

CPAT Report No 1204.4

Maentwrog to Trawsfynydd Powerlines

CULTURAL HERITAGE ASSESSMENT



THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

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Cover photo: Maentwrog Hydro Electric Power Station and its pipeline (CPAT 3622-0021)

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Summary

An assessment has been conducted to determine the potential impacts on the cultural heritage resource which may result from the installation of two new underground electricity cables between the existing substations at Maentwrog and Trawsfynydd, in Gwynedd. This comprised a desk-based study followed by a field survey, both of which examined the entire length of the scheme, including potential access routes, site compounds and ancillary works.

The assessment has identified a small number of cultural heritage assets within 100m of the proposed routes, including one designated asset, a listed bridge, although this will not be affected by the works. Summary information on the undesignated assets is given in this report, some of these could potentially be affected by the construction works.

Following the completion of the original study a geophysical survey was conducted to investigate the potential line of a Roman road which may have been affected by the scheme. However, the survey revealed no evidence for the course of the road, suggesting that its line is elsewhere and therefore unlikely to be affected.

A mitigation strategy has been suggested which encompasses these assets, together with the potential for unrecorded, buried assets, which may be summarised as follows:

- Watching brief during the excavation of test pits 7 and 8
- Demarcate and avoid limekiln (site 11)
- Demarcate and avoid footbridge (site 33)
- Demarcate and avoid culvert (site 34)
- Demarcate and avoid bridge (site 35)
- Demarcate and avoid culvert (site 36)
- Demarcate and avoid mining trial (site 37)
- Demarcate and avoid mining trial (site 38)
- Demarcate and avoid former boundary (site 39)
- Demarcate and avoid trackway (site 40)
- Watching brief during soil stripping within 5m wayleave
- Watching brief during soils stripping for compound and any drainage works
- Use existing breaks in stone boundary walls or rebuild in same style with original stone

1 Introduction

- 1.1 This report describes the results of a cultural heritage assessment undertaken by the Field Services Section of the Clwyd-Powys Archaeological Trust (CPAT) for the route of two new underground electricity cables (one at 132kV and the other 33kV), together with minor refurbishment works to an existing overhead powerline at the points where the new cables are due to connect. The overall scheme extends for around 4.4km between Maentwrog (SH 6544 3946) and Trawsfynydd (SH 6902 3850) in Gwynedd (Fig. 1), lying entirely within the Snowdonia National Park.



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Fig. 1 Scheme location

- 1.2 The powerlines have been designed to provide a revised link between the Maentwrog hydroelectric power station, the Trawsfynydd nuclear power station (now disused and in the course of being decommissioned) and the various overhead power transmission lines in the locality. The 33kV cable will extend from the substation at Maentwrog and the route passes through fields and woodland for around 1.5km before crossing the line of the pipeline to the hydroelectric station and then following a road and farm track as far as an existing powerline at SH 6694 3951. The 132kV cable commences at the existing powerline and follows a farm track and then a road, also with diversions into adjacent fields, as far as SH 6804 3902. The remaining section to Trawsfynydd is partly through fields and partly along a cycle track and

other tracks through woodland. Site access to the eastern section of the scheme will follow one or perhaps two existing trackways.

- 1.3 This assessment is based on information provided by the client in June 2013, with revisions in October 2013, February 2014, and May 2014. At present the final route has yet to be confirmed, although the assessment has considered all known potential alternatives, as well as the possible location for the site compound and access routes. Any subsequent changes to the scheme would need to be considered in a revised report.
- 1.4 It is understood that there are no elements of the scheme which require planning permission, but the works are subject to the Electricity Act of 1989 which makes provision for the supply, generation and transmission of electricity. Schedule 9 of the Act details the preservation of amenity and fisheries, stating that:

‘In formulating any relevant proposals, a licence holder or a person authorised by exemption to generate or supply electricity:

(a) shall have regard to the desirability of ... protecting sites, buildings and objects of architectural, historical or archaeological interest; and

(b) shall do what he reasonably can to mitigate any effects which the proposals would have on ... any such flora, fauna, features, sites, buildings or objects.’

2 Sources of Information and Guidance

- 2.1 Cultural heritage is deemed to include the complete range of man-made features that have been introduced into the landscape from the Palaeolithic, more than two hundred and fifty thousand years ago, to the 20th century. Some of these features will be visible as upstanding remains on the ground; others will be buried and only become apparent during ground disturbance, whilst others may be objects that have been discarded, lost or deliberately deposited. Some will have an archaeological interest and importance; others will be more historical in their origin. In addition, some natural features will be relevant because of the information they contain; peat bogs, for instance, hold pollen that can throw light on past human activity in the area. Collectively, all these features are known as cultural heritage assets - as for instance defined in the Highways Agency’s Design Manual for Roads and Bridges (DMRB 2007). Appendix 2 contains information on the categorisation and conservation of the cultural heritage resource
- 2.2 The Design Manual for Roads and Bridges (DMRB), Volume 11 Section 3 Part 2, HA 208/07 (August 2007) provides a suitable, general framework for assessing the cultural heritage, and for Wales currently offers the most explicit, government-endorsed methodology that we are aware of. The approach to the cultural heritage which it promotes, although designed for road developments, is relevant as a methodology for the proposed development and has been adopted here. All sites can be classified according to a system devised for the assessment of cultural heritage assets in the DMRB, which is summarised in Appendix 3.
- 2.3 The baseline survey of the assessment was undertaken with reference to the principles and methods for assessing archaeological and cultural heritage assets laid out in a) the *Standard and Guidance for Archaeological Desk-based Assessments* (1994, revised 2012) and b) the *Standard and Guidance for Archaeological Field Evaluation* (1994, revised 2008), both produced by the Institute for Archaeologists, the regulatory body for the profession.
- 2.4 It is a general tenet in relevant conservation strategies that cultural heritage assets represent a non-renewable resource, and should be avoided wherever this is feasible in order to avoid damage or destruction.

Consultations

- 2.5 The following has been consulted as part of the assessment:
- John Roberts, Archaeologist for the Snowdonia National Park Authority

3 Assessment Methodology

General

- 3.1 The primary aim of the assessment is to identify the cultural heritage assets within 100m of the powerlines, and to provide sufficient information on them to enable the reader to appreciate their level of importance, whether national, regional or local, to identify the significance of impact that the development might have upon them, and to recommend mitigation to limit the impact of the development on them. Later modifications to the proposed route resulted in further phases of desk-based study and field survey to ensure that all areas were assessed.

Desk-top Methodology

- 3.2 The desk-based study, which formed the basis for the baseline assessment of the area, involved the examination of readily available written, cartographic, and aerial photographic sources held in the following repositories:
- a) The National Monuments Record, Aberystwyth.
 - b) The National Library of Wales, Aberystwyth.
 - c) The regional Historic Environment Record maintained by Gwynedd Archaeological Trust in Bangor.
 - d) The Gwynedd Archives Service (for the old county of Merionethshire), Dolgellau.

Field survey

- 3.3 Following the completion of the desk-top study, a field survey was undertaken for the entire route, including potential compounds and access routes, in order to verify the location and extent of known assets as well as prospecting for previously unrecorded assets.

Geophysical survey

- 3.4 The survey was conducted in early December 2013 along the predicted line of the Roman road from Segontium to Tomen-y-mur (site 8; PRN 17821) using an array of Geometrics G858 Magmapper caesium magnetometers, the survey having a spatial resolution of 1.0m between lines and reading at 0.25m intervals (Fig.4; Fry 2014).

Impacts and Effects

- 3.5 This report considers potential direct impacts on statutorily protected assets and undesignated assets during all phases of the scheme.
- 3.6 Direct impacts are most likely to result from:
- a) a programme of test pits
 - b) the construction of works compounds
 - c) the excavation of the trenches in which the cables are to be placed
 - d) the need to gain vehicular access to the route during all phases of work
 - e) works associated with the links to existing overhead lines
- 3.7 Appropriate mitigation for all phases is recommended in Table 5.

4 Cultural Heritage History of the Area

- 4.1 The wider landscape surrounding the study area contains visible remains of human activity from the prehistoric period to the present day. The earliest indications of settlement are provided by a number of prehistoric hut circles, some lying within an enclosure, such as that near Nurse Cae Du, which is a scheduled ancient monument (ME163). Finds too provide an indication of early activity, including a knife or dagger found within the study area near Penyglannau.
- 4.2 The exceptionally well-preserved earthworks of the Roman fort at Tomen-y-mur, 1.5km from the eastern end of the study area are surrounded by a complex of contemporary features which is unparalleled in Wales and includes the fort itself, a bath house, an amphitheatre, a parade ground, and a civilian settlement. Part of the associated road system remains visible, while other sections, including one which crosses the study area, have yet to be located with certainty.
- 4.3 Tomen-y-mur is also cited as one of the courts in the early Welsh Mabinogi tale of Math fab Mathonwy and its military significance continued into the medieval period with the construction of a motte.
- 4.4 The modern landscape, which is heavily wooded, is characterised by small, irregular fields defined by rubble stone walling, the stone having been largely derived from field clearance. Small farmsteads were once scattered throughout the area, some of which could have their origins in the medieval period, although the visible remains appear to be largely later. Many of these farmsteads have since been abandoned and their ruins stand in various stages of decay, including several within the study area. The area also contains the remains of industrial activity in the form of a now-abandoned gold mine at Felenrhyd Fach and some mining trials.
- 4.5 The modern history of the area is dominated by the generation of electricity, initially with the construction of the hydro-electric power station at Maentwrog, which was opened in 1928 and is fed by a substantial pipe which forms a prominent feature in the landscape from its source taking at Trawsfynydd reservoir. The nuclear power station at Trawsfynydd was built between 1959 and 1965, closing 26 years later, and is currently in the process of being decommissioned.
- 4.6 There is a possible cultural association with the Mabinogion, a collection of eleven prose stories collated from medieval Welsh manuscripts. According to local tradition the farm known as Felinryd-fach (SH 6570 3930) is thought to be Felen Rhyd, where Prederi, the king of Dyfed, was killed in single combat by Gwydion, the king of Gwynedd.

5 The Baseline Assessment

Designated Cultural Heritage Assets within 100m of the overhead line

- 5.1 The identification of designated assets within 100m of the overhead line is based on official information provided by Cadw. All assets designated as nationally important are automatically considered to be of high value (see Appendix 3 Table 1).
- 5.2 Each of these designated assets has been assessed to establish whether there is likely to be any direct impact as a result of the proposed development.

World Heritage Sites

- 5.3 There are no world heritage sites within 100m of the proposed powerlines and access routes.

Scheduled Ancient Monuments

- 5.4 There are no scheduled ancient monuments within 100m of the proposed powerlines and access routes. The closest scheduled asset is an enclosed hut group at Nurse Cae Du (ME163) at a distance of 200m.

Listed Buildings

- 5.5 There is one listed building within 100m of the proposed powerlines and access routes, namely Ivy Bridge, which is designated as grade II. This will remain unaffected by the works.

Table 1: Listed Buildings within 100m of the route

LB No	Name	LB Grade	NGR
4793/ 83453	Ivy Bridge (the numbers refer to the sections in Maentwrog and Talsarnau parishes, respectively)	II	SH65423942

Registered Historic Parks and Gardens

- 5.6 There are no Registered Historic Parks and Gardens within 100m of the proposed powerlines and access routes, although the route does cross the area defined as the essential setting for the Dragon Square and Dame Sylvia Crowe Garden (Gd64), which itself lies on the south-east side of the former nuclear power station at Trawsfynydd. The registered gardens at Plas Tan-y-bwlch (Gd31) lie outside the study area to the north-west.

Table 2: Registered Historic Parks and Gardens within 100m of the route

PGW No	Name	Grade	NGR
Gd 64	Former Nuclear Power Station at Trawsfynydd: Dragon Square and Dame Sylvia Crowe Garden	II*	SH692382

Registered Historic Landscapes

- 5.7 The powerline passes through one registered historic landscape:

Table 3: Registered Historic Landscapes within 100m of the route

No	Name
HLW (Gw) 11	Trawsfynydd Basin and Cwm Prysor

Conservation Areas

- 5.8 There are no Conservation Areas within 100m of the proposed powerlines and access routes.

Undesignated Cultural Heritage Assets within 100m of the powerline

- 5.9 At the commencement of the study, a total of seven undesignated assets were identified from consultation of the regional HER. An additional 24 previously unrecorded assets were identified by the desk-based study, while the field survey identified 8 further assets. Therefore a total of 39 undesignated cultural heritage assets have now been identified within 100m of the proposed powerlines and access routes, a full list of which is provided in Appendix 1, and this includes an assessment of their perceived value. The majority are of low (25 assets) or negligible value (8 assets), although there are also 5 of medium value and one, the potential line of a Roman road, whose value is currently unknown. However, the results from a geophysical survey provided no evidence for the presence of the road within the corridor and it is therefore likely to remain unaffected.

- 5.10 It is worth noting that while some of these assets are individually of low or medium value, they may occasionally have a collective value which is greater, particularly with respect to their contribution to the character of the Trawsfynydd Basin and Cwm Prysor Registered Historic Landscape through which the eastern part of the scheme runs. This is also true of the many stone walls which both flank and cross the route for much of its length and collectively form a significant element in the understanding and appreciation the historic landscape.

6 Assessment of Impacts

Potential Direct Impacts on designated cultural heritage assets

- 6.1 No direct impacts are predicted for any scheduled ancient monuments, listed buildings, or registered parks and gardens.

Potential Direct Impacts on Registered Historic Landscapes

- 6.2 The route runs through the Trawsfynydd Basin and Cwm Prysor Registered Historic Landscape and while the undergrounding of the cables, once complete, presents no obvious visual intrusion in itself there is the potential for an impact on surviving historic boundaries, which form an integral part of the character of the landscape, since short sections of stone wall may be demolished during the construction phase.

Potential Direct Impacts on Registered Historic Parks and Gardens

- 6.3 The eastern end of the route extends within the essential setting of the registered Dragon Square and Dame Sylvia Crowe Garden, although there will be no direct impact on the garden itself, and no visual impact on its setting since the cables will be laid underground.

Potential Direct Impacts on Undesignated Cultural Heritage Assets

- 6.4 Potential direct impacts have been identified for 11 undesignated cultural heritage assets and these are listed in Table 4, which has been compiled using the DRMB criteria for assessment impacts (see Appendix 4). In the table, the magnitude of impact before mitigation is an assessment of the impact that could occur if a site were damaged during the construction process, either through the cable installation process itself or through gaining access.

Table 4: Potential direct impacts on undesignated cultural heritage assets

Site no (PRN)	Type	Period	NGR	Type of Impact	Value	Magnitude of impact before mitigation	Significance of impact
06 (3886)	Trackway	Unknown	SH67043930	cable trench	Low	Minor	Slight/Moderate
08 (17821)	Road	Roman	SH67543935	cable trench	Unknown	Minor	Unknown
11	Limekiln	Post-medieval	SH6618739256	cable trench	Medium	Major	Moderate/Large
33	Bridge	Post-medieval	SH6893538790	cable trench	Low	Major	Slight/
34	Culvert	Post-medieval	SH6621039253	cable trench	Low	Major	Moderate
35	Bridge	Post-medieval	SH6619839225	cable trench	Low	Major	Slight/
36	Culvert	Post-medieval	SH6629039230	cable trench	Low	Major	Moderate
37	Mining trial	Post-medieval	SH6643039190	cable trench	Low	Major	Slight/
38	Mining	Post-medieval	SH6646139161	cable trench	Low	Major	Moderate

	trial						
39	Boundary	Post-medieval	SH6589639211	cable trench	Low	Major	Slight/
40	Trackway	Post-medieval	SH6655639189 to SH6598539283	cable trench	Low	Major	Moderate

Summary

- 6.5 To summarise, within 100m of the route there are eleven undesignated assets where there is the potential for a direct impact, the potential magnitude of which is considered in the table above, based on Table 3 in Appendix 3.
- 6.6 There is also the potential for direct impacts on unrecorded, buried assets as part of the construction process, through the excavation of the cable trench and the construction of the site compound.

7 Detailed Mitigation Measures

- 7.1 A small number of cultural heritage assets have been identified within the assessment area which could be subject to direct impacts from the proposed work. In the light of the assessment above, this section provides a description of the measures adopted to mitigate the identified impacts on cultural heritage assets, together with a consideration of the residual effects of the development on cultural heritage assets.
- 7.2 Cultural heritage assets represent a non-renewable resource, and should be avoided wherever this is feasible in order to avoid damage or destruction. The purpose of mitigation is to avoid or reduce any adverse impacts that might result from the proposed scheme on the cultural heritage resource. The main strategy for minimising impacts from the scheme is avoidance through careful planning, design and demarcation of sensitive assets. Where an impact is unavoidable, the reduction of that impact on the cultural heritage asset necessitates detailed consideration of the site characteristics and the introduction of specific measures designed to limit the impact. These are addressed in the section that follows.
- 7.3 The client will be provided with digital data identifying the location of all cultural heritage assets which should be included on all constraints mapping for the project.
- 7.4 Table 5 provides detailed mitigation options for those assets for which there may be a direct impact from the proposed refurbishment works.

Table 5: Mitigation Measures

Site no (PRN)	Type	Value of asset	Type of Impact	Mitigation
06 (3886)	Trackway	low	Excavation of cable trench	Watching brief with Site 08
08 (17821)	Roman road	unknown	1/ Test pits 2/ Excavation of cable trench	1/ Watching brief 2/ Watching brief
11	Limekiln	medium	Excavation of cable trench	Avoid / demarcate
33	Bridge	low	Site access	Avoid / demarcate
34	Culvert	low	Excavation of cable trench	Avoid / demarcate
35	Bridge	low	Excavation of cable trench	Avoid / demarcate
36	Culvert	low	Excavation of cable trench	Avoid / demarcate
37	Mining trial	low	Excavation of cable trench	Avoid / demarcate

38	Mining trial	low	Excavation of cable trench	Avoid / demarcate
39	Boundary	low	Excavation of cable trench	Avoid / demarcate
40	Trackway	low	Excavation of cable trench	Avoid / demarcate
	Stone boundary walls	medium	Excavation of cable trench	Use existing breaks or rebuild in same style with original stone
	Unrecorded, buried assets	unknown	Soil strip within wayleave Site compound and drainage works	Watching brief

Test pits

- 7.5 The locations of proposed test pits have been checked against the cultural heritage data resulting from the assessment. Two of the test pits (nos 7 and 8) lie along the predicted line of a Roman road and a watching brief is consequently recommended in mitigation.

Site Access, compounds etc

- 7.6 Ground disturbance is likely to occur within a sizeable area associated with the construction of the site compound and related drainage works. A watching brief should be undertaken during soil-stripping operations in order to ensure that an appropriate record is made of any buried assets which may be revealed.
- 7.7 One of the potential access routes to the eastern end of the scheme follows an existing track alongside which there is a stone, slab-built footbridge which should be clearly demarcated to ensure avoidance.

Underground cable installation

- 7.8 The exact construction details are not available at the time of writing, although it is understood that for much of the route the new underground cables will follow existing roads and trackways, the cable trench being around 0.5m in width. It appears that one of these trackways (Site 40; Plate 8 in Appendix 2) is of historic interest; it includes a number of culverted embankments, and avoidance is preferred. There are, however, a number of areas where the route may deviate into adjoining fields where soil stripping may be conducted within a 5m-wide wayleave. A watching brief is recommended during soil stripping operations with the facility for an appropriate level of excavation for the recording of any significant archaeological features which may be revealed.
- 7.9 The nature of the terrain is such that in general there is considered to be a low potential for disturbance to buried assets. Although there is the potential for an impact on the Roman road from Segontium to Tomen-y-mur (site 8; PRN 17821) where its predicted line coincides with the cable route between SH 6739 3930 and SH 6801 3910 recent geophysical survey provided no evidence for the presence of the road within the corridor and it is therefore likely to remain unaffected.
- 7.10 This section also includes the crossing of a trackway (site 6; PRN 3886) and passes close to the place where a prehistoric knife or dagger was found (site 7; PRN 4348) and a watching brief is recommended during groundworks along this section.
- 7.11 Where the cable route deviates from existing roads and tracks there will be a need to breach a number of stone boundary walls which form an integral part of the historic landscape. Where possible the route should utilise existing breaks and elsewhere the walls should be rebuilt in a similar style, using the original stone. There are also two abandoned mining trials (Sites 37 and 38; Plates 5 and 6 in Appendix 2), possibly for manganese, which may be impacted by the soil stripping for the wayleave and should be avoided.

8 Sources

Published sources

- Burnham, B. C. and Davies, J. L., 2010. *Roman Frontiers in Wales and the Marches*. Cardiff: University of Wales Press.
- Cadw, 1998. *The Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales. Part 2.1: Register of Landscapes of Outstanding Historic Interest in Wales*, Cardiff: Cadw.
- Fry, R., 2014. *Trawsfynydd, Gwynedd, Wales. Geophysical Survey Report*. ArchaeoPhysica Report TGW131.
- Lewis, M. J. T., 1989. *Sails on the Dwyryd*, Maentwrog: Snowdonia National Park Study Centre.

Documentary sources

- Gwynedd Record Office, Dolgellau
Z/M/5295 Articles relating to the Maentwrog Generating Station, from 'The Engineer', dated Oct 19, Oct 26 and Nov 2 1928

Cartographic sources at Merioneth Record Office, Dolgellau

- 1867 – Z/M/7/1-2 Maps of the Allt Ddyrus Estate
Early 19th century – Z/M/1055/5 Maps of an estate in the parishes of Ffestiniog, Maentwrog and Trawsfynydd

Cartographic sources at National Library of Wales, Aberystwyth

- 1841 Maentwrog Tithe map (shows land holdings only)
19th century – MS Estate map No 7416
1865 – Sale Catalogues Merioneth 169 (Plan of Pen-y-glannau, Ty-hen, Ffridd-wen and Allt-ddyrus, in the parish of Maentwrog)
1873 – Sale Catalogues Merioneth 248
1876 – Sale Catalogues Merioneth 181 (Plan of Pen-y-glannau, Ty-hen, Ffridd-wen and Allt-ddyrus, in the parish of Maentwrog)

- 1889 Ordnance Survey 1st edition 1:2500 map (Merioneth 11.11)
1889 Ordnance Survey 1st edition 1:2500 map (Merioneth 11.12)
1889 Ordnance Survey 1st edition 1:2500 map (Merioneth 12.09)
1889 Ordnance Survey 1st edition 1:2500 map (Merioneth 12.13)
1900 Ordnance Survey 2nd edition 1:2500 map (Merioneth 11.11)
1901 Ordnance Survey 2nd edition 1:2500 map (Merioneth 11.12)
1901 Ordnance Survey 2nd edition 1:2500 map (Merioneth 12.09)
1901 Ordnance Survey 2nd edition 1:2500 map (Merioneth 12.13)

Aerial photographic sources

- RAF 106G/UK/1455 Nos 3134-3138, 4022-4026, taken on 2/5/1946
RAF 106G/UK/1469 Nos 4106-4112, taken on 4/5/1946
58/RAF/2649 F21 No 219, taken on 5/12/1958
58/RAF/2649 F22 Nos 218, 219, 227 and 228, taken on 5/12/1958
Ordnance Survey 71-283 Nos 367, 398 and 404, taken on 4/6/1971
Ordnance Survey 83-070 No 18, taken on 4/5/1983
Ordnance Survey 98-501 Nos 025-033, taken on 1/5/1998

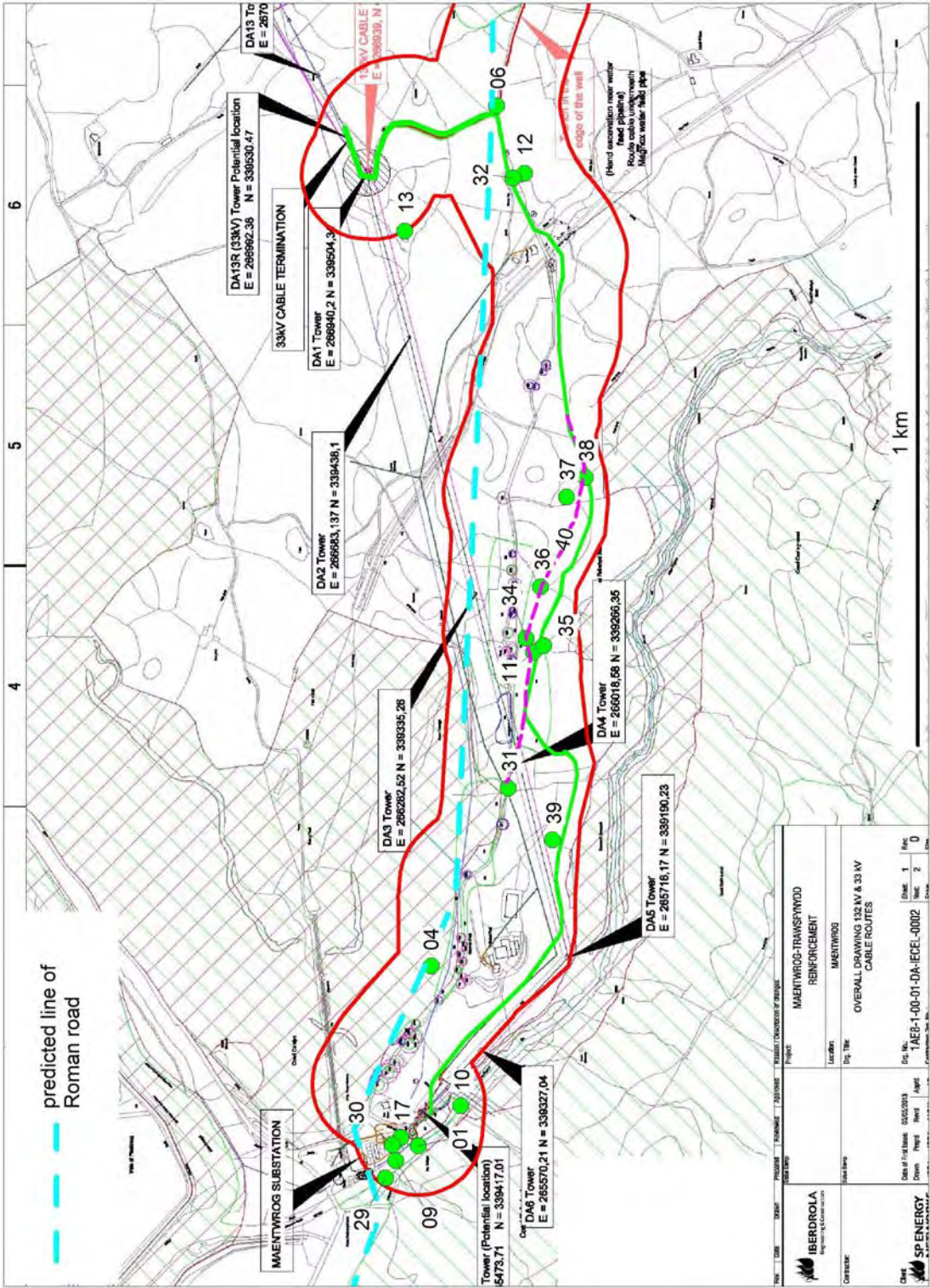


Fig. 2 The western half of the proposed scheme showing the study area (outlined in red) and known cultural heritage assets

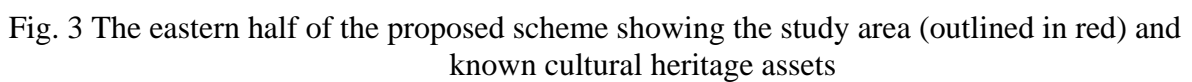




Fig. 4 Geophysical Survey results (see Fry 2014 for full results)

APPENDIX 1

Undesignated Cultural Heritage Assets within 100m of the powerlines
(NB Site 1 is the designated asset, Ivy Bridge, a listed building)

Site no (PRN)	Name	Type	Grid ref	Value	Magnitude of impact before mitigation
2 (1813)	Hut Group (Enclosed), Penyglannau	Hut circle settlement	SH67563925	Medium	No change
3 (1816)	Settlement, NW of Trawsfynydd Power Station	Settlement	SH68693865	Medium	No change
4 (21788)	Felenrhyd Fach/ Penpont Felenrhyd	Gold mine	SH65703940	Medium	No change
5 (28573)	Sheepfold, E of Caersaeson	Sheep fold	SH6841538825	Low	No change
6 (3886)	Trackway: Gellilydan to Felinrhyd	Trackway	SH67043930	Low	Minor
7 (4348)	Knife-Dagger – Findspot, Penyglannau	Find	SH67803920	Negligible	No change
8 (17821)	Segontium to Tomen y Mur Roman road	Road	SH67543935	Unknown	Minor
9	Ivy Bridge stepping stones	Stepping stones	SH6539739455	Negligible	No change
10	Ivy Bridge weir	Weir	SH6548239354	Low	No change
11	Felinrhyd Fach limekiln	Limekiln	SH6618939241	Medium	Major
12	Ty'n-y-coed reservoir	Reservoir	SH6693539256	Low	No change
13	Coed-y-trwyn house	House	SH6684539443	Low	No change
14	Pen-y-glanau sheepfold	Sheep fold	SH6756539377	Low	No change
15	Pen-y-glanau well	Well	SH6786239195	Negligible	No change
16	Bryntirion sheep fold	Sheep fold	SH6802539019	Low	No change
17	Pen-y-bont/Ivy Bridge cottage	House	SH6543339447	Negligible	No change
18	Building SE of Bryntirion	House	SH6807038989	Medium	No change
19	Pant-yr-onen house	House	SH6820938927	Low	No change
20	Pant-yr-onen sheep fold	Sheep fold	SH6827038872	Low	No change
21	Llwyn fold	Fold	SH6835439001	Low	No change
22	Gwylan sheep fold I	Sheep fold	SH6871038735	Low	No change
23	Gwylan sheep fold II	Sheep fold	SH6876938685	Negligible	No change
24	Gwylan sheep fold III	Sheep fold	SH6868638503	Low	No change
25	Gwylan farmstead	Farmstead	SH6881238727	Low	No change
26	Gwylan building	Barn ?	SH6884938617	Low	No change
27	Gwylan fold	Fold ?	SH6888338633	Low	No change
28	Bryntirion walled garden	Walled garden	SH6794539093	Low	No change
29	Felinrhyd Fawr limekiln	Limekiln	SH65373947	Negligible	No change
30	Felinrhyd Mill	Mill	SH65423946	Negligible	No change
31	Felinrhyd Fach quarry	Quarry	SH6597739280	Negligible	No change
32	Ty'n-y-coed sheep dipping bath	Sheep dip	SH6692739274	Low	No change
33	Pandy-gwylan footbridge	Bridge	SH6893538790	Low	Major
34	Felinrhyd Fach culvert I	Culvert	SH6621039253	Low	Major
35	Felinrhyd Fach bridge	Bridge	SH6621039253	Low	Major
36	Felinrhyd Fach culvert II	Culvert	SH6629039230	Low	Major

37	Felinrhyd Fach trial mine working I	Mining trial	SH6643039190	Low	Major
38	Felinrhyd Fach trial mine working II	Mining trial	SH6646139161	Low	Major
39	Felinrhyd Fach field boundary	Field boundary	SH6589639211	Low	Major
40	Felinrhyd Fach trackway	Trackway	SH6655639189 to SH6599539277	Low	Major

APPENDIX 2

Images of sites where there is a potential direct impact



Plate 1 Felinrhyd Fach limekiln (Site 11). Photo CPAT 3837-0002.



Plate 2 Felinrhyd Fach culvert I (Site 34). Photo CPAT 3837-0006.



Plate 3 Felinrhyd Fach bridge (Site 35). Photo CPAT 3837-0007.



Plate 4 Felinrhyd Fach culvert II (Site 36). Photo CPAT 3837-0008.



Plate 5 Felinrhyd Fach trial mine working I (Site 37). Photo CPAT 3837-0009.



Plate 6 Felinrhyd Fach trial mine working II (Site 38). Photo 3837-0010.



Plate 7 Felinrhyd Fach field boundary (Site 39). Photo 3837-0001.



Plate 8 Felinrhyd Fach trackway (Site 40). Photo 3837-0012.

APPENDIX 3

The categorisation and conservation of the cultural heritage resource

The cultural heritage resource is not a single body of equally significant assets, but an infinitely complex set of individual assets, the number of which increases and alters in form and relationships on a continuous basis. They range in importance from internationally significant sites to features of minor and even negligible value, with those perceived to be of more importance being categorised by designation (statutory) or registration (non-statutory).

World Heritage Sites. This is the only statutorily recognised category of international importance. No World Heritage Site has been designated within or adjacent to the corridor.

Scheduled Ancient Monuments. SAMs are protected under the Ancient Monuments and Areas of Archaeological Importance Act, 1979, and their settings are also protected. Setting is not defined within the Act, but is typically taken to refer to the immediate area around a protected site, for example the curtilage of a building. As a concept, it is covered in Planning Policy Wales (4th edition; 2011), and in more detail in a supporting Welsh Office Circular on Planning and the Historic Environment: Archaeology (60/96)

Listed Buildings. These are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990, and are usually classed in diminishing importance as Grades I, II* and II. The Act requires local planning authorities to have special regard to the desirability of preserving the setting of a listed building, and it also requires planning proposals to meet the test of determining the extent to which a development affects views to and from a listed building. Further guidance comes in Welsh Office Circular on Planning and the Historic Environment: Historic Buildings and Conservation Areas (61/96).

Conservation Areas. These are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990. This Act requires local planning authorities to have special regard to the desirability of preserving the setting of a conservation area, and it also requires planning proposals to meet the test of determining the extent to which a development affects views to and from such an area. The setting of a conservation area is covered in the same set of publications as those for scheduled ancient monuments, above.

Parks and Gardens. In Wales parks and gardens of significance appear in the non-statutory Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales, the register for Powys appearing in 1999. Parks and gardens are graded using the same categories as listed buildings. Being non-statutory, parks and gardens are thus classed as registered rather than designated assets, though for practical purposes this distinction appears to be of limited importance. Planning Policy Wales (2011) states that local authorities should protect registered parks and gardens and their settings, and that Cadw should be consulted on developments affecting grade I and II* sites.

Historic Landscapes. In Wales significant landscapes appear in the two-volume non-statutory Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales (1998 & 2001). Unlike parks and gardens, registered landscapes are not graded, but are classified as either 'outstanding' or 'special'. Though registered rather than designated, historic landscapes are treated in the same way as parks and gardens, as indicated in Planning Policy Wales (2011). All the larger registered landscapes have been the subject of historic landscape characterisation in recent years.

Battlefields. England has a Battlefields Register, but there is at present nothing equivalent for Wales, though one is now in preparation.

Undesignated assets. There are a large number of undesignated heritage assets within the route corridors, both above ground where they are still visible and buried beneath the surface. These range in date from the prehistoric era through to the 20th century.

Planning Policy Wales (5th edition, 2012) sets out the land-use planning policies of the Welsh Government, including the conservation of the historic environment. This states that 'it is important that the historic environment - encompassing archaeology and ancient monuments, listed buildings, conservation areas and historic parks, gardens and landscapes - is protected', with the following objectives:

- preserve or enhance the historic environment, recognising its contribution to economic vitality and culture, civic pride and the quality of life, and its importance as a resource for future generations; and specifically to
- protect archaeological remains, which are a finite and non-renewable resource, part of the historical and cultural identity of Wales, and valuable both for their own sake and for their role in education, leisure and the economy, particularly tourism;
- ensure that the character of historic buildings is safeguarded from alterations, extensions or demolition that would compromise a building's special architectural and historic interest; and to
- ensure that conservation areas are protected or enhanced, while at the same time remaining alive and prosperous, avoiding unnecessarily detailed controls over businesses and householders.

APPENDIX 4**The Assessment Framework**

The classification of designated and registered assets is laid out in DMRB (2007) (as in Table 1). The classification of undesignated assets is based on the collective professional judgement and expertise of the field staff of CPAT.

Table 1 Factors for Assessing the Value of Cultural Heritage Assets

Factors for Assessing the Value of Cultural Heritage Assets	
Very High	World Heritage Sites (including those nominated). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.
High	Scheduled Monuments (including those proposed). Undesignated monuments of which could potentially be worthy of scheduling. Grade I and Grade II* Listed Buildings. Assets that can contribute significantly to acknowledged national research objectives.
Medium	Grade II Listed Buildings. Conservation Areas. Designated or undesignated assets that contribute to regional research objectives.
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 the potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving cultural heritage interest.
Unknown	The importance of the resource has not been ascertained.

Factors to be considered in assessing the magnitude (or scale) of the impact are given in Table 2, based on the DMRB (2007).

Table 2 Factors in the Assessment of the Magnitude of Impacts

Factors in the Assessment of Magnitude of Direct Impacts	
Major	Change to most or all key cultural heritage elements, such that the resource is totally altered.
Moderate	Changes to many key cultural heritage elements, such that the resource is clearly modified.
Minor	Changes to key cultural heritage elements, such that the asset is slightly altered or different.
Negligible	Very minor changes to cultural heritage elements.
No Change	No change.

The significance of the impact of a development on a particular cultural heritage asset is then established from the matrix (Table 3) taken from the DMRB (2007).

Table 3 Matrix for Assessing the 'Significance' of Direct Impacts of the Proposed Development upon Cultural Heritage Assets

Magnitude of Impact	Value/Sensitivity of Cultural Heritage Asset				
	Very High	High	Medium	Low	Negligible
Major	Very Large	Large/ Very Large	Moderate/ Large	Slight/ Moderate	Slight
Moderate	Large/Very Large	Moderate/ Large	Moderate	Slight	Neutral/ Slight
Minor	Moderate/ Large	Moderate/ Slight	Slight	Neutral/ Slight	Neutral/ Slight
Negligible	Slight	Slight	Neutral/ Slight	Neutral/ Slight	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral