

THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

*Proposed extension
to Hafotty Ucha Windfarm,
Llangwm, Conwy*

ARCHAEOLOGICAL ASSESSMENT

CPAT Report No 597

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Hafotty Ucha Windfarm,
Llangwm, Conwy*

ARCHAEOLOGICAL ASSESSMENT

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Report for Dulas Ltd

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1 INTRODUCTION

- 1.1 The contracting section of the Clwyd-Powys Archaeological Trust (henceforward CPAT Contracting) was commissioned by Dulas Ltd. of Machynlleth in November 2003 to produce an archaeological assessment of a proposed extension to the existing windfarm known as Hafotty Ucha, in the community of Llangwm near Cerrigydrudion in Conwy County Borough. The proposed extension is centred broadly at SH 939458, and will occupy the summit of an upland ridge to the west of the valley of the Afon Ceirw. There is a requirement under the *Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations* of 1999 to carry out Environmental Impact Assessments for most new windfarms in Wales, over a certain size, leading to the submission of an Environmental Statement to the local planning authority in support of the planning application for that proposal. The study that follows is intended to form the archaeological component of the Environmental Statement for the proposed windfarm extension at Hafotty Ucha.
- 1.2 The assessment has been guided by the Terms of Reference for an Archaeological Assessment prepared by Dulas Ltd. The programme of work was laid out in a specification submitted to Dulas Ltd. on 6 November 2003 and accepted by them. It included both a desk-top study and an assessment of the archaeology in the field, and covered the three new turbine sites and a larger area of the ridge around those turbines, henceforward termed 'the proposal area'. No detailed examination was undertaken, either in the archives or in the field, of the historic environment beyond the proposal area. The infrastructure details of the windfarm were not available at the time of the fieldwork: it was assumed that much of the infrastructure would fall within the proposal area.
- 1.3 The desk-based element of the work was completed in November and the fieldwork in the latter part of the same month. The draft report on the work was prepared in December.

2 GEOGRAPHICAL LOCATION AND ASSOCIATED ASPECTS

- 2.1 The proposed extension to the windfarm lies on the highest point of an undulating ridge known, at this point, as Moel Gwern-nannau. The proposed turbine locations lie on the crest of this ridge which itself extends to the south-west to Moel Llechwedd-figyn which, at 521m OD, is the highest point in the immediate locality. The highest point on the ridge and within the proposal area is 452m OD, and the entire area lies above 410m OD. This block of upland is separated by the valley of the Afon Medrad from a larger block of mountainous country to the south which culminates in the summit of Foel Goch at 621m OD.
- 2.2 All of the ridge has been enclosed since the second half of 19th century (see below) and most of the proposal area has seen considerable pasture improvement. The land now appears as an area of well-grassed undulating upland pasture, from which many of the small-scale surface irregularities, whether natural or artificial, are likely to have been removed. At the extreme western end of the proposal area, some of the lower ground has remained relatively unimproved, leaving a rush-covered area of boggy pasture.
- 2.3 The underlying rocks of the area are generally shaly mudstones and siltstones, belonging to the Caradoc Series of Ordovician age (British Geological Survey *Geological Map of Wales*), and these are intermittently visible at the surface. The soils on the ridge are derived from this underlying geology and consist of fine silty or loamy soils belonging to the Manod Soil Association and loamy upland soils with a wet, peaty surface horizon and a

bleached subsurface, belonging to the Hafren Soil Association. The soils of the land surrounding the proposal are fine silty or clayey soils of the Cegin Soil Association (Soil Survey of England and Wales map and legend).

3 METHODOLOGY

3.1 The aims of the assessment were:

a) to identify and record the archaeology of the area to be affected by the proposal, and also to identify, where obvious, broader areas of archaeological sensitivity;

b) to evaluate the importance of what had been identified (both as a cultural landscape and as the individual elements which make up that landscape);

c) to determine the potential impact of the turbine locations and, if possible, other elements of the windfarm infrastructure on any archaeological sites or areas of sensitivity;

d) to consider the essential setting of any archaeology that was located, depending on its significance.

3.2 The assessment comprised an initial desk-top study consisting of the consultation of maps, computer records, written records and reference works, contained within a number of archives and repositories: the regional Sites and Monuments Records (SMR) held by the Clwyd-Powys Archaeological Trust; the County Archives Service for Denbighshire in Ruthin; the National Library of Wales in Aberystwyth; the National Monuments Record (NMR), a department of the Royal Commission on Ancient and Historical Monuments in Wales (RCAHMW), also in Aberystwyth. The RCAHMW also provided access to vertical aerial photography held by both themselves and by the Central Register of Air Photography for Wales, a section of the Welsh Assembly in Cardiff. Lists supplied by Cadw: Welsh Historic Monuments were consulted for information relating to scheduled ancient monuments, but were found not to be relevant to the archaeology of the proposal area.

3.3 The second element of the assessment was a field survey. This allowed both a review of those sites and features already known to exist, and also a record to be prepared of any new sites encountered during the survey. Special emphasis was placed on those locations where turbines and infrastructure elements were proposed. At the time of the field survey infrastructure details of the new site access roads were available, and it was possible to assess on the ground their impact on elements of the historic landscape. It was not possible, however, to examine known sites of archaeological and historic landscape interest beyond the boundaries of the proposal area, and the records of these that are given in Appendix 1, part 2 are derived entirely from correlating information held in the regional SMR, the NMR and evidence recorded on the early cartography.

3.4 A visual search was also made for areas which might contain surface deposits that could have a palaeoenvironmental potential. It is evident that thin peaty soils exist throughout the proposal area, but there is one main area containing some deeper peat deposits which lies at the western end of the proposal area and this is defined as 'Marshy Grassland' on the ecology map which relates to the proposal. Peat depths in excess of 1.0m may be encountered there.

3.5 The survey was carried out on foot and consisted of an examination of the area in a systematic manner. Wherever possible, regular transects were walked, and the pattern of large fields aided this approach. The sites of archaeological and historic landscape interest

which were discovered during the survey were recorded on standard site record forms used by CPAT, and located by hand-held Global Positioning System (GPS) equipment.

- 3.6 All of the sites recorded during the desk-top and field survey exercises were entered into a Foxpro database and mapped in relation to the proposal area using the Mapinfo software package. Archaeological sites are distinguished by a single red dot which gives no guide to the overall size of the site that it denotes. Two types of linear features were encountered, namely redundant field boundaries, which are indicated by continuous red lines on the accompanying map, and a trackway which is indicated by a dashed red line.
- 3.7 An extract of the information within the database is included in this report as Appendix 1. Sites in Part 1 of the appendix are denoted by their individual site numbers on the plan of archaeological sites (Fig. 1) and are those which have been revealed by this assessment within the proposal area or immediately adjacent to it. Sites in Part 2 of the appendix are those which have already been recorded in the locality and may be useful in providing a background context for the archaeological resource of the proposal area; these are identified by their existing Primary Record Numbers (PRNs), as used in the regional Sites and Monuments Record.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 4.1 This section provides a summary of the archaeology and history of the area, so that the findings of the assessment can be put into a wider context. Primary Record Numbers (PRNs) are given for sites where information relating to them is held in the regional SMR, maintained by the Curatorial Section of CPAT.

4.2 Prehistoric

- 4.2.1 The main evidence for prehistoric occupation in the district is the Iron Age hillfort of Caer Caradog (PRN 100690), situated some 3km to the north-east of the proposal area. This apart, there are few indications of prehistoric occupation in the immediate environs of the ridge, yet it is logical to assume that groups of people visited and utilised it, perhaps from the Mesolithic but certainly from the succeeding Neolithic and through the Bronze Age. But only two other recorded sites in the locality have been considered to be of prehistoric origin, namely the possible enclosed settlement (PRN 101655) at Cwmoerddwr, 1.3km to the north-west, and a lost cairn (PRN 100688) at Gellioedd-uchaf, 0.7km to the south-west of the proposal. The cairn was originally recorded in the RCAHMW Inventory (1914), and appears to represent an authentic site, although it has not been seen since that date and has probably been destroyed. In contrast, the enclosed settlement is of questionable origin, and may be an entirely natural feature.
- 4.2.2 The degree of past land improvement has a bearing on the potential for surface evidence of prehistoric sites having survived within the proposal area. No traces of prehistoric burial or settlement have been recorded here and evidence of activity, in the form of worked flints, is also absent, although this is a reflection more of the fact that the opportunities and conditions for finding such material are poor, rather than that the material is wholly absent.

4.3 Roman

- 4.3.1 No evidence of any Roman activity has been discerned in the immediate area. It has been suggested that a Roman road may have mirrored the course of the present A5, but this remains to be confirmed. It seems possible that Romano-British farmsteads and other

settlements existed in the region, although present knowledge suggests it is unlikely that they would have extended to such an elevated locality as Moel Gwern-nannau.

4.4 *Medieval*

- 4.4.1 In the valleys below the ridge and perhaps even on the lower slopes, settlement probably developed during the early medieval period (up to c.AD 1100), and although their precise locations are presently unknown, it is likely that this was characterised by a pattern of dispersed farms. Although the existing structure is probably 18th-century in date, the church at Llangwm, some 2.5km to the south-east, is likely to have had its origin at this time (Silvester 1999).
- 4.4.2 Settlement in the Middle Ages (up to c. AD 1500) will have followed the same processes, but if the farms and their associated fields stretched as far as the ridge they have left no visible trace. It seems evident that the ridge and its slopes were open hill land used as common grazing pasture for stock from farms at lower altitudes. That this was done on a seasonal basis is suggested by the presence of *hafod* placenames - such as Hafotty Cerig and Hafotty Ucha - indicative of small steadings occupied only during the summer months.
- 4.4.3 One placename, that of the dwelling known as 'Castell' (PRN 101565), 1.1km to the south-west, could conceivably relate to a defensive site in the locality. This, however, remains an unconfirmed hypothesis and such names were given to later, post-medieval, farms as ironic labels.

4.5 *Post-medieval*

- 4.5.1 After 1500 settlement continued to expand as the population increased, necessitating the intake of land which had previously been open hill land. Some of the *hafodydd* were ultimately converted into permanent farms, occupied all the year around, and land around these was then enclosed. Similar results would have emerged from encroachment on the common, as landless people colonised the higher ground, creating small holdings for themselves, an example of which may be the apparent dwelling named as 'Bryn y Cloddfa' (Site 36) on a map, dated 1865, which was created as a consequence of the Llangwm enclosure. One factor which may have provided an impetus for this type of settlement is the presence of the minor road to the north-west which was apparently the main thoroughfare linking Bala and Cerrigydrudion prior to the enclosures; this is stated on the 1865 map.
- 4.5.2 An area of peat extraction was encountered at the west end of the proposal area, and it is likely that this would have provided fuel for some of these smaller settlements in the immediate locality during this period.
- 4.5.3 Much of the ridge, and certainly all of the proposal area, remained as open hill ground until the enclosure act for Llangwm was passed in 1869 (Chapman 1992, 81). The ridge was then divided up into large, generally rectilinear enclosures. These can still be seen today, although there have been some subsequent modifications to the patterns that were originally established in the latter part of the 19th century. The field boundaries which were created are represented by a combination of earth banks and stone walls, with plentiful evidence of the quarries which were excavated to provide walling stone throughout the proposal area.
- 4.5.4 Since enclosure the ridge has undergone periodic agricultural improvement. The original boundaries that were created in the 19th century have in places been superseded by post

and wire fences. Field surfaces have also been smoothed out, with the hollows left by stone quarrying providing convenient places to dump stone cleared from the land. The size of some of the boulders indicates the large scale of clearance, most of which appears to be of relatively recent date.

5 THE HISTORIC LANDSCAPE

- 5.1 The historic landscape of the Moel Gwern-nannau ridge is essentially one that has been created and developed during the last one hundred and fifty years. Prior to this, the land was open hill pasture that was probably utilised but seemingly unsettled from Roman times onwards. In the even earlier, prehistoric period, the nature of activity in the proposal area can only be guessed at. Comparisons with other, better preserved, prehistoric landscapes suggest that there might have been some funerary activity on the ridge and its higher slopes, but no traces of this have survived.
- 5.2 The regular appearance of the enclosures and fields attest the changes that have occurred as a result of agrarian practice in the late 19th and the 20th centuries. The first evidence relates to the initial enclosure of the open hill and consists of earth bank and stone walled boundaries, with the quarries excavated to provide material used in their construction. More recently the boundaries have been partially superseded by post and wire fences, and the pasture has been significantly improved by ploughing and reseeding, combined with stone clearance. Some less-favourable areas have remained untouched, particularly the damper and more boggy areas and those where the close proximity of rock to the surface has rendered improvement impractical. The pasture improvement has probably been sufficiently thorough to remove any surface evidence, which may once have existed, of activity prior to the later 19th-century enclosure of the ridge.

6 ARCHAEOLOGICAL SITES AND THEIR SIGNIFICANCE

- 6.1 The archaeological sites within the proposal area are classified according to their perceived significance (Table 1 below and Appendix 1). The categories, with the exception of Category E, are based on those given in the Department of Environment, Transport and Regions' *Design Manual for Roads and Bridges* Volume 11 Section 3 Part 2 (1993).

- 6.1.1 *Category A* sites are those believed by CPAT Contracts to be of primary significance, either potentially of national importance or already designated by CADW: Welsh Historic Monuments as being of scheduled ancient monument status. No sites in this category have been identified within the proposal area.
- 6.1.2 *Category B* sites are sites of regional importance. These sites are not of sufficient importance to justify scheduling, but are nevertheless important in aiding the understanding and interpretation of the archaeology of the region. No sites in this category have been identified within the proposal area.
- 6.1.3 *Category C* sites are sites of local importance. These sites are of lesser importance, but are nevertheless useful in aiding the understanding and interpretation of the archaeology of the local area. Three sites in this category have been identified within the proposal area.
- 6.1.4 *Category D* sites are either sites of minor importance or those which are so badly damaged that too little now remains to justify their inclusion in a higher grade. Thirty-four sites in this category have been identified in the proposal area.
- 6.1.5 *Category E* sites are sites which have been identified, but whose importance cannot be assessed from fieldwork and desk-top study alone. An archaeological evaluation would be required to categorise such a site more accurately if the proposal was likely to cause a direct impact. One site in this category has been identified, but this lies 50m beyond the boundary of the proposal area, and will not be physically effected.
- 6.2 A total of thirty-eight sites have been identified within the proposal area and its immediate vicinity. Brief details of these sites are provided in the following table. Descriptive information regarding the nature of each site can be found in the gazetteer (Appendix 1).

6.3 *Table 1: Archaeological sites within the proposal area and their categories*

Site	Name	Type	Period	NGR	Category
1	Bryn y Cloddfa peat stand	Peat stand	Post Medieval	SH93734555	C
2	Bryn y Cloddfa quarry	Quarry	19th century	SH93704572	D
3	Moel Gwern-nannau quarry I	Quarry	19th century	SH93714590	D
4	Moel Gwern-nannau quarry II	Quarry	19th century	SH93794599	D

5	Moel Gwern-nannau quarry III	Quarry	19th century	SH93824592	D
6	Moel Gwern-nannau quarry IV	Quarry	19th century	SH93784588	D
7	Moel Gwern-nannau quarry V	Quarry	19th century	SH93744583	D
8	Moel Gwern-nannau trackway	Trackway	Post Medieval	SH93764553	D
9	Moel Gwern-nannau quarry VI	Quarry	19th century	SH93744578	D
10	Moel Gwern-nannau quarry VII	Quarry	19th century	SH93804561	D
11	Moel Gwern-nannau quarry VIII	Quarry	19th century	SH93824577	D
12	Moel Gwern-nannau quarry IX	Quarry	19th century	SH94344609	D
13	Moel Gwern-nannau quarry X	Quarry	19th century	SH94344604	D
14	Moel Gwern-nannau quarry XI	Quarry	19th century	SH94354598	D
15	Moel Gwern-nannau quarry XII	Quarry	19th century	SH94294597	D
16	Moel Gwern-nannau quarry XIII	Quarry	19th century	SH94254599	D
17	Moel Gwern-nannau quarry XIV	Quarry	19th century	SH94214601	D
18	Moel Gwern-nannau quarry XV	Quarry	19th century	SH94094598	D
19	Moel Gwern-nannau quarry XVI	Quarry	19th century	SH93974594	D
20	Moel Gwern-nannau quarry XVII	Quarry	19th century	SH94014591	D
21	Moel Gwern-nannau quarry XVIII	Quarry	19th century	SH94044591	D
22	Moel Gwern-nannau quarry XIX	Quarry	19th century	SH94044593	D
23	Moel Gwern-nannau quarry XX	Quarry	19th century	SH94064589	D
24	Moel Gwern-nannau quarry XXI	Quarry	19th century	SH94044588	D
25	Moel Gwern-nannau quarry XXII	Quarry	19th century	SH94154589	D
26	Moel Gwern-nannau quarry XXIII	Quarry	19th century	SH94164579	D
27	Moel Gwern-nannau quarry XXIV	Quarry	19th century	SH94084582	D
28	Moel Gwern-nannau quarry XXV	Quarry	19th century	SH94024581	D
29	Moel Gwern-nannau quarry XXVI	Quarry	19th century	SH93984586	D
30	Moel Gwern-nannau quarry XXVII	Quarry	19th century	SH93804581	D
31	Moel Gwern-nannau quarry XXVIII	Quarry	19th century	SH93894569	D
32	Moel Gwern-nannau quarry XXIX	Quarry	19th century	SH93934572	D
33	Moel Gwern-nannau quarry XXX	Quarry	19th century	SH94054569	D
34	Moel Gwern-nannau quarry XXXI	Quarry	19th century	SH94024566	D
35	Moel Gwern-nannau quarry XXXII	Quarry	19th century	SH93994561	D
36	Bryn y Cloddfa house	House	Post Medieval	SH93554564	E
37	Moel Gwern-nannau field boundary I	Field boundary	19th century	SH94244610	C
38	Moel Gwern-nannau field boundary II	Field boundary	19th century	SH94054597	C

7 EFFECTS OF THE PROPOSAL

- 7.1 The potential impacts of the proposed windfarm on the known archaeological resource are given in Table 2 (Section 7.6, below). It must be stressed here that there may be further archaeological sites and features in the proposal area which cannot be identified, because there are no surface traces and no records relating to them. Such sites cannot be categorised at this stage and may only become visible during topsoil stripping or other ground disturbance.
- 7.2.1 Impacts on the archaeological resource may include disturbance during the construction phase of the windfarm, and visual intrusion into the setting of a nationally or regionally important monument or group of monuments when the windfarm is in operation.
- 7.2.2 A zone of 50m beyond the perimeter of each identified site has been taken, in this study, as the baseline for any potential physical disturbance during the construction phase of the proposal.
- 7.2.3 It is likely that all archaeological sites, regardless of their importance and classification, will be subject to some level of visual intrusion on their setting. Presently, visual intrusion is, however, thought to be potentially significant only for sites attributed to Category A (national), or exceptionally Category B (regional), where the presence of the proposal may affect the appreciation of their setting. There are no sites in either category within the proposal area.
- 7.3 Factors used to evaluate potential impacts and their significance include the duration, nature, reversibility, scale and extent of any identified change to the archaeological resource. The probability of the occurrence of any impact or effect and the efficacy of any proposed mitigation has also been considered.
- 7.4 The significance of the identified effects is also given in Table 2. The criteria used in determining the significance of any effect is given below.
- i) *Major significance*: Fundamental change to an archaeological site.
 - ii) *Moderate significance*: Material but non-fundamental change to a location or archaeological site.
 - iii) *Minor significance*: Detectable but non-material change to a location or archaeological site.
 - iv) *Uncertain significance*: Unquantifiable or unqualifiable change to a location or archaeological site.
- 7.5 The duration of any effect is categorised under the following headings:
- i) *Short-term*: Will only occur during the construction phase of the proposal.
 - ii) *Medium-term*: Will occur during the design life of the proposal.
 - iii) *Long-term*: Will extend beyond the design life of the proposal.
 - iv) *Permanent*: Irreversible effect.
- 7.6 *Table 2: Effects of the Proposal on the known Archaeological Resource and their Significance*

Site	Type	Category	Effect/Impact	Significance of impact (prior to mitigation)	Duration of effect
1	Peat stand	C	Potential loss; Visual	Major ?	Permanent
2	Quarry	D	Visual	-	-
3	Quarry	D	None	-	-
4	Quarry	D	None	-	-
5	Quarry	D	Minor visual	Minor	Medium-term
6	Quarry	D	Minor visual	Minor	Medium-term
7	Quarry	D	None	-	-
8	Trackway	D	Partial loss ?; Visual	Moderate	Permanent
9	Quarry	D	None	-	-
10	Quarry	D	None	-	-
11	Quarry	D	Minor visual	Minor	Medium-term
12	Quarry	D	Minor visual	Minor	Medium-term
13	Quarry	D	Minor visual	Minor	Medium-term
14	Quarry	D	None	-	-
15	Quarry	D	Minor visual	Minor	Medium-term
16	Quarry	D	Minor visual	Minor	Medium-term
17	Quarry	D	Minor visual	Minor	Medium-term
18	Quarry	D	Visual	Minor	Medium-term
19	Quarry	D	Visual	Minor	Medium-term
20	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
21	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
22	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
23	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
24	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
25	Quarry	D	Minor visual	Minor	Medium-term
26	Quarry	D	None	-	-
27	Quarry	D	Minor visual	Minor	Medium-term
28	Quarry	D	Minor visual	Minor	Medium-term
29	Quarry	D	Visual	Minor	Medium-term
30	Quarry	D	Visual	Minor	Medium-term
31	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
32	Quarry	D	Potential loss; Visual	Moderate ?	Permanent ?
33	Quarry	D	Minor visual	Minor	Medium-term
34	Quarry	D	Minor visual	Minor	Medium-term
35	Quarry	D	Minor visual	Minor	Medium-term
36	House	E	Visual	Minor	Medium-term
37	Field boundary	C	Partial loss; Visual	Moderate	Permanent
38	Field boundary	C	Minor visual	Minor	Medium-term

8 RECOMMENDATIONS

- 8.1 These recommendations are offered solely for the general guidance of the developer and the archaeological curator in the knowledge that under existing guidelines it is the latter

who ultimately may determine further action and mitigation to ensure the preservation of the archaeological resource, either through preservation in situ or preservation by record.

- 8.2 There are no sites in the immediate vicinity of the proposal area which are scheduled as monuments of national importance, or are considered to fall within categories A or B. There are, however, sites that are scheduled and will be visible from the proposal area, the nearest appearing to be the Iron Age hillfort of Caer Caradog (PRN 100690), situated 3km to the north-east. It may be useful if the developer discusses any issues relating to intervisibility between the proposal area and sites of this category with Cadw who have the statutory responsibility for scheduled ancient monuments in Wales.
- 8.3 A number of mitigation measures may be considered to minimise or negate the impacts which have been identified in Table 2 (section 7.6). Two category C sites (1 and 37) may be damaged during the construction phase of the proposal. In the case of Site 1, the monument could be marked out by readily visible and distinct means to ensure that disturbance is avoided, and it would be preferable for the associated area of boggy ground which preserves evidence of peat extraction to be similarly avoided. The linear nature of the old boundary recorded as Site 37 renders it unlikely that it can be avoided in the same manner and a more appropriate means of mitigation may entail carrying out a watching brief in order to preserve by (photographic and drawn) record any sections which are exposed by machining. Sufficient time should be allowed for in the programme of work to enable this recording to be carried out.
- 8.4 The remaining sites which may be affected by the proposal are all within category D and do not require the same level of mitigation as those sites which belong in higher categories. The southern part of the line of a trackway (Site 8) is likely to be utilised by the proposed site access road to turbine 4, in avoiding Site 1 (see 8.3, above), but no mitigation is recommended as it does not appear that any in-situ earthworks relating to this section of the track will be affected, it having been lost to land improvement in the past. Seven further sites, namely the small quarries (Site Nos 20-24, 31 and 32) could potentially be disturbed by the construction of access roads leading from the existing turbine 3 to the proposed turbines 5 and 6. The most appropriate method of mitigation for any potential loss may involve the rapid photographic recording of these minor elements of the landscape of the ridge, prior to the commencement of site works.
- 8.5 A brief consideration of the visual impact of the proposal on the archaeology of the locality may be worthwhile, despite the lack of sites of national or regional importance. One site (No 36) which lies approximately 50m to the west of the proposal area will be subject to a visual impact from turbine 4. Although there appears to be no way to significantly reduce this impact, and the importance of the site remains to be determined, photographic recording of the setting of the site from the proposal area may be sufficient to allow its location to be assessed, should this factor be considered to be of sufficient importance in future. The appearance of site 36 suggests that there are unlikely to be sufficient in-situ remains to ascribe it more than local (Category C) importance.
- 8.6 Most of the archaeological sites within the proposal area, a total of thirty in all, will be subject to some level of visual impact, although this is likely to be minor in the case of fifteen sites. The minor significance of the vast majority of the sites in the proposal area suggests that further mitigation with regard to visual impacts is unlikely to be appropriate.
- 8.7 It is believed that access to the ridge for construction traffic will be along the minor road which runs westward from the B4501, and this should avoid damage to any of the specific archaeological sites recorded here. Any subsequent additions or modifications to the plans

for the infrastructure network must be assessed against the known archaeology and elements of the historic landscape.

- 8.8 During the construction phases of the windfarm an archaeological watching brief should be maintained on site, in case sub-surface deposits, features or artefacts are revealed by groundworks. The watching brief will also enable the preservation by (drawn and photographic) record of any sections of extant field boundary which may lie on the course of site access roads, should they prove to be related to the initial phase of enclosure on the hill.

9 CONCLUSIONS

- 9.1 No archaeological sites of national or regional importance have been identified in the immediate area of the proposal. Although the area and its immediate surroundings contain a large number of archaeological sites, the range of sites is almost exclusively limited to features which relate to the enclosure of the area in the 1860s, and the vast majority of these features are quarries which have limited value in understanding the nature of the archaeological resource.
- 9.2 It is suggested here that the direct physical impact of the proposed windfarm on the archaeological resource should be of limited significance. The only identified visual impacts on sites of national importance relate to sites which lie at least 3km distant from the proposal.

10 ACKNOWLEDGEMENTS

- 10.1 The writer would particularly like to thank the staff of: the Regional Sites and Monuments Record, CPAT; the National Monument Record in Aberystwyth; the National Library of Wales in Aberystwyth; and the Denbighshire and Merionethshire Record Offices at Ruthin and Dolgellau respectively, for their assistance.

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11.1 References

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11.4 Aerial photographic sources (verticals)

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