

PROPOSED HYDRO-ELECTRIC SCHEME,
CWMORTHIN

ARCHAEOLOGICAL ASSESSMENT

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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

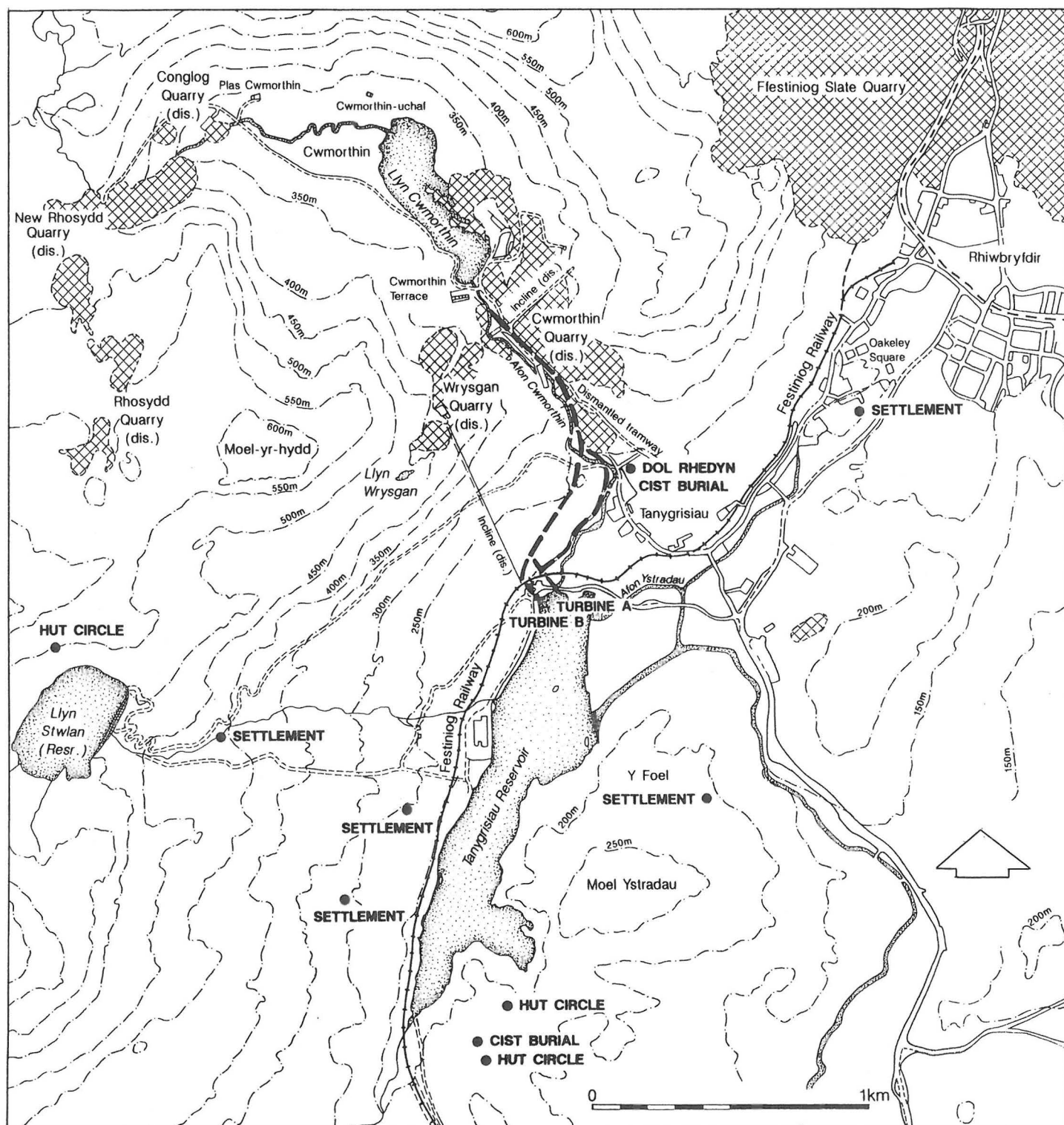


Fig. 1. General location map showing pipeline options.

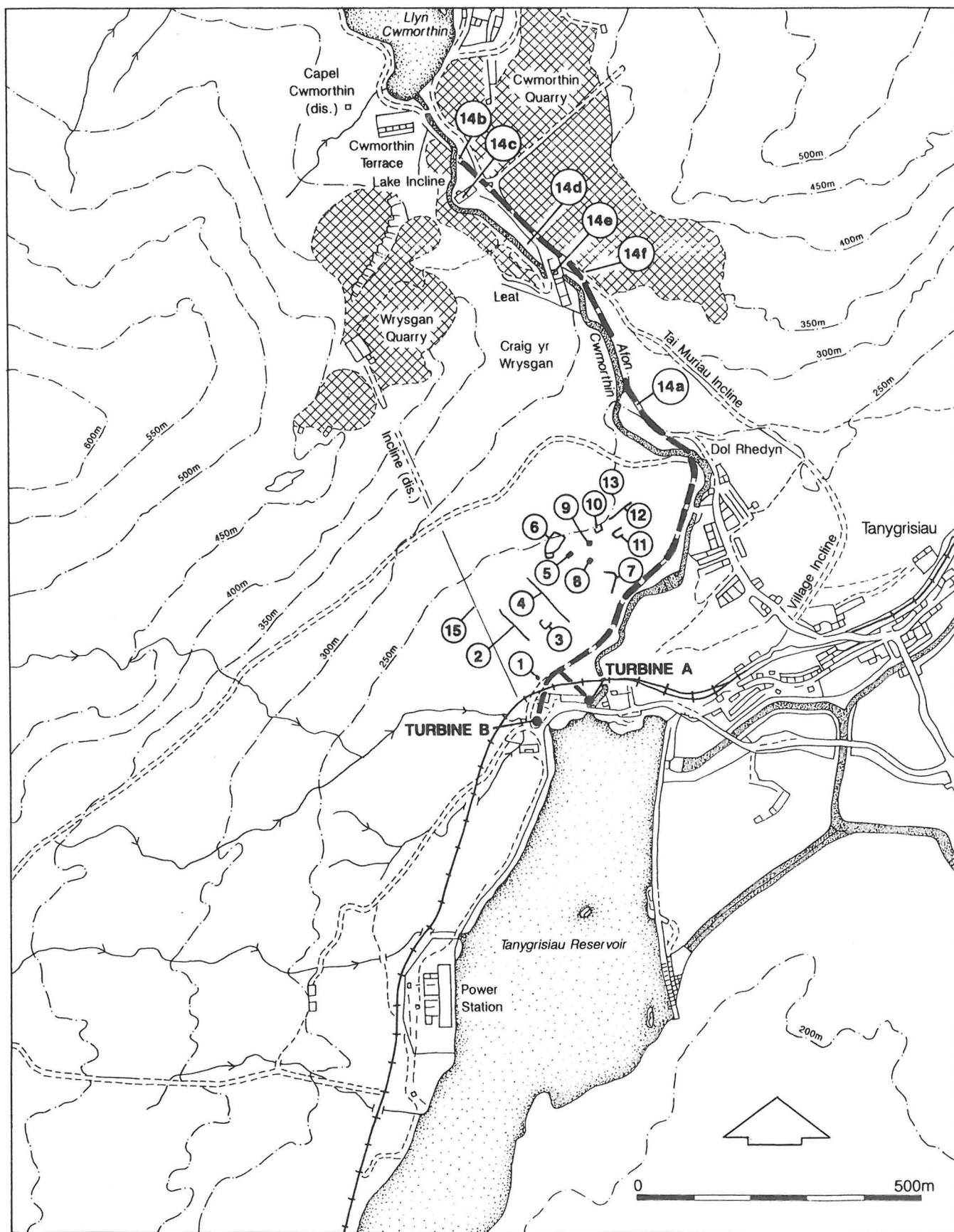


Fig 2. Location map showing sites in the gazetteer and recommended pipeline route.

PROPOSED HYDRO-ELECTRIC SCHEME, CWMORTHIN

INITIAL REPORT

1. INTRODUCTION

A hydro-electric scheme is proposed which will draw water off the Afon Cwmorthin immediately down stream of Llyn Cwmorthin at SH67954592, and return it, in the area of the Visitor Centre, either to the same river at SH68194494, or to a small stream where it enters the Tanygrisiau reservoir at SH68096490. Gwynedd Archaeological Trust (Contracts Section) has been asked by Shawater Ltd to carry out an archaeological assessment of the proposed scheme, to form part of an Environmental Assessment, leading to an Environmental Statement which is to accompany the proposal.

2. ASSESSMENT BRIEF

An initial report was requested from Gwynedd Archaeological Trust, assessing the likely archaeological impact of the scheme and suggesting mitigatory measures.

The basic requirement was for a desk-top survey and field search of the proposed area in order to assess the impact of the proposals on the archaeological and heritage features within the area concerned. The importance and condition of known archaeological remains were to be assessed and areas of archaeological potential and new sites to be identified. Measures to mitigate the effects of the proposed scheme on the archaeological resource were to be suggested.

Gwynedd Archaeological Trust's proposals for fulfilling these requirements were, briefly, as follows:

- a) to identify and record the cultural heritage of the area to be affected by the proposals;
- b) to evaluate the importance of what was identified (both as a cultural landscape and as the individual items which make up that landscape); and
- c) to recommend ways in which damage to the cultural heritage can be avoided or minimised.

This report covers the work done under the first two stages of assessment, documentary research and walking the area, and includes recommendations for later stages.

3. METHODS AND TECHNIQUES

3.1 Desk-top Study

Consultation of maps, computer records, written records and reference works, which make up the Sites and Monuments Record, was undertaken at Gwynedd Archaeological Trust. Records (including early Ordnance Survey maps, tithe maps and schedules, estate papers and reference works - see bibliography) were consulted in the library and the archives of the University College of North Wales, Bangor, and the County archive at Dolgellau. Aerial photographs were inspected at the offices of the Countryside Council for Wales.

3.2 Field Search

This was undertaken on the 6th of June 1994, when the whole of the proposed route of the

pipeline was walked. Conditions were poor for fieldwork, with light and visibility below average for the time of year.

Sites identified were marked on copies of 1:10,000 OS maps as accurately as possible without surveying. Forms were filled in assessing each site, and detailed notes made of the more important. Photographs were taken of all potential sites identified, where the light conditions allowed.

3.3 Report

All available information was collated, and transferred onto a single set of maps at a scale of 1:10,000. The sites were then assessed and allocated to the categories listed below. These are intended to give an idea of the importance of the site and the level of response likely to be required; descriptions of the sites and specific recommendations for further evaluation or mitigatory measures, as appropriate, are given in the relevant sections of this report.

In some cases, further investigation may result in sites being moved into different categories. The criteria used for allocating sites to categories are based on those used by the Secretary of State when considering ancient monuments for scheduling; these are set out in Annex 3 to Planning Policy Guidance 16 (Wales): Archaeology and Planning.

3.4 Categories

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

Category A - Sites of national importance.

Scheduled Ancient Monuments, Listed Buildings and sites of schedulable or listable quality, i.e. those which would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both.

Sites which 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 or county importance.

Sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless 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.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites which are of minor importance or so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

Category E - Sites needing further investigation.

Sites whose importance 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. By the end of the assessment there should be no sites remaining in this category.

4. ARCHAEOLOGICAL FINDINGS

4.1 Introduction

A search of the Sites and Monuments Record held by the Gwynedd Archaeological Trust produced details of a number of sites of archaeological interest within the study area, though none of them will be directly affected by the proposed hydro-scheme. The sites include, amongst others, the late Prehistoric - Roman Settlements near Tanygrisiau and Llyn Stwlan, discussed below.

Archive material consulted at the Dolgellau Record Office, in particular the Tithe map for Ffestiniog, and estate papers, were useful in indicating the history of landownership in the area from the 16th to 19th centuries, and early Ordinance Survey maps also helped elucidate changing patterns of farm boundaries and tracks. Unfortunately, Land Tax Assessments for the area dating from before 1900 were not available. Aerial Photographs helped establish the location of sites located during field work.

Lists supplied by Cadw: Welsh Historic Monuments were consulted for information about listed buildings and scheduled ancient monuments. There are no sites in the immediate area which fall into this category.

Sites noted from documentary sources were identified in the field where possible, and a number of additional sites were identified. These are included, with the rest of the sites, in the gazetteer.

4.2 The Archaeological Background

This section provides a summary of the archaeology and history of the surrounding area so that the findings of the assessment can be put into a wider context.

4.2.1 Prehistoric

The Prehistoric period is fairly well represented by settlement sites of circular houses and associated enclosures. These typically date to the Iron Age (600 BC - 0 BC) although occupation can continue into the Roman period. There are a number of settlement sites dating to this period within a 10km. radius of the area of interest. One of these, situated just to the east of Tanygrisiau at SH69264558 is fairly extensive, consisting of five round huts and two rectangular huts of a later date. The other, near Llyn Stwlan (SH66964438) consists of one, possibly two round huts with an irregular enclosure wall running between.

The nearest known extant funary monument of the period, a stone cist probably dating from the Bronze Age (1,600 - 600 BC), is located at Nant-y-stradau, some 16km. to the south. There is, however, a reference of 1875 to the existence of an 'old stone cist in Dolredyn' that had some time before been cleared away. Like the cist at Nant-y-stradau there was apparently no evidence for any associated cairn. From a manuscript attributed to the 19th century antiquarian Richard Williams, (Wmffra Dafydd) it appears that the cist at Dolrhedyn contained an urn cremation burial. Though he attributes these burials to the Roman period, it is more likely that they belong to the Bronze Age.

4.2.2 Roman

The Roman road of Sarn Helen between Segontium (Caernarfon) and Tomen-y-mur is thought to pass some way to the south of the area by way of Maentwrog and Rhyd. The settlement sites and field systems mentioned in 4.2.1 above may have continued in use throughout the Roman period.

4.2.3 Medieval

The study area lies within the Medieval Cantref of Ardudwy, in the Commote of Ardudwy Uwch Artro, and formed part of the Medieval township of Ffestiniog. The settlement site at Y Foel (SH68704418) to the south-east of the area of interest probably dates from the early part of the period and comprises a number of rectangular huts.

4.2.4 Post Medieval

Prior to the industrial revolution the land in the area of interest appears to have formed part of the extensive upland sheep farm of Tanygrisiau Isaf and a part of Cwmorthin then belonging to the estate of Wynns of Peniarth. Many of the agricultural remains in the area probably date from the 18th century upsurge in sheep farming. The Moelwyn fulling mill (c.1880) at Tanygrisiau, sited to the north of the main woollen manufacturing centre around Dolgellau, hints at the importance of woollen industry in the region.

Industrial remains exist in abundance throughout the region, dating in the main from the nineteenth century. Among these are the quarries of Cwmorthin and the smaller Wrysgan. The northern section of the area of interest lies within the bounds of the Cwmorthin slate quarry. Cwmorthin quarry was opened in 1810, by Mr. Thomas Casson, Mr. Evans, Ty'nycoed and Mr John Lloyd, Trallwyn, who had recently bought the land from Peniarth. Production was only sporadic to begin with, and the quarry was abandoned by 1830 probably due to transportation difficulties, or the quality of the slate. In 1840 renewed interest in Cwmorthin led to a succession of lessees, among whom were John Edwards of Teiliau Bach and W. B. Chorley.

It was during the early 1860s that the substantial underground workings at Cwmorthin were started, enabled by the construction of the tramway linking the quarry with the then recently completed Ffestiniog railway. At their peak the underground workings supported 3 mills, containing approximately 50 saws and dressing machines. Pumping and haulage was required as the work progressed to deeper levels initially powered by steam, then electricity. The quarry's out-put reached 10376 tons in 1882 and was employing over 500 men, however two years later production was down and in 1900 it was incorporated into the Oakley quarry. The 1930s saw a fresh period of working, however apart from a brief period during the 1950s production since then was fitful.

The quarry at Wrysgan, considerably smaller than Cwmorthin, was opened in the 1830s, substantially developed from the 1850s onwards, its first mill built in 1855 was joined by a second ten years later, with a combined capacity of 20 saws and 20 dressers. The turn of the century saw a drop in production at Wrysgan, the quarry being worked intermittently until the 1940s. Of special interest is the self acting incline, of 1850, which directly connects the workings with the Ffestiniog Railway some 600' below.

4.2.4 Summary

The region around Cwmorthin holds a number of sites of archaeological and historical interest belonging to the Prehistoric and Roman periods. The Medieval period is poorly chronicled, though it is likely that more sites of this period are present. The most notable remains in the region, however, are its industrial monuments, dating in the main from the 19th century.

4.3 Archaeology of proposed development area.

4.3.1 Introduction (N.B. the numbers refer to the site numbers in the gazetteer)

It is currently proposed that the pipeline will extract water from the river immediately south of Llyn Cwmorthin, from the bend in the river below the ford at the ruins of Cwmorthin Terrace and will then run south-east through the Cwmorthin slate workings. The proposed route starts

along the lower part of the Lake incline, following the bed of the disused tramway and finally turns down the old Cwmorthin track until it crosses the river Cwmorthin at approximately SH68304538. From here there are two options (see fig. 1): the pipeline could either follow the course of the CEGB road from Stwlan to one of the outfall options (see below) near the visitor centre or cross the Stwlan road and continue to the south-west up a small stream valley, and roughly follow the power lines through an area of steep, rough undulating terrain, turning to the south as it begins to descend to recross the Stwlan road.

Two options are suggested for the siting of the turbine house, each will require a slight variation in the final section of the pipeline route: At approximately SH682451 the pipeline will follow one of two possible courses to the outfall point. The pipeline would either turn sharply down the steep hillside to the south-east and a proposed turbine house to the east of the Visitor Centre at SH68194494 (alternative A, see fig. 1), or continue due south, to a turbine house located in the gully of a small stream where it enters the Tanygrisiau reservoir at SH68096490, (alternative B, see fig. 1).

4.3.2 Gazetteer of Archaeological Sites

1. Small rectangular enclosure SH68104499 *Category D*

A small rectangular earth banked enclosure with possible entrances in the east and west sides. The site overlooks the metalled road to the Stwlan dam.

2. Linear bank SH68074507C *Category D*

A low linear field bank of earth and stone construction on a south-east north-west alignment, with associated ditch.

3. Small drystone enclosure SH68104509 *Category D*

A small drystone enclosure, roughly square in shape, the north eastern side of which is formed by an outcrop (possibly quarried).

4. Linear bank SH68084515C *Category D*

A substantial length of low bank, which is partially revetted with stone along its length. This feature, aligned south-east - north-west, runs through a fairly boggy area.

5. Rectangular structure SH68154520 *Category C*

This site comprises a low grass covered rectangular bank, of earth and stone, with its long axis on an east-west alignment. There is a possible entrance in the centre of its east side. The structure might represent the remains of a habitation of the long-hut type, or an agricultural building such as a field barn.

6. Large sheepfold SH68124522C *Category D*

A large sheepfold, probably a gathering pen, possibly used for shearing. The pen is constructed of slatey quarried rock, and probably dates from the mid to late 19th century.

7. Boulder walling SH68234516C *Category D*

A section of curvilinear robbed walling following the contours of a small knoll. The construction is of large orthostats, and suggests an early date.

8. Possible sub-rectangular structure SH68194520 *Category D*

A fairly small sub-rectangular drystone feature, which remains to a height of approximately

2m. on its west side, but collapsed to the east. The site, which has possibly been used as a dump for field clearance material, may be associated with site 9, and may indeed represent the remains of a similar structure.

9. Drystone abutment SH68184522 *Category D*

This wedge shaped drystone structure, lying up against a scree slope, is possibly a plinth or abutment, which might originally have carried an industrial feature, now gone.

10. Sub-rectangular enclosure Approximately SH68194524 *Category D*

A collapsed rectangular boulder constructed enclosure situated at the base of a rock outcrop. The site is probably of an agricultural nature.

11. Sheepfold, with possible earlier feature SH68234524 *Category D*

A partially collapsed drystone sheepfold, which possibly overlies an earlier sub-rectangular feature, indicated by a low grassed over bank.

12. Drystone walling SH68244521C *Category D*

Short interrupted lengths of low drystone walling following the contours of a rocky knoll just below its crest.

13. Walling/Bank SH68234530C *Category D*

Drystone walling running north-east - south-west up a shallow stream valley, joined from the west by a low stone and earth bank.

14. Cwmorthin quarry *Category C*

a. The Old Cwmorthin road SH68284543-SH67964591

The main track leading up Cwmorthin to the lake and the slate quarries (Conglog SH670467, and Rhosydd SH664461) further up the valley. The track appears on the Ordnance Survey 1st edition map of c.1840, though the exact line differs slightly in several places, from that of the present day due to the encroaching tips of the Cwmorthin slate quarry. The route is known to have been used to transport material from the quarry at Rhosydd, prior to the opening of Croesor Tramway in 1864.

b. The Lake incline SH67964589C

The incline, built in 1874 to transport slate from the Conglog quarry, via the Cwmorthin tramway to the Ffestiniog Railway still stands as a revetted incline, though its drum house (SH67904596) survives reduced to its foundations.

c. The Cross mill SH67964583

This dressing mill, built in 1855, was originally powered by an overshot waterwheel, which stood in the wheel pit located in the centre of the building. The site has a number of unusual windows with triangular tops. By 1900 the mill, was mainly being used as a saw mill, dressing being carried out elsewhere. The mill was partly rebuilt in 1989.

d. Stacking yards

These lay to either side of the main tramway, between the Lower mill and the Cross mill. Each yard was served by a central tramway where slates were loaded onto Ffestiniog Railway wagons.

e. The Lower mills SH68134570

The Lower mills, now ruinous, and partially collapsed, lie across the river Cwmorthin, its course having been diverted beneath them in a slab roofed channel. The mill, also known as

'London Hall', was of a 3 phase construction: its southernmost section is thought to be the earliest, with its wheelpit. The wheel was fed by a millrace to the west and slightly above the mill complex, which took its water from the Afon Cwmorthin, just before the Cross mill. The waste openings of this site face the road and a bridge, no longer standing, allowed its removal across the Afon Cwmorthin to the tips on the south-west bank.

f. The weighhouse approximately SH68184570

The weighhouse, which stands to the south-east of the Lower mill site, used to measure the weight of waste destined for the tips and the main tramway. The weighbridge relied on a see-saw principle and comprised long levers to balance the wagon with a sliding weight on a scale housed in the building.

15. Wrysgan Incline SH67204553-SH68064495 *Category B*

A drystone revetted self acting incline that originally connected the Wrysgan slate quarry with the Ffestiniog railway. The incline is a remarkable piece of 19th century engineering, the upper part of the incline being in a tunnel the approach to the head placed in a cutting. Built in 1850, it is still in good condition apart from its lower end, where it has been obliterated by the new road serving the Stwlan reservoir. The original drum house associated with the incline has collapsed, however much of the drum gear remains on the site.

16. Field boundaries

The pattern and nature of field boundaries are an important part of the historic landscape. Their construction, linear plan and ecological diversity can provide valuable information about the landscape and its evolution. There are field boundaries of many different periods within the study area, some of which may have Prehistoric origins, although most are Post-Medieval in date.

5. RECOMMENDATIONS

5.1 General

The pipe will be 450 mm in diameter, and requires 300 mm cover. The trench for the pipe will therefore need to be 750 mm deep and some 650 mm wide. The impact of the scheme on the cultural heritage could be minimised by the correct choice of route of the pipeline, and by using the most appropriate method to dig the trench and lay the pipe.

5.2 Route

The suggested route, shown on the accompanying plan, is designed to minimise the impact on the known archaeological features.

5.2.1 Cwmorthin Quarry It is recommended that where the proposed pipeline proceeds through Cwmorthin quarry, following the line of the Lake Incline and later the quarry track, time is allowed for recording features revealed during construction work. This will include the make-up and construction method of the incline and track. Reinstatement of the stonework to its pre-disturbed appearance is recommended.

5.2.2 Afon Cwmorthin - S end of Wrysgan Incline The area between the Afon Cwmorthin and the Wrysgan incline contains numerous interesting archaeological features. It is therefore recommended that the pipeline avoid the cross country route through this area, and instead follow the line of the CEGB road. If this is not possible, then it is recommended that a measured survey of all features be undertaken, and an appropriate route designed, to ensure that the impact on the archaeological resource is minimised. A watching brief would then be necessary during the initial soil stripping operation to check for archaeological deposits.

5.2.3 S end of Wrysgan Incline - Tanygrisiau Reservoir Site 1, a small rectangular enclosure, may be affected by the cross-country route, and it is therefore recommended that the route is designed to avoid this feature. However, if this is not possible, then the site should be fully recorded before work starts. The route following the road should not affect this feature.

5.2.4 Field Walls Where the route crosses any field banks or walls, these will require recording before work starts and reinstatement following completion.

5.3 Working method

The working corridor should be kept to the minimum needed to excavate the trench, store the soil, and reinstate. It is recommended that an archaeologist is present when the working corridor is established, to minimise the impact of the route design on the cultural remains. The possibility of working by hand should be examined where machine working may cause unnecessary damage. Care should be taken when reinstating the stored material that the original ground surface is kept as undisturbed as possible.

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