other features of possibly the same period were identified further to the east during the GAT Upland Survey of Pencoed in 1988 (GAT 1993).

F13 Walled field enclosure: NGR SH 6770 1027 (C)
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change
Impact significance prior to mitigation: Negligible
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Negligible

A stone-walled field enclosure already present on the 1889 1:2500 Ordnance Survey map. A medium-sloping area of improved pasture on the lower valley side that may have been used for a hay meadow or occasional arable in the past. There is no evidence that the wall could have replaced an earlier wall or bank.

F14 Possible medieval homestead (Fig. 18): NGR SH 6784 1018 (C)
Period: Possibly Medieval
Category: High

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change
Impact significance prior to mitigation: Neutral
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Avoidance essential- all excavation work to be kept on the track at this point. If it were necessary to carry out any works off the line of the proposed route in this area, an **intensive watching brief** would be needed to be carried out on any off track works.

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A previously unrecorded enclosure consisting of an original sub-rectangular enclosure to which has been added a larger irregular annexe. Both are shown on the 1889 1:2500 Ordnance Survey map. They consist of low rubble walls, now in a ruinous state and at first would be taken for just a sheep or cattle gathering enclosure. However, at the north end of the smaller rectangular enclosure is a long sub-rectangular platform terraced above the slope about 1m attached to which is a slightly larger, platform of curving outline, which is terraced above the slope by 2m. There is an orthostatic-sided entrance into the smaller platform from the north. These look like dwelling platforms rather than anything to do with stock enclosures. The walls are presently ruinous and the details are obscured by bracken but an RAF aerial Photo of 1958 shows the features much more clearly, at a time when there was no masking vegetation (RAF 1958) and are shown on a sketch plot (Fig. 7).

The proposed pipeline runs along the track adjacent to the west of this site, which has been improved and cut into the hill-slope in recent times, in order to widen it (Fig. 27). It is thought highly unlikely that any archaeological remains could survive in the track bed here. No particular mitigation is thought to be required, provided that all works are carried out on the track bed at this point.

F15 Knoll summit (Fig. 19): NGR SH 6778 1006 (C)
Period: Unknown
Category: Unknown

Recommendations for further assessment: None

Impact magnitude prior to mitigation: No change
Impact significance prior to mitigation: Neutral
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A distinctively prominent knoll overlooking the lower valley, the summit of which has potential for prehistoric funerary activity. The field of which it is part has been improved and cultivated and there are no sign of any earthworks or of any features on aerial photographs of 1958 or 2006 so the possibility of archaeological features is low but uncertain.

The proposed pipeline route diverges around the knoll, leaving the summit unaffected.

F16 Ruined cattle shed, Gwastadfryn (Fig. 9 and 20-23): NGR SH 6768 0988
Period: Post-medieval
Category: Medium

Recommendations for further assessment: None

Impact magnitude prior to mitigation: None
Impact significance prior to mitigation: Neutral
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

A small roofless ruined building in the southern part of the farmyard of Gwastadfryn, Possibly a cow-shed with later attached hay-store. Of typical local style of 18th century or earlier date. It is c. 16m by 6m overall consisting originally of a shorter single storey building that has been extended or added to by a higher annexe. The walls are of trimmed face boulders, probably acquired from the river bed nearby. The foundations and quoins are of much larger untrimmed boulders. The annexe is of rather better build with some quoins of neater faced blocks. The original building has a doorway slightly off-centre in the end wall with an external stone lintel and a long internal oak lintel that extends to the east wall. It has three splayed slit windows, one still with a timber lintel. There would have been four but one has gone, and replaced by modern rebuilding. There is also a narrow ledge along the inner face of the west wall, just below the windows, of unknown function. The south gable is complete to the roof line which is low and of a low angle and must have been slated.

The annexe has two parallel-side slit windows at head height on the east wall and no entrance surviving, presumably where the present gap now is and flanked by two more slit windows. There is a narrow ledge below the windows on the east wall.

This site is to be avoided by the scheme works

F17 House, Gwastadfryn: NGR SH 6767 0997 **Grade II LB**
Period: Post-medieval
Category: High

Recommendations for further assessment: None

Impact magnitude prior to mitigation: None
Impact significance prior to mitigation: Neutral
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Avoidance

Impact magnitude with mitigation: No change

Impact significance with mitigation: Neutral

This is included here because although physically unaffected by the development it is an important structure close to the pipeline route. The listing description described it as 'built in the 17th century and remodelled in the late 18th or early 19th century.' It once had stone stairs internally and a water wheel attached to the east end. The farmyard extends south along the river bank and includes a barn and further south the possible cow-shed, F16.

This site is to be avoided by the scheme works

F18 Stream Crossing: NGR SH 6781 0998
Period: Post-medieval
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Slight
Impact likelihood: Certain

Recommendations for mitigatory measures: Archaeological Watching Brief during groundworks

Impact magnitude with mitigation: Minor

Impact significance with mitigation: Slight

The trackway crosses the stream at this point, and evidence for cutting into the bank has been noted on the southern bank of the stream. It is possible that evidence relating to this crossing point is present archaeologically

F19 Area of Outcropping: NGR SH 6781 0998
Period: Probably natural
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Slight
Impact likelihood: Probable

Recommendations for mitigatory measures: Archaeological Watching Brief

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Slight

A probable natural outcrop of rock on the north bank of the stream. It is a possible site of human activity although there is no clear evidence of it (Fig. 26).

F20 Spring and Possible Cultivation terrace NGR SH 6774 0978 **NPRN 414048**
Period: Unknown, but likely to be medieval
Category: Medium

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Moderate
Impact significance prior to mitigation: Minor
Impact likelihood: Certain

Recommendations for mitigatory measures: Intensive Archaeological Watching Brief

Impact magnitude with mitigation: Minor

Impact significance with mitigation: Slight

A spring rises at this point, close to an area of terracing which may have been created for medieval or earlier cultivation (Fig. 25). There is no clear evidence of human settlement, although the terracing suggests that agricultural activity has taken place, resulting in landscape alteration and the spring is likely to have been used as a water supply in the past. The terracing is visible on RAF AP 106G UK 1468, dated 4th may 1946.

This indicated that there is an increased potential for archaeology in this area, and an **intensive archaeological watching brief** will be required during groundworks.

F21 Power House Location: NGR SH 6753 0959
Period: Modern
Category: Low

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Slight
Impact likelihood: Certain

Recommendations for mitigatory measures: Archaeological Watching Brief during groundworks

Impact magnitude with mitigation: Negligible

Impact significance with mitigation: Slight

The proposed power house site is located on the valley floor on the floodplain of the Afon Cadair in a field north of the modern farm outbuildings of Tynyfach, and excavation works are expected to cover an area of 12.5m by 8.5m (Fig. 30). An avenue of trees bounds the river to the west of the power house. There is evidence of modern activity within the field, including patches of gravel, but the area would be a possible location for settlement in historic or earlier times, although there is no evidence for any, and it would appear that the area floods from the river from time to time.

F22 Tyn-y-Ddol: NGR SH 6737 0953 **Grade II LB; Ref 23166**
Period: Post-medieval
Category: High

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Negligible
Impact significance prior to mitigation: Slight
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Ensure sympathetic design of the powerhouse, to ensure it does not form an excessive visual intrusion on the cottage

Impact magnitude with mitigation: Minor

Impact significance with mitigation: Slight

The former childhood home of Mary Jones consists of a substantial walled cottage and outbuilding, with the lower courses of a substantial chimney to the east, possibly of 17th century origin (Fig. 29). It now contains a monument to Mary Jones, and is ruined surviving to about 5 courses high, and capped with recent protective stones.

Mary Jones was from a poor family, the daughter of a weaver, and was born in December 1784. Her parents were devout Calvinistic Methodists, and she herself professed the Christian faith at eight years of age. Having learned to read in the circulating schools organized by Thomas Charles, it became her burning desire to possess a Bible of her own. The nearest copy was at a farm two miles distant from her little cottage, and there was no copy on sale nearer than Bala, which was 25 miles away; and it was not certain that a copy could be obtained there. Having saved for six years until she had enough money to pay for a copy, she started one morning in 1800 for Bala, and walked the 25 miles to obtain a copy from the Rev. Charles, the only individual with Bibles for sale in the area. According to one version of the story, Mr. Charles told her that all of the copies which he had received were sold or already spoken for. Mary was so distraught that Charles spared her one of the copies already promised to another. In another version, she had to wait two days for a supply of Bibles to arrive, and was able to purchase a copy for herself and two other copies for members of her family. According to tradition, it was the impression that this visit by Mary Jones left upon him that impelled Charles to propose to the Council of the *Religious Tract Society* the formation of a Society to supply Wales with Bibles.

There will be no direct impact upon the building, which is located on the west bank of the river, and about 180m from the proposed power house, but it is important that the indirect visual impact of the setting of the cottage is considered by sympathetic design and setting. It must be stated however that the modern farm buildings to the north of Tynyfach farm already have a significant impact on the setting of the cottage.

F23 Pont Pennant: NGR SH 6735 0950 **Grade II LB; Ref 23163**
Period: Post-medieval

Category: High

Recommendations for further assessment: None

Impact magnitude prior to mitigation: Neutral
Impact significance prior to mitigation: Slight
Impact likelihood: Unlikely

Recommendations for mitigatory measures: Ensure sympathetic design of the powerhouse, to ensure it does not form an excessive visual intrusion on the cottage

Impact magnitude with mitigation: No change

Impact significance with mitigation: Slight

The two arched bridge carries the road from Llanfihangel-y-Pennant, past Ty'n-y-Ddol to the upper reaches of the valley. It is of late 17th or 18th century date. A modern bridge carries the road adjacent to it now, which considerably affects its setting. There will be no direct impact on this structure, and its setting has already been significantly affected by the modern bridge adjacent to it.

7 SUMMARY OF RECOMMENDATIONS FOR MITIGATORY MEASURES

The assessment and mitigatory measures are summarised in Table 2. The definitions of categories used for the assessment are provided in Appendix 2.

Table 2 Summary of assessment and recommended mitigation

Feature No.	***Description***	***Archaeological Value***	***Impact magnitude before mitigation***	***Further assessment***	***Proposed mitigation***
1	Stack stand	Low	No change	None	Avoidance
2	Cattle shed	Low	No change	None	Avoidance
3	Walled field enclosure	Low	Minor	None	Reinstatement
4	Boulder weir	Negligible	Major	None	None
5	Old track, drain and activity area	Negligible	Negligible	None	None
6	Field drainage ditches	Negligible	Negligible	None	None
7	Area of prehistoric burnt mound potential	Unknown	No change to Moderate	None	**Intensive watching brief**
8	Field wall	Low	Slight	None	Reinstatement
9	Track	Negligible	Moderate	None	None
10	Track	Low	Negligible	None	None
11	Wall	Low	Unknown	None	Avoidance
12	Wall	Negligible	Minor	None	Basic Recording
13	Walled field enclosure	Low	Negligible	None	Avoidance
14	Possible Medieval homestead	Medium	No change	None	Avoidance, or **Intensive Watching Brief** during any off

					track disturbance
15	Knoll summit with prehistoric potential	Unknown	No change	None	Avoidance
16	Ruined cattle shed	Medium	No change	None	Avoidance
17	Gwastadfryn House	High	No change	None	Avoidance
18	Stream crossing	Low	Negligible	None	Archaeological Watching Brief
19	Area of outcropping	Low	Negligible	None	Archaeological Watching Brief
20	Spring and Cultivation Terrace	Medium	Moderate	None	**Intensive Archaeological Watching Brief**
21	Power house location	Low	Negligible	None	Archaeological Watching Brief
22	Ty'n-y-Ddol	High	Negligible	None	Avoidance and ensure sympathetic design
23	Pont Pennant	High	Neutral	None	Avoidance and ensure sympathetic design

Summary of recommendations requiring action

Intensive watching Brief

- Area of prehistoric burnt mound potential F7
- Medieval Homestead F14 (if avoidance not possible).
- Possible Cultivation Terrace F20

Partial watching brief

- Stream Crossing F18
- Area of Outcropping F19
- Power House Location F21

Reinstatement

- Field wall F3
- Field wall F8

Basic Recording

- Field Wall F12

Avoidance

- Stack stand F1

- Cattle shed F2
- Wall F11
- Field wall F13
- Possible Medieval homestead F14
- Knoll summit with prehistoric potential F15
- Cattle shed F16
- Gwastadfryn House F17
- Ty'n-y-Ddol F22
- Pont Pennant F23

8 REFERENCES AND OTHER SOURCES

Maps

1797 John Evans. *A Map of North Wales*, scale *c*. 5 inches to 7 miles.
1838 Map to accompany the Llanfihangel y Pennant Tithe Apportionment. Meirionnydd Archives, Dolgellau.
1889 Ordnance Survey 1:2500.
1900 Ordnance Survey 1:2500.
1912 Ordnance Survey 1:2500.
1972 Ordnance Survey 1:10000 map 60NE.

Unpublished documents

GAT 1993. *The Uplands Survey Project. Archaeological fieldwork in the Gwynedd Uplands between 1983 and 1992*, GAT Rep. no. 22.

Photographs

RAF 106G UK 1468 frame 1020; taken 4th May 1946
RAF 1958. Sheet 116 Vertical, 158/2649, Frame 0172, NMR, RCAHMW, Aberystwyth.
Ordnance Survey 71/322 frame 581; taken 6 July 1971
Google Earth 2006, Vertical cover.

Published documents

ADAS 1977. *Land Capability Maps*, Ministry of Agriculture, Fisheries and Foods.
Beverley Smith, J. and Ll. 2001. *The History of Merioneth, Vol. II: The Medieval Age*, Merioneth Historical and Record Society, Cardiff.
Bowen, E.G. and Gresham, C.A. 1967. *History of Merioneth, Vol. 1*, Merioneth Historical and Record Society, Dolgellau.
Bowen, G. 1971. *Atlas Meirionnydd*, Meirionnydd County Council.
Cadw 2001. *Landscapes of Historic Interest in Wales. Part2.2: Landscapes of Special Historic Interest*, Cadw, Cardiff..
Chambers, F.M. and Price, S-M. 1988. The environmental setting of Erw-Wen and Moel y Gerddi, *Proc. Prehist. Soc*. 54, 93-100.
Crew, P. 1978, 1979, 1981. Cyfannedd Fawr, Arthog, *Archaeology in Wales*, 18, 19, 21, CBA (Wales).
IFA 2001 & 2008. *Standard and Guidance for Archaeological Desk-based Assessment*, Institute of Field Archaeologists.

MAFF 1988. *Agricultural land classification of England and Wales*, Ministry of Agriculture and Fisheries, HMSO, (London).
RCAHMW 1921. *County of Merioneth Inventory of Ancient Monuments*, HMSO, London.
Smith, B. and George, T.N. 1961. *British Regional Geology. North Wales*. Third edition. Natural Environment Research Council, HMSO, London.

APPENDIX 1

LIST OF ARCHAEOLOGICAL SITES AND BUILDINGS WITHIN THE STUDY AREA RECORDED IN THE GWYNEDD HISTORIC ENVIRONMENT RECORD (SEE FIG. 1)

Status - Sites with Statutory Protection, LB = Listed building, SAM = Scheduled Ancient Monument
PRN – Primary Record Number
NGR – National Grid Reference, (A – approximate location only, C – centre of extensive site)

Within 1km of the construction area

PRN	SITENAME	NGR	STATUS_NO	SITEST AT	GLOSSARY_SITETYPE	PERIOD	FORM
4935	STANDING STONE - UNLOCATED	SH68070982			STANDING STONE	Prehistoric	STANDING MONUMENT
4944	CRUCK COTTAGE	SH67400945	GII	LB	HOUSE	Post-Medieval	BUILDING - ROOFED
4212	MARKER CAIRN - NON-ANTIQUITY	SH68361026			CAIRN	Unknown	STONE BUILT FEATURE
4230	CARNEDD LWYD, (CAIRN) CRAIG-Y-LLYN	SH65961140			CAIRN	Prehistoric	STONE BUILT FEATURE
4239	'U' ENCLOSURE - PROBABLY DRAINAGE DITCH	SH68451156			ENCLOSURE	Unknown	EARTHWORK
4240	SHEEPFOLD - NON ANTIQUITY	SH68121149			SHEEP FOLD	Unknown	STONE BUILT FEATURE
4241	BARN WITH UPPER CRUCKS	SH67561043			BARN	Post-Medieval	BUILDING - ROOFED
10160	THE DEVIL'S ROCK	SH69011036			NATURAL FEATURE	Prehistoric	NATURAL FEATURE
10161	HOUSE REMAINS NE OF NANT PENCOED	SH69301026			HOUSE	Post-Medieval	STONE BUILT FEATURE
10162	BANK/ENCLOSURE E NANT PENCOED	SH69271020			ENCLOSURE	Post-Medieval	EARTHWORK
10163	BANKS & WALLS E NANT PENCOED	SH69441011			WALL	Post-Medieval	STONE BUILT FEATURE
10164	PEAT MOUNDS	SH69121004			PEAT STAND	Post-Medieval	OTHER STRUCTURE
10165	FIELD/RIDGE & FURROW N	SH68901040			RIDGE AND	Post-Medieval	OTHER STRUCTURE

	NANT PENCOED				FURROW		
10166	BUILDING SE OF CRAIG YSGOIG	SH68621032			BUILDING	Post-Medieval	STONE BUILT FEATURE
10167	ENCLOSURE N SLOPE CRAIG YSGOIG	SH68421056			ENCLOSURE	Post-Medieval	STONE BUILT FEATURE
10168	TRACKWAY NW CRAIG YSGOIG	SH68201055			TRACKWAY	Post-Medieval	OTHER STRUCTURE
10169	STRUCTURE N OF NANT PENCOED	SH68991051			BUILDING	Medieval	STONE BUILT FEATURE
10170	FIELD WALLS SE OF PENCOED	SH68651072			FIELD SYSTEM	Medieval	STONE BUILT FEATURE
10171	PLATFORM SE OF PENCOED	SH68741065			PLATFORM	Prehistoric	EARTHWORK
10172	BUILDING SE OF PENCOED	SH68681059			BUILDING	Post-Medieval	STONE BUILT FEATURE
10173	STRUCTURE TO SE OF PENCOED	SH68671061			BUILDING	Post-Medieval	STONE BUILT FEATURE
10174	ENCLOSURE SE OF PENCOED	SH68661058			ENCLOSURE	Post-Medieval	EARTHWORK
10175	AGRICULTURAL BUILDING S OF PENCOED	SH68491087			AGRICULTURAL BUILDING	Post-Medieval	STONE BUILT FEATURE
10176	FOUR HOUSES AT PENCOED	SH68501108			HOUSE	Post-Medieval	STONE BUILT FEATURE
10177	POSSIBLE CAIRN SSW OF PENCOED	SH68401091			CAIRN	Prehistoric	STONE BUILT FEATURE
10178	STRUCTURE SW OF PENCOED	SH68351087			BUILDING	Post-Medieval	STONE BUILT FEATURE
20418	SLATE QUARRY, GERNOS	SH66900940			SLATE QUARRY	Post-Medieval	
20423	SLATE QUARRY, GWASTAD FRYN	SH67800980			SLATE QUARRY	Post-Medieval	
4950	HOUSE-GWASTADFRYN	SH67650998	GII	LB	HOUSE	Post-Medieval	BUILDING-ROOFED
20420	SLATE QUARRY, PENNANT	SH67100970			SLATE QUARRY	Post-Medieval	
20421	SLATE QUARRY, TYN	SH67500950			SLATE QUARRY	Post-Medieval	

	Y FACH						
7921	PEN-Y-GRIBIN WOOD SHEEPFOLD	SH679211903			SHEEP FOLD	Unknown	
9961	PENNANT MEDIEVAL TOWNSHIP	SH66400960			TOWNSHIP	Medieval	Documentary

APPENDIX 2

DEFINITIONS OF CATEGORIES OF ARCHAEOLOGICAL VALUE, IMPACT AND MITIGATION

In order to assess the importance of sites and to allow the appropriate mitigatory action to be proposed for each, a framework of categories is used to define the importance of each site and the magnitude and significance of impact caused by the proposed scheme on each site.

1 Assessment of the value of archaeological assets

All archaeological sites should be assessed for value, and allocated to one of the categories listed below. The allocation of a site to a category defines the value of the archaeological resource of that site.

Table 1: Factors for assessing the value of archaeological assets

Very High	• World Heritage Sites (including nominated sites). • Assets of acknowledged international importance. • Assets that can contribute significantly to acknowledged international research objectives. (Previously Category A)
High	• Scheduled Monuments (including proposed sites). • Undesignated assets of schedulable quality and importance. • Assets that can contribute significantly to acknowledged national research objectives. (Previously Category A)
Medium	• Designated or undesignated assets that contribute to regional research objectives. (Previously Category B)
Low	• Designated and undesignated assets of local importance. • Assets compromised by poor preservation and/or poor survival of contextual associations. • Assets of limited value, but with potential to contribute to local research objectives. (Previously Category C)
Negligible	• Assets with very little or no surviving archaeological interest. (Previously Category D)
Unknown	• The importance of the resource has not been ascertained. (Previously Category E)

2 Magnitude of impacts

The definitions of impacts on the cultural heritage are defined as follows.

Table 2: Factors in the Assessment of Magnitude of Impacts

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 ass et
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	No change

The value of an archaeological asset refers to both the physical remains and information inherent in the site. If a site is excavated in advance of destruction the physical remains will be destroyed but the information will have been retained. This is termed 'Preservation of Archaeological Remains by Record' in Planning and the Historic Environment: Archaeology (Welsh Office Circular 60/96). It should be noted that even though this is seen as a valid mitigatory measure, preservation *in situ* is the preferred option.

3 The significance of effect

The significance of effect is derived from the importance of the resource and the magnitude of the impact upon it. Archaeological value Unknown sites are not included because they would have been reassigned to another category by the end of the assessment and evaluation.

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

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

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

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

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

The significance of effect will be determined using Table 13, a basic matrix combining archaeological value and magnitude of impact.

Table 3: Determination of Significance of Effect

	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
Archaeological Value	High	Neutral	Slight	Moderate or Slight	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Moderate or Slight
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight
		No Change	Negligible	Minor	Moderate	Major
		Magnitude of impact				

4 Definition of Mitigation Measures

The following are the basic categories of archaeological mitigation measures that will be used. Additional details may be added in regard to the setting of archaeological sites. The detailed recording, basic recording and watching brief options fulfil the "preservation by record" option described in Welsh Office Circular 60/96.

None: No impact, so no requirement for mitigation measures.

*Detailed recordin*g: Detailed recording requires a photographic record, surveying and the production of a measured drawing prior to the commencement of the works on site. Archaeological excavation works may also be required, depending upon the particular feature and the extent and effect of the impact.
This may entail full excavation and recording where a known site will be destroyed or partially destroyed by the scheme. Some built sites would require dismantling by hand, to provide a detailed record of the method of construction and in the case of a listed structure, the salvage of materials for re-use and re-building.
For wider areas of high archaeological potential there are three main options:
Geophysical Survey: This can be used, where appropriate, as an initial non-intrusive assessment technique allowing areas of archaeological activity to be recognised. Magnetometer survey is the preferred first option in most cases, because it allows large areas to be surveyed quickly and can detect a wide range of archaeological features. Resistivity may be used as a secondary option. It should be noted that not all archaeological features can be detected using geophysical survey and absence of positive results does not prove that there is no archaeology present. Geophysical survey should be followed by one of the following options.
Trial Trenching: This can be adopted as a staged mitigation process involving assessment and then wider excavation where necessary. A series of trenches would be excavated within a designated area in order to provide a sample of the buried archaeology. A minimum of 5% area coverage is usually specified. The results from geophysical survey can be used to allow accurate positioning of a proportion of the trenches over specific archaeological features. All archaeological features uncovered during the process would be assessed. Significant features would then be excavated and fully recorded.
S*trip map and sample*: This technique involves the examination of machine-stripped surfaces to identify archaeological remains. The process of machine stripping would be supervised by an archaeologist. Once stripping has been undertaken, areas of archaeological potential would be identified and cleaned by hand. Sample areas would be cleaned by hand in apparently negative areas to act as a control. Where complex archaeological deposits are identified during stripping, these would be identified at an early stage in order to formulate a defined area of work. This technique relies upon the recognition of features by plan, and excavation of features would be kept to a level required to assess the nature and importance of the remains. This would be followed by full excavation where appropriate.
Basic recording: Recording by photograph and description requires a photographic record and written description prior to the commencement of works on site. A measured survey may be required in certain cases.
Watching brief: Observation of particular identified features or areas during works in their vicinity. This may be supplemented by detailed or basic recording of exposed layers, structures or sections. An archaeological watching brief is divided in to four categories according the IFA. 2001. *Institute for Archaeologists 2001 Standard and Guidance for an archaeological watching brief:*

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

Avoidance - Features which may be affected directly by the scheme, or by the construction of the scheme, should be avoided.
Reinstatement and/or relocation: The feature should be reinstated with archaeological advice and supervision.

APPENDIX 3

DESIGN BRIEF

GWASTADFRYN, CADAIR IDRIS

PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT (G2050)

Prepared for Renewable Power Consulting Ltd, September 2008

1. PROJECT BACKGROUND

Gwynedd Archaeological Trust has been asked by Renewable Power Consulting to provide a cost and project design for carrying out an archaeological assessment in advance of a proposed hydro-electricity scheme at Afon Cadair, Gwastadfryn, Llanfihangel y Pennant.

The proposed development will extract water from the Afon Cadair at SH 68201148 and a tributary of the Afon Cadair at SH 68401070. Two pipelines, which merge close to where the tributary meets the Afon Cadair, will carry the water down to the proposed power house at SH 67600980.

A detailed brief has been prepared for this scheme by Snowdonia National Park (Ref: A-D/018). The brief is for an Archaeological Assessment. This design will conform to the brief, and to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 2001).

2. ARCHAEOLOGICAL AIMS

A desk-based assessment is defined as "a programme of assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate" (IFA 2001, 2)

The aims of the assessment are:

- to identify and record the cultural heritage within the defined study area;
- to evaluate the importance of what has been identified;
- to recommend ways in which impact upon the cultural heritage can be avoided or minimised.

To comply fully with the aims expressed above it can be necessary to undertake a programme of Field Evaluation following the Desktop study and Field Visit. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is therefore required. This typically takes the form of geophysical survey or trial excavation, although measured survey is also a possible option. A full programme of assessment and evaluation may therefore consist of:

- Desktop study
- Field walkover
- Initial report
- Field evaluation
- Draft report
- Final report

This design is for the first three phases only, and recommendations will be made for any field evaluation required.

3. ARCHAEOLOGICAL BACKGROUND

The scheme lies on west facing slopes to the south-west of Cadair Idris, extracting water at a height of approximately 200m. The proposed power house lies close to Gwastadfryn at an approximate height of 50m. The house at Gwastardfryn is a listed building, of possible 17th century origin. The area is rich in relict archaeology of all periods. The area lies largely within the Snowdonia National Park, and also within the Dyffryn Dysynni landscape of Outstanding Historic Interest.

4. PROGRAMME OF WORK

4.1 Introduction

The brief requires the development of an archaeological deposit model, which will take into account:

- The history of the site
- The potential impact of the development on archaeological remains
- The potential impact of the development on the setting of sites of archaeological importance
- The requirements for further assessment in the form of non-intrusive and intrusive field evaluation.

The project will be undertaken in four stages:

- Desk-based assessment
- Field visit
- Report compilation
- Project archive

The scheme lies within the Dyffryn Dysynni Landscape of Outstanding Historic Interest, and as such it is possible that an 'Assessment of Significance of the Impact of Development on Historic Areas on the Register of Landscapes of Historic Interest in Wales' (ASIDOHL, as defined in *Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process,* CCW, Cadw and ICOMOS, rev. 2nd edition, 2007) may be requested by the Planning Authority or CCW. This assessment will provide the base data for undertaking an ASIDOHL, but will not fulfil the requirements of a full ASIDOHL, which would need to be undertaken separately.

4.2 Desk-based assessment

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

The regional Historic Environment Register (HER) will be examined for information concerning the study area. This will include an examination of the core HER, and secondary information held within the record which includes unpublished reports, the 1:2500 County Series Ordnance Survey maps, and the National Archaeological Record index cards. The National Monuments Record (NMR) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.

Information about Listed Buildings and Scheduled Ancient Monuments from Cadw will be examined in the regional HER, with supporting information from Cadw if required. The Register of Outstanding and Special Historic Landscapes and the Register of Parks and Gardens will be checked, and also the location of World Heritage Sites.

Secondary sources will be examined, including the Inventories of the Royal Commission on Ancient and Historical Monuments for Wales, and works held within the regional libraries. Indices to relevant journals, including county history and archaeology society journals and national society journals such as *Archaeologia Cambrensis* will be checked. Also at this stage 19th century topographical dictionaries, antiquarian tours and trade directories will be examined where relevant.

Evidence from aerial photographs will be collated. Vertical and oblique collections held by the NMR, CCW and Welsh Assembly Government will be considered for examination.

Archive maps, where relevant, will be consulted in the regional and national archives, and at the archives of the University of Wales, Bangor. This will include the relevant tithe map and information from Land Tax Assessments. Other general maps to be used will include those by John Speed, John Evans and the OS first edition 2" manuscript maps. If relevant antiquarian prints and photographs from the national and regional archives will be examined.

Results from previous archaeological work will be reviewed. These results, combined with the results from the desk-based assessment and field survey will be used to assess environmental potential, faunal potential and artefactual potential of the study area.

4.3 Field survey

This part of the assessment will involve walking the study area and assessing the sites identified during the desk-based study. Any additional sites noted will also be assessed. The location of potentially well-preserved environmental deposits will be noted.

The aims of this stage of the work are to:

- verify the results of the desk based assessment
- identify any further archaeological sites which may exist as above ground features
- assess the potential for the preservation of below-ground archaeology
- assess the impact upon the historic landscape
- photograph and record the present condition of all sites noted.

Access onto land is to be arranged by the Clients.

4.4 Field Evaluation

Recommendations for any field evaluation considered necessary will be contained within the assessment report.

4.5 Data processing and report compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

Non-technical summary
1. Introduction
2. Aims and purpose
3. Specification and Project Design

4. Methods and techniques, including details and location of project archive
5. Archaeological Background
6. Results of assessment in the form of a gazetteer
7. Assessment of impacts
8. Proposals for field evaluation and/or mitigation
9. Summary and conclusions
10. List of sources consulted.

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included. Photographs of relevant sites and of the study area where appropriate will be included.

A draft copy of the report will be sent to the Development Control Archaeologist and to the client prior to production of the final report.

4.6 Definition of category of importance

To assess the importance of sites and to allow the appropriate mitigatory action to be proposed for each, a framework of categories will be used with each site allocated to a particular category according to its relative importance:

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

Category B - Sites of Regional Importance
These sites are those which would not fulfil the criteria for scheduling, but may include Listed Buildings at grade II. They are sites are of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative. Sites that are Listed have legal protection, and it is recommended that all listed buildings are preserved *in situ*.

Category C - Sites of District or Local Importance
These sites are not of sufficient importance to justify a recommendation for preservation if threatened, but nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and Damaged Sites
These are sites which are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For these sites the most appropriate mitigation is often rapid recording either in advance or during destruction.

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

5. DISSEMINATION AND ARCHIVING

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled, and cross-

referenced, and lodged in an appropriate place within six months of the completion of the project. The location is to be agreed with the National Park Archaeologist.

Three copies of the bound report will be sent to the National Park Archaeologist and one copy to the regional HER.

Copies of the digital archive will be sent to the National Park Archaeologist and to the regional HER.

The results of the assessment will be published in a suitable journal (e.g. Archaeology in Wales) if relevant.

6. PERSONNEL

The work will be supervised by Mr Andrew Davidson, Principal Archaeologist. The work will be undertaken by one of the Trust's Archaeologists experienced in the relevant skills/periods required. Full details of personnel involved, with *curricula vitae*, can be supplied upon request.

7. MONITORING AND TIMING

Monitoring visits can be arranged during the course of the project with the clients and with the appropriate Development Control archaeologist.

8. HEALTH AND SAFETY

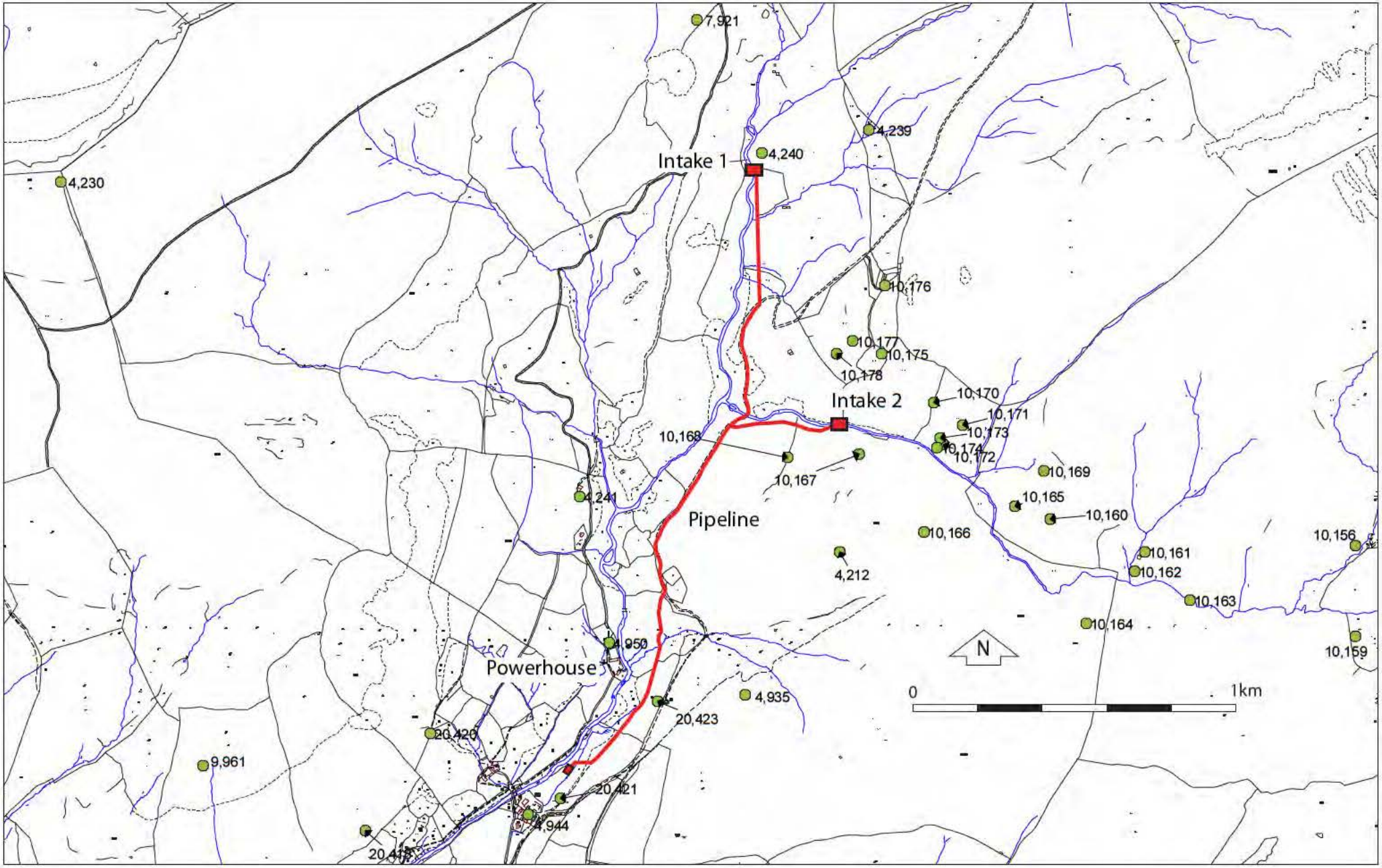
The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (2006). Risks will be assessed prior to and during the work.

9. INSURANCE

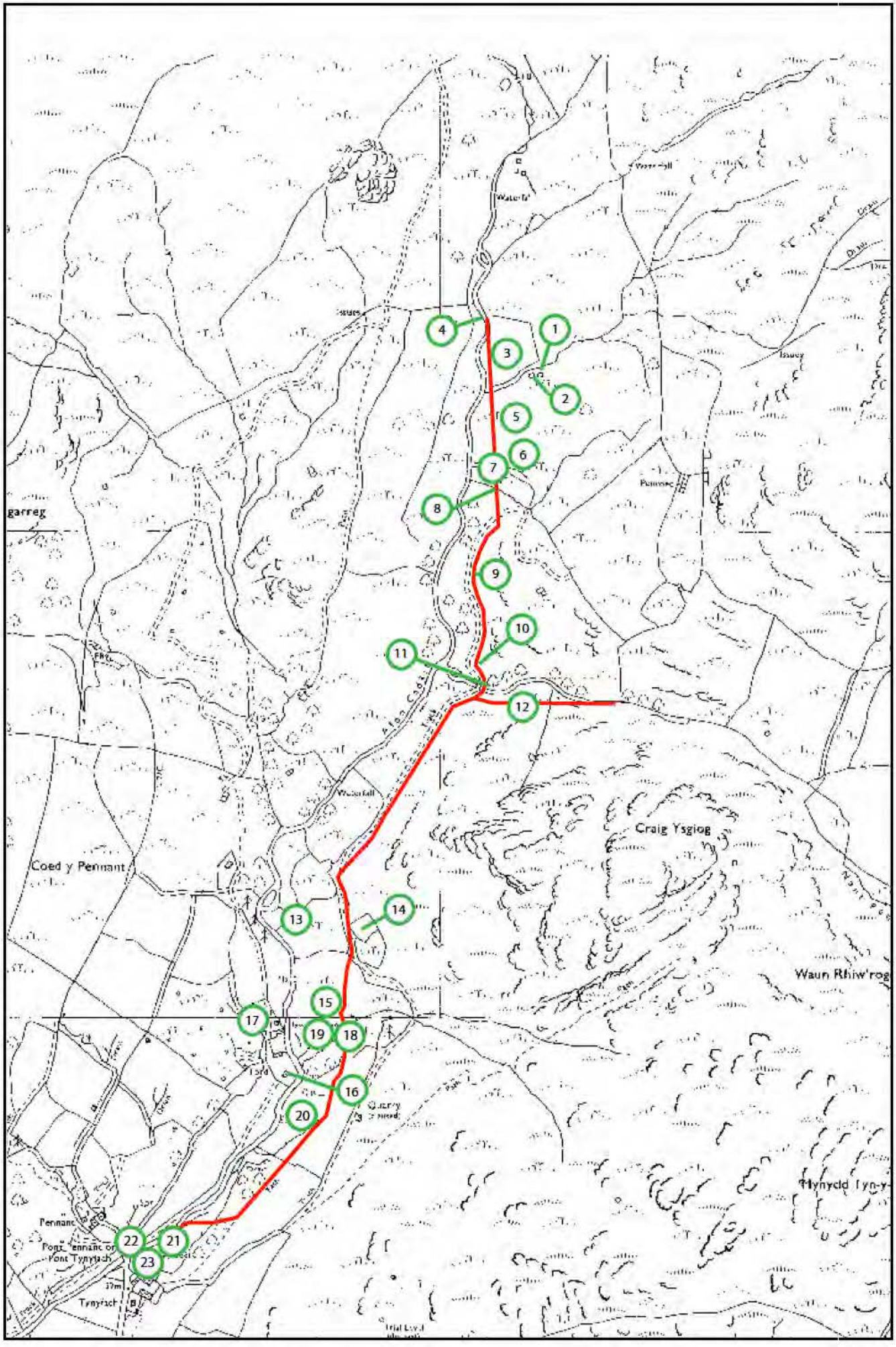
The Trust holds public liability insurance with an indemnity limit of £5,000,000 through Russell, Scanlon Limited Insurance Brokers, Wellington Circus, Nottingham NG1 5AJ (policy 01 1017386 COM), and Professional Indemnity Insurance for £2,000,000 per claim (policy No. 59A/SA11818791).

10. OTHER

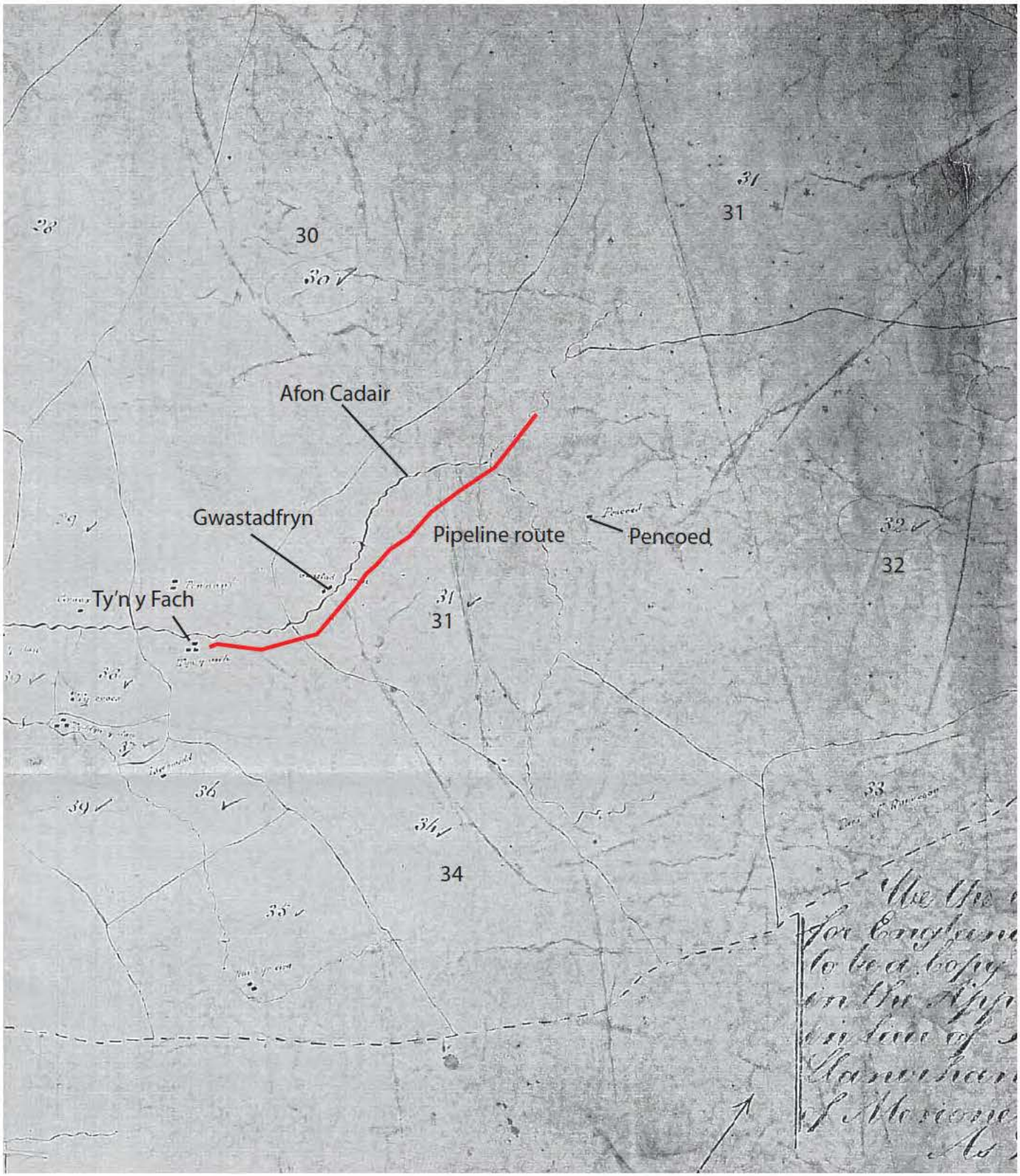
Any queries concerning the above should be directed to Mr Andrew Davidson or Mr John Roberts at the Gwynedd Archaeological Trust Offices, Garth Road, Bangor. Telephone (01248) 352535.



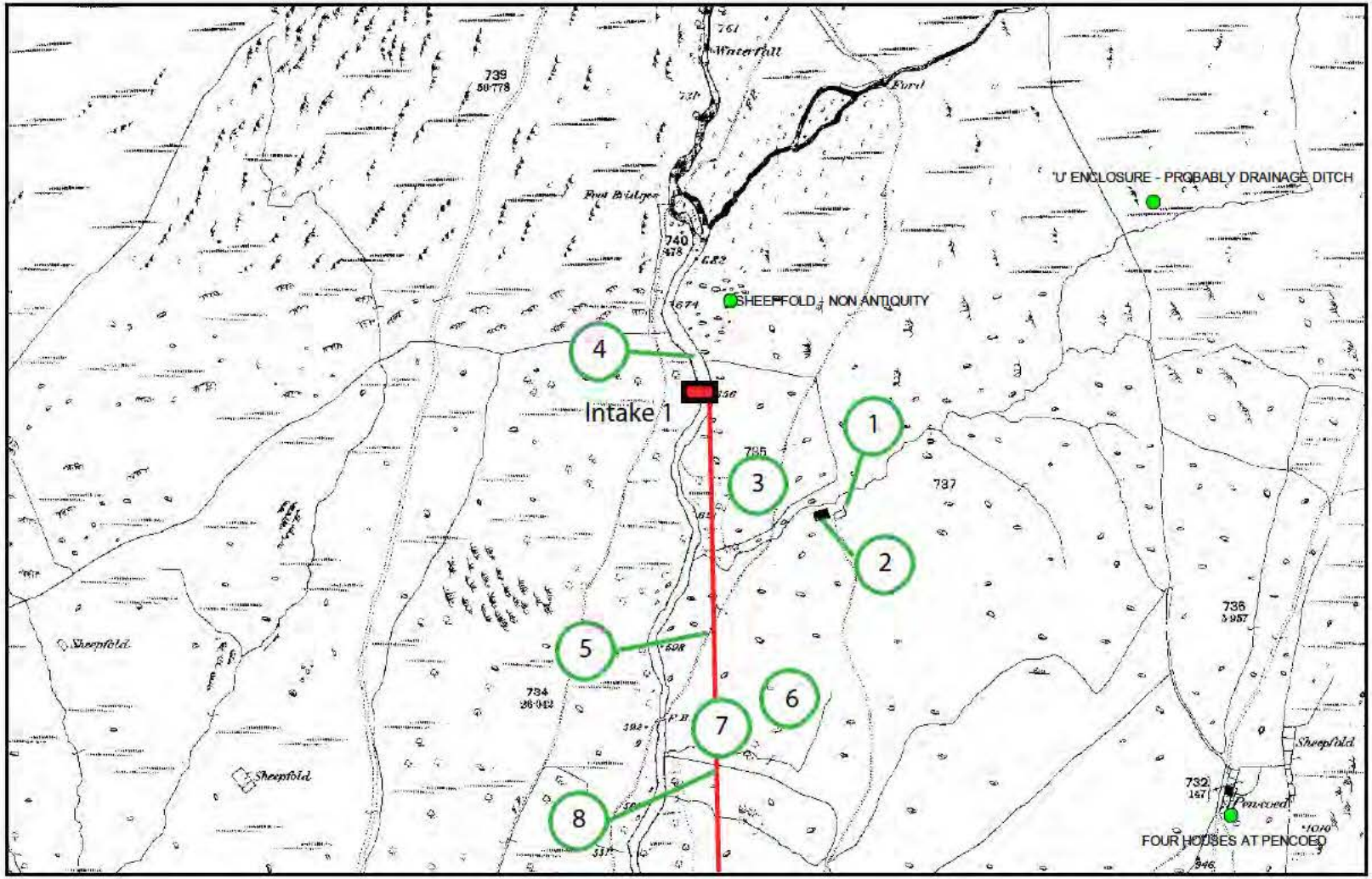
Cadair Hydro Fig. 1 Location map of the study area, showing the pipeline route and all archaeological or historic features in the study area recorded in the Gwynedd Historic Environment Record



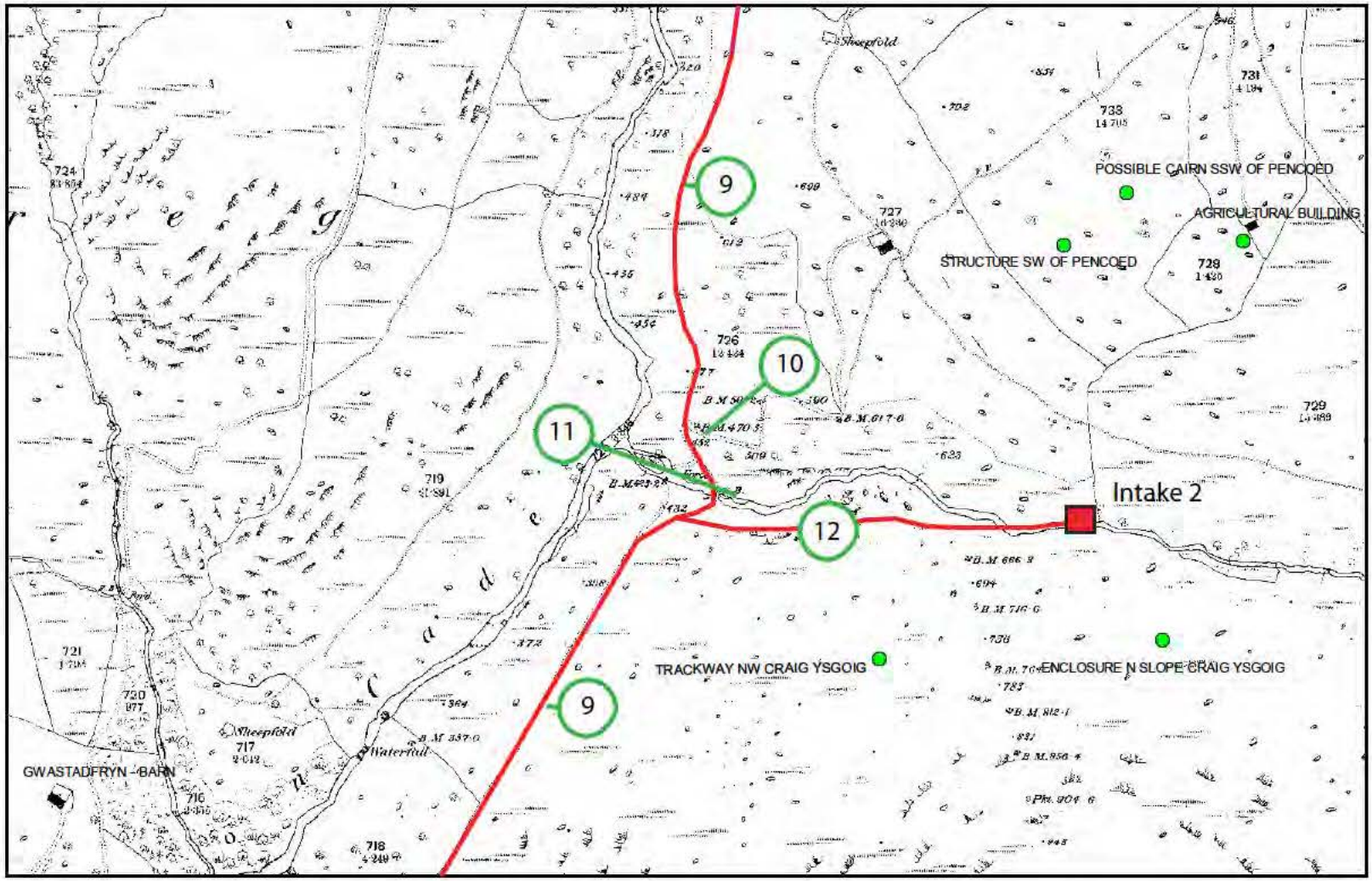
Cadair Hydro Fig. 2 The proposed turbine route showing identified features and areas of archaeological potential.



Cadair Hydro Fig. 3 Part of the Tithe map for Llanfihangel y Pennant of 1838
showing the early property boundaries in the study area and the route of the proposed pipeline



Cadair Hydro Fig. 4 Part of the Ordnance Survey 1:2500 map of 1889, showing the northern part of the study area, the location of the identified features and the route of the proposed pipeline (Red)



Cadair Hydro Fig. 5 Part of the Ordnance Survey 1:2500 map of 1889, showing the central part of the study area, the location of the identified features and the route of the proposed pipeline (Red)

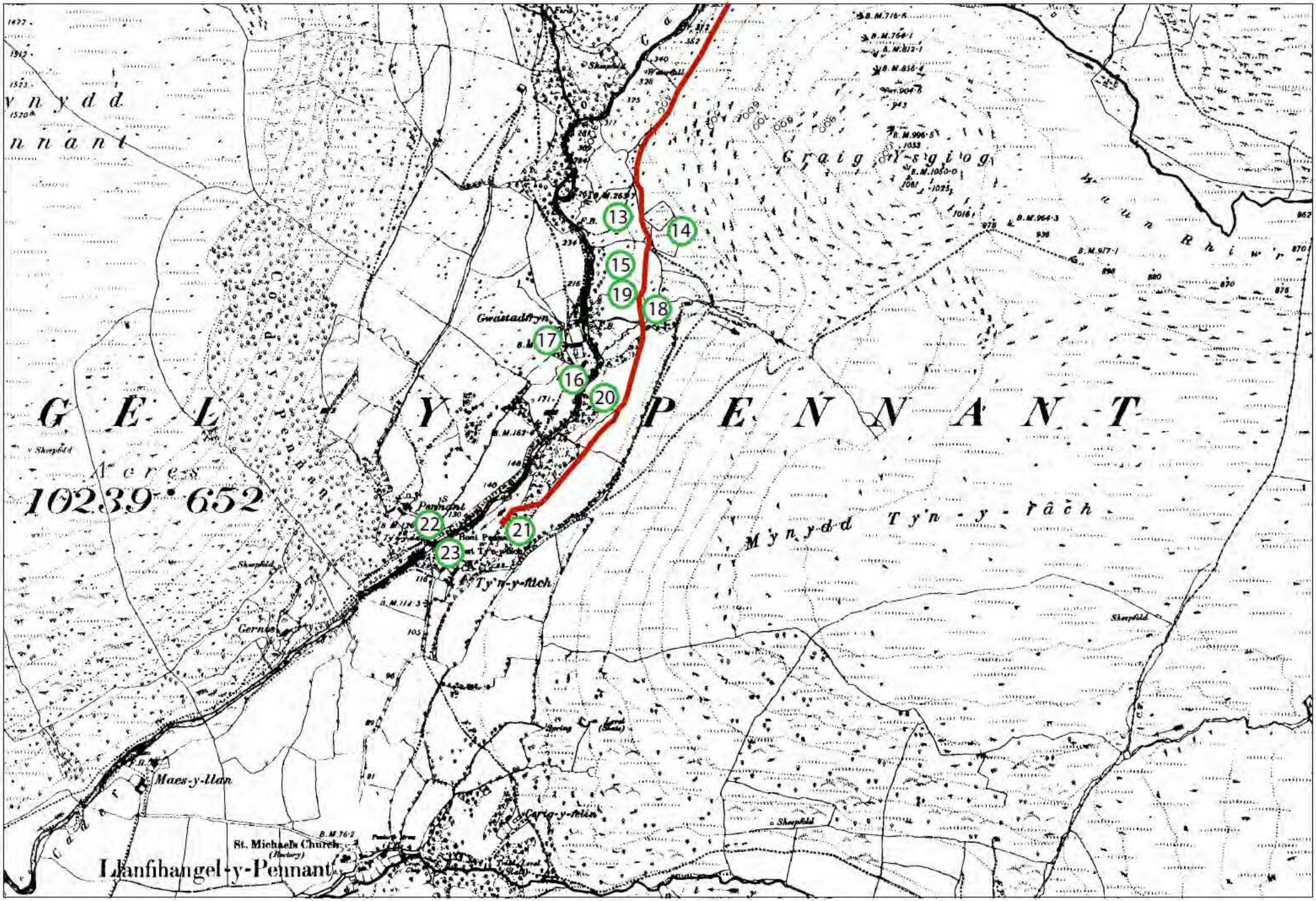
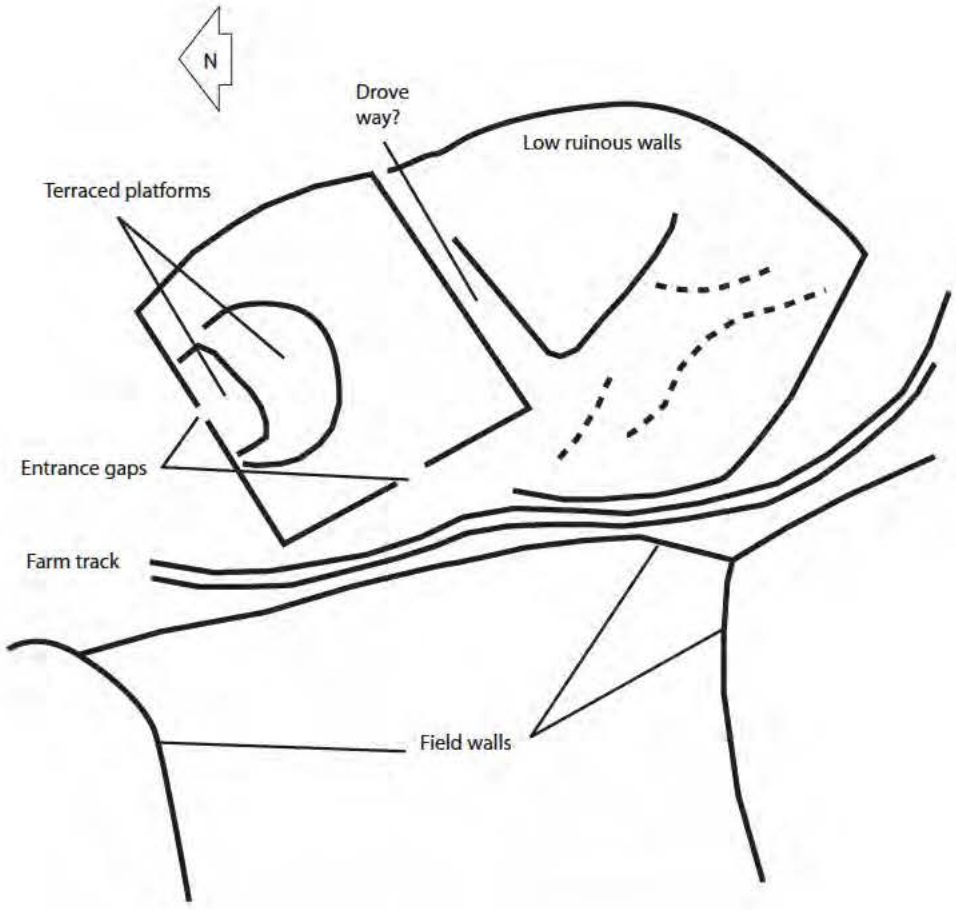
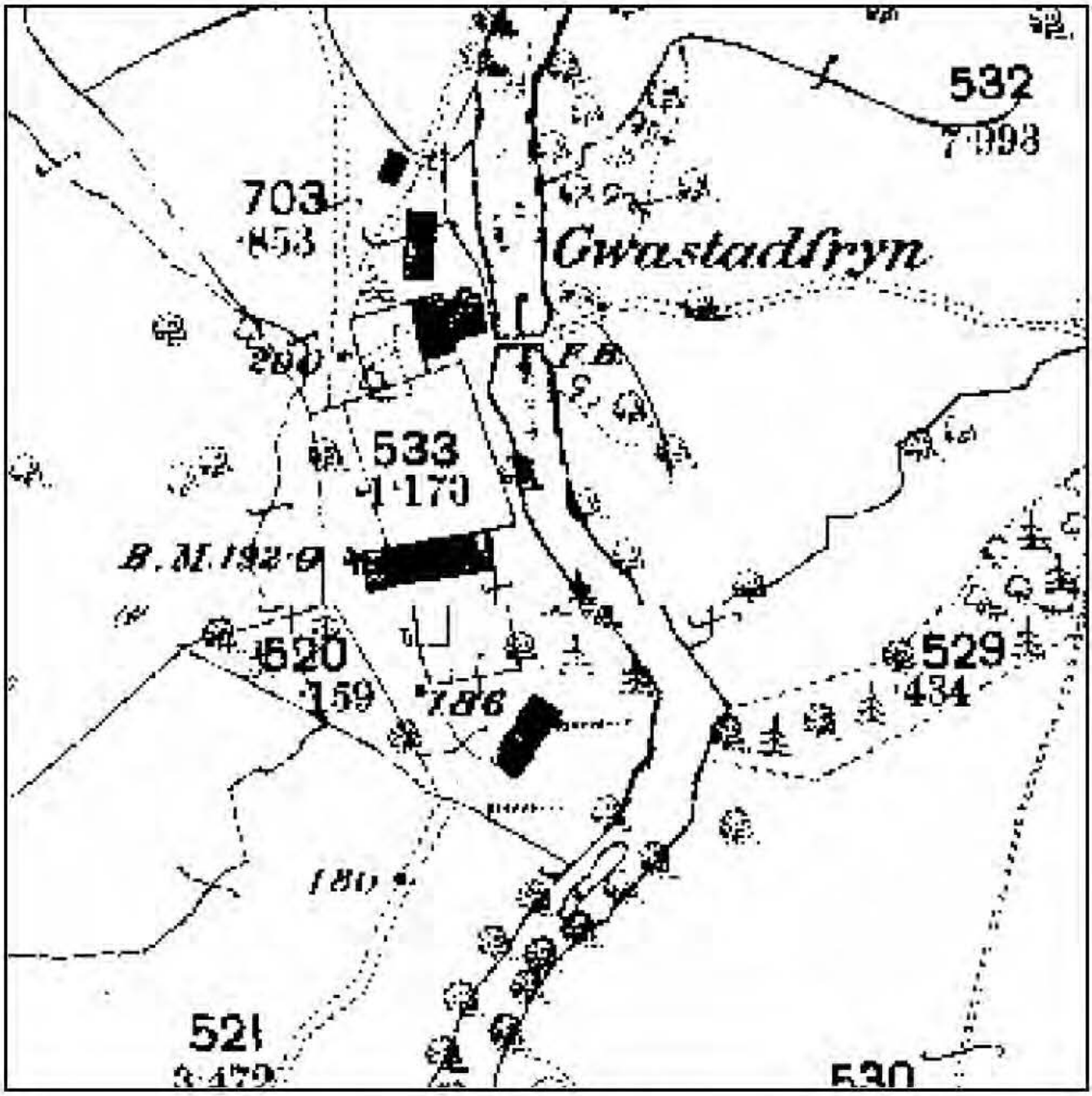


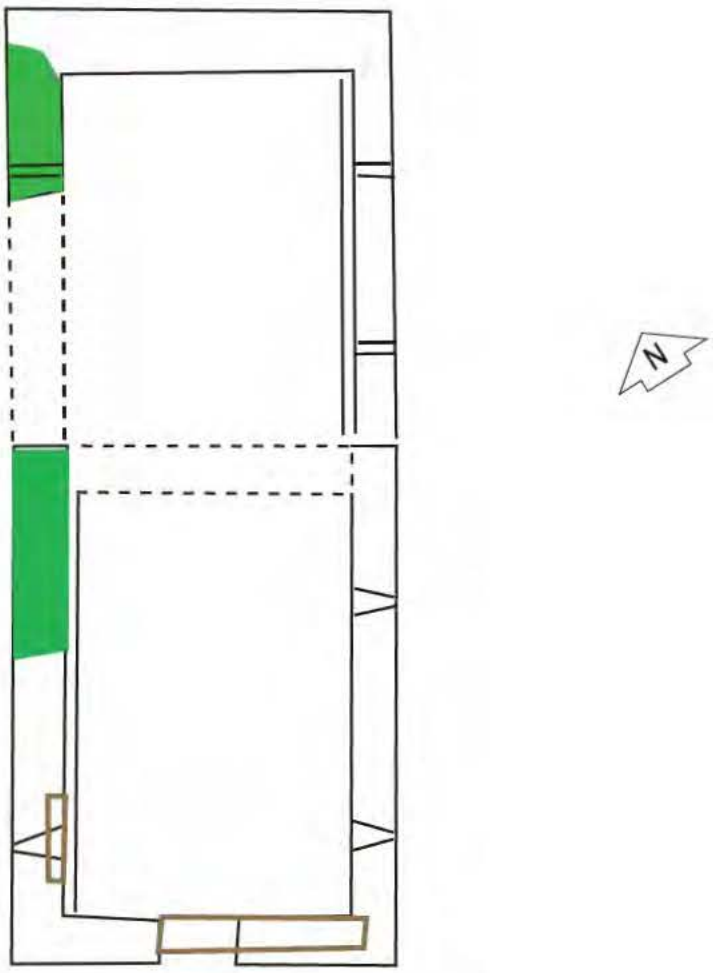
Fig. 6 Part of the Ordnance Survey 1:2500 map of 1889, showing the southern part of the study area, the location of the identified features and the route of the proposed pipeline (Red)



Cadair Hydro Fig. 7 Sketch plot of possible Medieval homestead, F14, from RAF aerial photograph



Cadair Hydro Fig. 8 Part of the Ordnance Survey 1:2500 map of 1889 showing the farmyard of Gwastadfryn. Not to scale.



Cadair Hydro Fig. 9 Sketch plan of ruined cattle-shed, F16
Green: rebuilt walls
Dashed lines: demolished walls
Brown: Timber lintels

Not to scale

Cadair Hydro Fig. 10 Stack stand, F1, from the west. 1m scale

Cadair Hydro Fig. 11 Cattle shed, F2, from the east. 1m scale

Cadair Hydro Fig. 12 Field wall, F3, from the north-west. 1m scale

Cadair Hydro Fig. 13 Area of burnt mound potential, F7, from the north.

Cadair Hydro Fig. 14 Track, F9, from the north.

Cadair Hydro Fig. 15 Track, F10, from the north-west. 1m scale

Cadair Hydro Fig. 16 Wall, F11, from the north-west. 1m scale

Cadair Hydro Fig. 17 Wall, F12, from the west. 1m scale

Cadair Hydro Fig. 18 Possible medieval homestead, F14. Close up of platform, from the south-west. 1m scale

Cadair Hydro Fig. 19 Knoll summit area of prehistoric potential, F15, from the north.

Cadair Hydro Fig. 20 Ruined cattle shed, F16, from the north-west. 1m scale

Cadair Hydro Fig. 21 Ruined cattle shed, F16, from the north-east.

Cadair Hydro Fig. 22 Ruined cattle shed, F16, interior, from the north-east. 1m scale

Cadair Hydro Fig. 23 Ruined cattle shed, F16, from the south-west.

Figure 24: Cutting at stream crossing F18, view from the south

Figure 25: The spring and cultivation terrace F20, view from the east

Figure 26: Area of rock outcrop to the north of the stream F19. Scale 1m, view from the south

Figure 27: Trackway adjacent to the medieval homestead F14 showing the cutting made in recent times. View from the north

Figure 28: Route of the pipelinevclose to NGR SH 67780989. Scale 1m. View from the south

Figure 29: *Ty'n y Ddol* F22 from the south west

Figure 30: The proposed turbine location F21. View from the south west

APPENDIX 1

LIST OF ARCHAEOLOGICAL SITES AND BUILDINGS WITHIN THE STUDY AREA RECORDED IN THE GWYNEDD HISTORIC ENVIRONMENT RECORD (SEE FIG. 1)

Status - Sites with Statutory Protection, LB = Listed building, SAM = Scheduled Ancient Monument
PRN – Primary Record Number
NGR – National Grid Reference, (A – approximate location only, C – centre of extensive site)

Within 1km of the construction area

PRN	SITENAME	NGR	STATUS_NO	SITEST AT	GLOSSARY_SITETYPE	PERIOD	FORM
4935	STANDING STONE - UNLOCATED	SH68070982			STANDING STONE	Prehistoric	STANDING MONUMENT
4944	CRUCK COTTAGE	SH67400945	GII	LB	HOUSE	Post-Medieval	BUILDING - ROOFED
4212	MARKER CAIRN - NON-ANTIQUITY	SH68361026			CAIRN	Unknown	STONE BUILT FEATURE
4230	CARNEDD LWYD, (CAIRN) CRAIG-Y-LLYN	SH65961140			CAIRN	Prehistoric	STONE BUILT FEATURE
4239	'U' ENCLOSURE - PROBABLY DRAINAGE DITCH	SH68451156			ENCLOSURE	Unknown	EARTHWORK
4240	SHEEPFOLD - NON ANTIQUITY	SH68121149			SHEEP FOLD	Unknown	STONE BUILT FEATURE
4241	BARN WITH UPPER CRUCKS	SH67561043			BARN	Post-Medieval	BUILDING - ROOFED
10160	THE DEVIL'S ROCK	SH69011036			NATURAL FEATURE	Prehistoric	NATURAL FEATURE
10161	HOUSE REMAINS NE OF NANT PENCOED	SH69301026			HOUSE	Post-Medieval	STONE BUILT FEATURE
10162	BANK/ENCLOSURE E NANT PENCOED	SH69271020			ENCLOSURE	Post-Medieval	EARTHWORK
10163	BANKS & WALLS E NANT PENCOED	SH69441011			WALL	Post-Medieval	STONE BUILT FEATURE
10164	PEAT MOUNDS	SH69121004			PEAT STAND	Post-Medieval	OTHER STRUCTURE
10165	FIELD/RIDGE & FURROW N	SH68901040			RIDGE AND	Post-Medieval	OTHER STRUCTURE

	NANT PENCOED				FURROW		
10166	BUILDING SE OF CRAIG YSGOIG	SH68621032			BUILDING	Post-Medieval	STONE BUILT FEATURE
10167	ENCLOSURE N SLOPE CRAIG YSGOIG	SH68421056			ENCLOSURE	Post-Medieval	STONE BUILT FEATURE
10168	TRACKWAY NW CRAIG YSGOIG	SH68201055			TRACKWAY	Post-Medieval	OTHER STRUCTURE
10169	STRUCTURE N OF NANT PENCOED	SH68991051			BUILDING	Medieval	STONE BUILT FEATURE
10170	FIELD WALLS SE OF PENCOED	SH68651072			FIELD SYSTEM	Medieval	STONE BUILT FEATURE
10171	PLATFORM SE OF PENCOED	SH68741065			PLATFORM	Prehistoric	EARTHWORK
10172	BUILDING SE OF PENCOED	SH68681059			BUILDING	Post-Medieval	STONE BUILT FEATURE
10173	STRUCTURE TO SE OF PENCOED	SH68671061			BUILDING	Post-Medieval	STONE BUILT FEATURE
10174	ENCLOSURE SE OF PENCOED	SH68661058			ENCLOSURE	Post-Medieval	EARTHWORK
10175	AGRICULTURAL BUILDING S OF PENCOED	SH68491087			AGRICULTURAL BUILDING	Post-Medieval	STONE BUILT FEATURE
10176	FOUR HOUSES AT PENCOED	SH68501108			HOUSE	Post-Medieval	STONE BUILT FEATURE
10177	POSSIBLE CAIRN SSW OF PENCOED	SH68401091			CAIRN	Prehistoric	STONE BUILT FEATURE
10178	STRUCTURE SW OF PENCOED	SH68351087			BUILDING	Post-Medieval	STONE BUILT FEATURE
20418	SLATE QUARRY, GERNOS	SH66900940			SLATE QUARRY	Post-Medieval	
20423	SLATE QUARRY, GWASTAD FRYN	SH67800980			SLATE QUARRY	Post-Medieval	
4950	HOUSE-GWASTADFRYN	SH67650998	GII	LB	HOUSE	Post-Medieval	BUILDING-ROOFED
20420	SLATE QUARRY, PENNANT	SH67100970			SLATE QUARRY	Post-Medieval	
20421	SLATE QUARRY, TYN	SH67500950			SLATE QUARRY	Post-Medieval	

	Y FACH						
7921	PEN-Y-GRIBIN WOOD SHEEPFOLD	SH679211903			SHEEP FOLD	Unknown	
9961	PENNANT MEDIEVAL TOWNSHIP	SH66400960			TOWNSHIP	Medieval	Documentary

APPENDIX 2

DEFINITIONS OF CATEGORIES OF ARCHAEOLOGICAL VALUE, IMPACT AND MITIGATION

In order to assess the importance of sites and to allow the appropriate mitigatory action to be proposed for each, a framework of categories is used to define the importance of each site and the magnitude and significance of impact caused by the proposed scheme on each site.

1 Assessment of the value of archaeological assets

All archaeological sites should be assessed for value, and allocated to one of the categories listed below. The allocation of a site to a category defines the value of the archaeological resource of that site.

Table 1: Factors for assessing the value of archaeological assets

Very High	• World Heritage Sites (including nominated sites). • Assets of acknowledged international importance. • Assets that can contribute significantly to acknowledged international research objectives. (Previously Category A)
High	• Scheduled Monuments (including proposed sites). • Undesignated assets of schedulable quality and importance. • Assets that can contribute significantly to acknowledged national research objectives. (Previously Category A)
Medium	• Designated or undesignated assets that contribute to regional research objectives. (Previously Category B)
Low	• Designated and undesignated assets of local importance. • Assets compromised by poor preservation and/or poor survival of contextual associations. • Assets of limited value, but with potential to contribute to local research objectives. (Previously Category C)
Negligible	• Assets with very little or no surviving archaeological interest. (Previously Category D)
Unknown	• The importance of the resource has not been ascertained. (Previously Category E)

2 Magnitude of impacts

The definitions of impacts on the cultural heritage are defined as follows.

Table 2: Factors in the Assessment of Magnitude of Impacts

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 ass et
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	No change

The value of an archaeological asset refers to both the physical remains and information inherent in the site. If a site is excavated in advance of destruction the physical remains will be destroyed but the information will have been retained. This is termed 'Preservation of Archaeological Remains by Record' in Planning and the Historic Environment: Archaeology (Welsh Office Circular 60/96). It should be noted that even though this is seen as a valid mitigatory measure, preservation *in situ* is the preferred option.

3 The significance of effect

The significance of effect is derived from the importance of the resource and the magnitude of the impact upon it. Archaeological value Unknown sites are not included because they would have been reassigned to another category by the end of the assessment and evaluation.

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

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

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

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

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

The significance of effect will be determined using Table 13, a basic matrix combining archaeological value and magnitude of impact.

Table 3: Determination of Significance of Effect

	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
Archaeological Value	High	Neutral	Slight	Moderate or Slight	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Moderate or Slight
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight
		No Change	Negligible	Minor	Moderate	Major
		Magnitude of impact				

4 Definition of Mitigation Measures

The following are the basic categories of archaeological mitigation measures that will be used. Additional details may be added in regard to the setting of archaeological sites. The detailed recording, basic recording and watching brief options fulfil the "preservation by record" option described in Welsh Office Circular 60/96.

None: No impact, so no requirement for mitigation measures.

*Detailed recordin*g: Detailed recording requires a photographic record, surveying and the production of a measured drawing prior to the commencement of the works on site. Archaeological excavation works may also be required, depending upon the particular feature and the extent and effect of the impact.
This may entail full excavation and recording where a known site will be destroyed or partially destroyed by the scheme. Some built sites would require dismantling by hand, to provide a detailed record of the method of construction and in the case of a listed structure, the salvage of materials for re-use and re-building.
For wider areas of high archaeological potential there are three main options:
Geophysical Survey: This can be used, where appropriate, as an initial non-intrusive assessment technique allowing areas of archaeological activity to be recognised. Magnetometer survey is the preferred first option in most cases, because it allows large areas to be surveyed quickly and can detect a wide range of archaeological features. Resistivity may be used as a secondary option. It should be noted that not all archaeological features can be detected using geophysical survey and absence of positive results does not prove that there is no archaeology present. Geophysical survey should be followed by one of the following options.
Trial Trenching: This can be adopted as a staged mitigation process involving assessment and then wider excavation where necessary. A series of trenches would be excavated within a designated area in order to provide a sample of the buried archaeology. A minimum of 5% area coverage is usually specified. The results from geophysical survey can be used to allow accurate positioning of a proportion of the trenches over specific archaeological features. All archaeological features uncovered during the process would be assessed. Significant features would then be excavated and fully recorded.
S*trip map and sample*: This technique involves the examination of machine-stripped surfaces to identify archaeological remains. The process of machine stripping would be supervised by an archaeologist. Once stripping has been undertaken, areas of archaeological potential would be identified and cleaned by hand. Sample areas would be cleaned by hand in apparently negative areas to act as a control. Where complex archaeological deposits are identified during stripping, these would be identified at an early stage in order to formulate a defined area of work. This technique relies upon the recognition of features by plan, and excavation of features would be kept to a level required to assess the nature and importance of the remains. This would be followed by full excavation where appropriate.
Basic recording: Recording by photograph and description requires a photographic record and written description prior to the commencement of works on site. A measured survey may be required in certain cases.
Watching brief: Observation of particular identified features or areas during works in their vicinity. This may be supplemented by detailed or basic recording of exposed layers, structures or sections.
Avoidance - Features which may be affected directly by the scheme, or by the construction of the scheme, should be avoided.
Reinstatement and/or relocation: The feature should be reinstated with archaeological advice and supervision.

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GWASTADFRYN, CADAIR IDRIS

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A detailed brief has been prepared for this scheme by Snowdonia National Park (Ref: A-D/018). The brief is for an Archaeological Assessment. This design will conform to the brief, and to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 2001).

2. ARCHAEOLOGICAL AIMS

A desk-based assessment is defined as "a programme of assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate" (IFA 2001, 2)

The aims of the assessment are:

- to identify and record the cultural heritage within the defined study area;
- to evaluate the importance of what has been identified;
- to recommend ways in which impact upon the cultural heritage can be avoided or minimised.

To comply fully with the aims expressed above it can be necessary to undertake a programme of Field Evaluation following the Desktop study and Field Visit. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is therefore required. This typically takes the form of geophysical survey or trial excavation, although measured survey is also a possible option. A full programme of assessment and evaluation may therefore consist of:

- Desktop study
- Field walkover
- Initial report
- Field evaluation
- Draft report
- Final report

This design is for the first three phases only, and recommendations will be made for any field evaluation required.

3. ARCHAEOLOGICAL BACKGROUND

The scheme lies on west facing slopes to the south-west of Cadair Idris, extracting water at a height of approximately 200m. The proposed power house lies close to Gwastadfryn at an approximate height of 50m. The house at Gwastardfryn is a listed building, of possible 17th century origin. The area is rich in relict archaeology of all periods. The area lies largely within the Snowdonia National Park, and also within the Dyffryn Dysynni landscape of Outstanding Historic Interest.

4. PROGRAMME OF WORK

4.1 Introduction

The brief requires the development of an archaeological deposit model, which will take into account:

- The history of the site
- The potential impact of the development on archaeological remains
- The potential impact of the development on the setting of sites of archaeological importance
- The requirements for further assessment in the form of non-intrusive and intrusive field evaluation.

The project will be undertaken in four stages:

- Desk-based assessment
- Field visit
- Report compilation
- Project archive

The scheme lies within the Dyffryn Dysynni Landscape of Outstanding Historic Interest, and as such it is possible that an 'Assessment of Significance of the Impact of Development on Historic Areas on the Register of Landscapes of Historic Interest in Wales' (ASIDOHL, as defined in *Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process,* CCW, Cadw and ICOMOS, rev. 2nd edition, 2007) may be requested by the Planning Authority or CCW. This assessment will provide the base data for undertaking an ASIDOHL, but will not fulfil the requirements of a full ASIDOHL, which would need to be undertaken separately.

4.2 Desk-based assessment

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

The regional Historic Environment Register (HER) will be examined for information concerning the study area. This will include an examination of the core HER, and secondary information held within the record which includes unpublished reports, the 1:2500 County Series Ordnance Survey maps, and the National Archaeological Record index cards. The National Monuments Record (NMR) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.

Information about Listed Buildings and Scheduled Ancient Monuments from Cadw will be examined in the regional HER, with supporting information from Cadw if required. The Register of Outstanding and Special Historic Landscapes and the Register of Parks and Gardens will be checked, and also the location of World Heritage Sites.

Secondary sources will be examined, including the Inventories of the Royal Commission on Ancient and Historical Monuments for Wales, and works held within the regional libraries. Indices to relevant journals, including county history and archaeology society journals and national society journals such as *Archaeologia Cambrensis* will be checked. Also at this stage 19th century topographical dictionaries, antiquarian tours and trade directories will be examined where relevant.

Evidence from aerial photographs will be collated. Vertical and oblique collections held by the NMR, CCW and Welsh Assembly Government will be considered for examination.

Archive maps, where relevant, will be consulted in the regional and national archives, and at the archives of the University of Wales, Bangor. This will include the relevant tithe map and information from Land Tax Assessments. Other general maps to be used will include those by John Speed, John Evans and the OS first edition 2" manuscript maps. If relevant antiquarian prints and photographs from the national and regional archives will be examined.

Results from previous archaeological work will be reviewed. These results, combined with the results from the desk-based assessment and field survey will be used to assess environmental potential, faunal potential and artefactual potential of the study area.

4.3 Field survey

This part of the assessment will involve walking the study area and assessing the sites identified during the desk-based study. Any additional sites noted will also be assessed. The location of potentially well-preserved environmental deposits will be noted.

The aims of this stage of the work are to:

- verify the results of the desk based assessment
- identify any further archaeological sites which may exist as above ground features
- assess the potential for the preservation of below-ground archaeology
- assess the impact upon the historic landscape
- photograph and record the present condition of all sites noted.

Access onto land is to be arranged by the Clients.

4.4 Field Evaluation

Recommendations for any field evaluation considered necessary will be contained within the assessment report.

4.5 Data processing and report compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

Non-technical summary
1. Introduction
2. Aims and purpose
3. Specification and Project Design

4. Methods and techniques, including details and location of project archive
5. Archaeological Background
6. Results of assessment in the form of a gazetteer
7. Assessment of impacts
8. Proposals for field evaluation and/or mitigation
9. Summary and conclusions
10. List of sources consulted.

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included. Photographs of relevant sites and of the study area where appropriate will be included.

A draft copy of the report will be sent to the Development Control Archaeologist and to the client prior to production of the final report.

4.6 Definition of category of importance

To assess the importance of sites and to allow the appropriate mitigatory action to be proposed for each, a framework of categories will be used with each site allocated to a particular category according to its relative importance:

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

Category B - Sites of Regional Importance
These sites are those which would not fulfil the criteria for scheduling, but may include Listed Buildings at grade II. They are sites are of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative. Sites that are Listed have legal protection, and it is recommended that all listed buildings are preserved *in situ*.

Category C - Sites of District or Local Importance
These sites are not of sufficient importance to justify a recommendation for preservation if threatened, but nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and Damaged Sites
These are sites which are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For these sites the most appropriate mitigation is often rapid recording either in advance or during destruction.

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

5. DISSEMINATION AND ARCHIVING

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled, and cross-

referenced, and lodged in an appropriate place within six months of the completion of the project. The location is to be agreed with the National Park Archaeologist.

Three copies of the bound report will be sent to the National Park Archaeologist and one copy to the regional HER.

Copies of the digital archive will be sent to the National Park Archaeologist and to the regional HER.

The results of the assessment will be published in a suitable journal (e.g. Archaeology in Wales) if relevant.

6. PERSONNEL

The work will be supervised by Mr Andrew Davidson, Principal Archaeologist. The work will be undertaken by one of the Trust's Archaeologists experienced in the relevant skills/periods required. Full details of personnel involved, with *curricula vitae*, can be supplied upon request.

7. MONITORING AND TIMING

Monitoring visits can be arranged during the course of the project with the clients and with the appropriate Development Control archaeologist.

8. HEALTH AND SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (2006). Risks will be assessed prior to and during the work.

9. INSURANCE

The Trust holds public liability insurance with an indemnity limit of £5,000,000 through Russell, Scanlon Limited Insurance Brokers, Wellington Circus, Nottingham NG1 5AJ (policy 01 1017386 COM), and Professional Indemnity Insurance for £2,000,000 per claim (policy No. 59A/SA11818791).

10. OTHER

Any queries concerning the above should be directed to Mr Andrew Davidson or Mr John Roberts at the Gwynedd Archaeological Trust Offices, Garth Road, Bangor. Telephone (01248) 352535.

Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

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