

**CPAT Report No 1180.3**

# **Bryn Gwian Wind Turbine Eglwysbach, Conwy**

## **CULTURAL HERITAGE BASELINE ASSESSMENT**



**THE CLWYD-POWYS ARCHAEOLOGICAL TRUST**

*Client name:* Mr Olly Foulkes  
*CPAT Project No:* 1842  
*Project Name:* Bryn Gwian  
*Grid Reference:* SH 8271 6781  
*County/LPA:* Conwy

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Cultural Heritage Baseline Assessment

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**Contents**

	Summary	2
1	Introduction	3
2	Scoping and Guidance	3
3	Assessment Methodology	4
4	The Cultural Heritage History of the Area	5
5	The Baseline Assessment	8
6	Assessment of Impacts	13
7	Mitigation	18
8	References	18
	Appendix 1: Gazetteer Of Assets	20
	Appendix 2: Wireframe 1	21

## Summary

*A proposal to construct a wind turbine on the slopes of Mynydd Bryn-gwian in Eglwysbach in the central part of Conwy County Borough has resulted in the compilation of a report to establish the impact of the proposed development on the cultural heritage. A desk-top assessment was complemented by a walkover survey and an examination of a number of designated (scheduled, listed and registered) assets lying up to five kilometres away from the development area.*

*Several features of cultural heritage interest were noted in the areas close to the projected courses of the overhead line and access tracks that would serve the turbine but none in the immediate vicinity of the turbine itself. There is, however, the possibility that there are sub-surface archaeological deposits that are currently unrecognised. Overall, most designated and registered assets will either not be visually affected by the development, or only slightly so, but on a group of scheduled barrows on Mwdwl Eithin the visual impact will be more significant for the duration of the turbine's operational life. The recommended mitigation is a watching brief during groundworks and the recording of field boundary sections where their damage is unavoidable.*

## 1 Introduction

- 1.1 This report provides a baseline assessment of cultural heritage features (aka assets) on the site of a proposed wind turbine in the community of Eglwysbach in central Conwy, and along the infrastructure routes that serve it, henceforward termed the Development. The name adopted by the client, Mr Olly Foulkes, is the Bryn Gwian turbine.
- 1.2 The original study was conducted by the Field Services Section of the Clwyd-Powys Archaeological Trust (CPAT) in September and October 2012, and a report (CPAT 1180) was prepared after the completion of the fieldwork. Following revisions to the scheme, replacing the proposed wooden pole grid connection with an underground connection which lay partly beyond the original study area, the assessment, including additional fieldwork, was revised in June 2013 CPAT Report No 1180.2). Further revisions were undertaken in October 2013 in response to comments from Gwynedd Archaeological Planning Service (GAPS), leading to the production of the present report. The assessment was conducted within a framework laid out in of a Written Scheme of Investigation (WSI) prepared by CPAT, following consultation with GAPS.
- 1.3 The proposed wind turbine is to be positioned on the southern slopes of Mynydd Bryn-gwian at National Grid Reference SH 8271 6781. The farm of Bryn-gwian lies 600m to the west, on the eastern slopes of Afon Hiraethlyn, a small watercourse in a deep valley that runs northwards past the village of Eglwysbach to an outfall into the Afon Conwy at Bodnant. The proposed access road to the site extends northwards from the lane that links Llangernyw to Eglwysbach for a distance of around 960m. The underground grid connection runs west and then south from the turbine for a distance of about 1.2km. It should be noted that the grid connection does not form part of the present planning application, although it has been considered here for the sake of completeness. For the purposes of this cultural heritage assessment we have defined a buffer zone of 100m around the proposed grid connection and access road and have termed this, for ease of reference, the Development Area. It must be stressed that this is not an officially defined development area designated by the developer, but simply a mechanism for the cultural heritage to be assessed.
- 1.4 The assessment considers the direct effect that the wind turbine might have on the known cultural heritage of the area and also examines the indirect effect on statutorily designated and registered cultural heritage assets that lie beyond it.

## 2 Scoping and Guidance

### Scope of Assessment

- 2.1 The cultural heritage is a broad concept that embraces archaeological remains, the built heritage and historic landscapes. Cultural heritage is deemed to include the full range of man-made features that have been imposed on the landscape from the Palaeolithic, more than 250,000 years ago, to the 20<sup>th</sup> 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. 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. Individually all these features are known as cultural heritage assets – as defined for instance, in the Highways Agency's Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2007), for which see section 2.8 below.

- 2.2 Cultural heritage assets include the following designated (statutorily protected) and registered (non-statutorily protected) sites: World Heritage Sites; Scheduled Ancient Monuments (SAMs); Listed Buildings (LBs); Conservation Areas; Registered Historic Landscapes; Registered Historic Parks and Gardens; and National Trust inalienable land.
- 2.3 A much larger number of assets are undesignated. Undesignated sites include those already recorded in the Historic Environment Record for the region, and those previously unrecognised sites which have been identified during the preparatory work for this assessment.
- 2.4 For the landscape in its entirety LANDMAP is the formally adopted landscape assessment tool for Wales, and is consulted in order to inform the baseline assessment of the study area.
- 2.5 The assessment considers the likely effects of the Development on all recognisable cultural heritage assets. Desk-based assessment and field survey were undertaken to identify those cultural heritage assets that might be affected by the proposed development. The potential for the Development area to contain buried and as yet undetected archaeological remains is also considered.
- 2.6 The assessment also includes an evaluation of potential visual effects on designated and registered assets arising from the Development.

### **Screening and Scoping Requests**

- 2.7 A screening request to Conwy Borough Council was made by North Wales Hydro Power Ltd in the summer of 2012 and as a result of this advice was sought from Gwynedd Archaeological Planning Service.

### **Guidance**

- 2.8 The revised DMRB, Volume 11 Section 3 Part 2, HA 208/07 (August 2007) provides a framework for cultural heritage assessments, whether these be for environmental statement reports or for smaller developments that do not require environmental impact assessments. The approach to the cultural heritage which it promotes, though designed primarily for road developments, is more generally relevant as a methodology for other types of development and has been adopted here.
- 2.9 The baseline survey of the Development has been undertaken with reference to the Institute for Archaeologists (IfA) Code of Conduct 2010 and Standard Guidance for Archaeological Desk-Based Assessments (last revised in 2011) and for Field Evaluation (last revised 2008).

## **3 Assessment Methodology**

### **Approach to Assessment**

- 3.1 The position of the turbine, the underground power line and the access road for the Development have been determined by the client and are depicted in Fig. 1. To allow for limited modifications to the siting of the infrastructure elements, a buffer zone of 100m has been defined around the two linear routes already defined, and all assets lying within this zone are considered.

**Desk-based study**

- 3.2 The desk-based study, which forms the basis for the 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 (NMR), Aberystwyth through Coflein.
  - b) The National Library of Wales, Aberystwyth.
  - c) The Denbighshire archives in Ruthin.
  - d) The Historic Environment Record held by GAT at Bangor
  - e) Electronic map archives
- 3.3 Analysis of vertical aerial photography held by the NMR failed to identify any potential assets. A full list of photographs consulted is presented in Section 8.

**Previous archaeological work**

- 3.4 Neither the HER nor NMR contained any records for previous archaeological work in the area. A group of scheduled round barrows outside the Development Area, on the summit of Mwdwl Eithin, were recorded by Ellis Davies (1929, 113-118), the largest of the group having been excavated in 1911-12 by Willoughby Gardner (1913). The barrows were also visited by the Gwynedd Archaeological Trust as part of the Cadw-funded study of prehistoric funerary and ritual monuments (Smith 2002). The only other archaeological work in the general area was an assessment relating to a proposed water main between Bryn Cowlyd and Gors Wen which, at its closest point, was 1.3km to the south-west of the Development Area.

**Field survey**

- 3.5 The desk-based study was followed by a field-walked survey which covered the proposed turbine site, its infrastructure and the buffer zone to assess known assets and identify any previously unrecorded assets. The original survey was conducted on 15 October 2012, a day of generally fine weather with good visibility both within the study area and across the wider landscape. The study area covered a number of pasture fields within which the grass was fairly short, while the ground conditions were dry. Following revisions to the proposal an additional field survey was conducted on 28 June 2013 to take into account revisions to the proposed grid connection. On this occasion the weather was again dry and generally sunny with good visibility. Grazing had maintained the relatively short grass cover, while bracken growth was still relatively low and at no point prevented access and observation.
- 3.6 Consideration of the visual impact of the proposed development on nearby protected (designated and registered) cultural heritage assets was undertaken as a final stage before the compilation of this assessment. Protected assets within 5km of the Development Area have been considered to assess the potential indirect visual effects of the proposal upon their settings.
- 3.7 No geotechnical data are known to be available for the Development Area.

## **4 The Cultural Heritage History of the Area**

- 4.1 The small number of assets recorded in the regional HER, if taken at face value, appears to suggest very little in the way of human activity in the area over the centuries. It is more likely, however, that this represents a general lack of systematic archaeological fieldwork.
- 4.2 Bronze Age activity is revealed by the presence of several barrows on Mwdwl Eithin, the ridge of which Mynydd Bryn-gwian is an extension (RCAHMW 1914, 50-51; Davies 1929, 113-118). And there is another barrow on the ridge, further south, below the lane to Pennant. As with so many areas of Wales, these barrows or cairns are the sole sign of the prehistoric

activity that in one form or another will have ranged across the whole landscape but remains largely invisible.

- 4.3 Medieval activity has to be surmised on the basis of similar and better understood areas elsewhere in the region. Eglwysbach, around three kilometres to the north and the centre of the ecclesiastical parish in which the development area lies, is undoubtedly a church foundation of early medieval origin. This though does not necessarily imply that a settlement grew up immediately around it, rather that in the pre-Conquest era, there were dwellings in the vicinity. The farm at Pennant, no more than a few hundred metres to the west of the overhead power line terminal was the centre of a demesne or manor which certainly existed in the medieval era, and could conceivably have been established prior to the 13<sup>th</sup>-century conquest of the area by Edward I. The mixed economy of such a manor would have involved all of the Development area in one way or another (cultivated fields; enclosed pasture; open hill pastures), but discernible indicators of this medieval activity are rare, except perhaps for some of the lanes and field boundaries, the specific time of origin of which it is impossible to determine.
- 4.4 Other farms in the area – Fron Leppa, Wern Fawr and the like – could also have been established by the end of the Middle Ages, but cottages and other habitations higher up the slopes could be later features, the result of enclosure and encroachment onto the open waste or mountain as it was termed in the late 18<sup>th</sup> century. Ty'n-y-mynydd Cottage on the lane running east from Pennant is one such, displayed on the 1797 estate map as being precisely on the boundary between the enclosed fields and the open hill. Indeed, immediately adjacent to the cottage the map shows a gate across the lane which controlled access to the unenclosed pastures on the hill. An enclosure act for Eglwysbach was passed in 1812 and the award made in 1831, but it was at some point between the 1840s when the tithe assessment was compiled and the 1870s that the hill land was enclosed.
- 4.5 Finally, we might note the peculiar geomorphology of the slopes below Mynydd Bryn-gwian and Mwdwl Eithin which on first examination of any map provides the impression of a series of strip fields potentially interspersed with lynchets. Their size, however, militates against this interpretation and it is evident that they represent a series of stepped terraces of purely natural origin.

#### **Map regression**

- 4.6 The most recent maps, covering the last decades of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century, are the large-scale Ordnance Survey plans (at 1:2,500). Three editions are available, published in 1913, 1900 and 1875. By the time that the earliest of these was surveyed the present field pattern had already been largely established, comprising a series of irregular fields following the north-south trend of the local topography (Fig. 1). The higher ground, within which the proposed turbine would be sited, remained unenclosed, consisting of unimproved pasture, although parts of the lower slopes had evidently been divided into regular fields, presumably by post and wire fences. A house named Erw-Cadwgan (Site 1) is depicted close to the southern end of the grid connection.
- 4.7 The 1841 Tithe Survey for Eglwysbach cannot be reproduced for reasons of copyright, but depicts a similar field pattern, with the exception of the later 19<sup>th</sup>-century upland land divisions, the majority of Mwdwl Eithin being unenclosed. The accompanying apportionment provides no further clues to the presence of historic assets. Although the area is also depicted by the Ordnance Survey surveyor's drawing for St Asaph area published in 1819 this adds little to our understanding of the area.
- 4.8 The only earlier map source which was available depicts the Pennant demesne in 1797 which is part of a collection within the National Library of Wales and restrictions prevent its



reproduction. The map depicts a similar situation of land division and settlement to that of the Tithe over 40 years later.

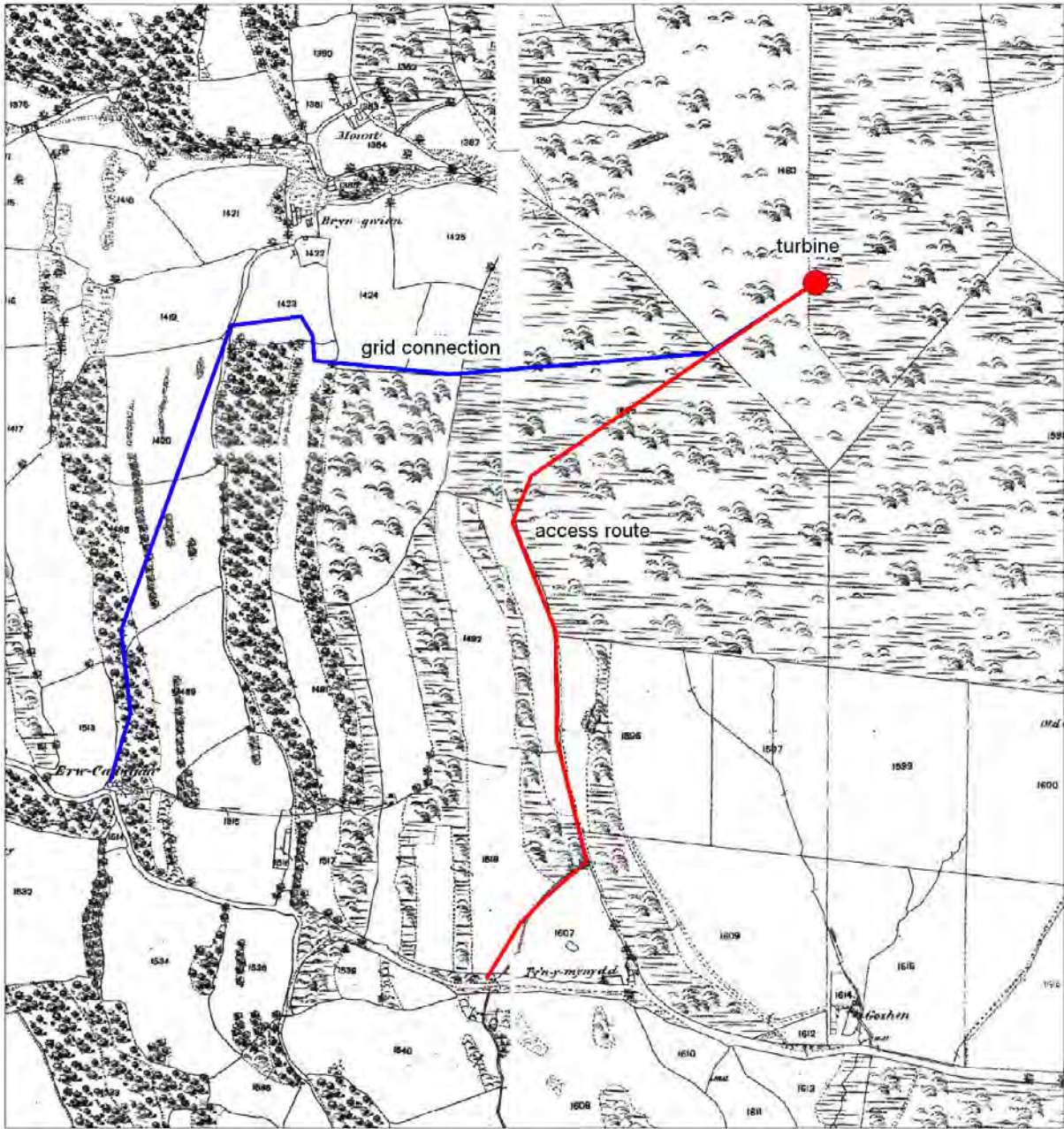


Fig. 1 Extract from the 1<sup>st</sup> edition Ordnance Survey 1:2,500 map of 1875

## 5 The Baseline Assessment

- Cultural Heritage Assets within the Development Area**
- 5.1 Neither the regional HER nor the NMR contained any records for heritage assets within the Development Area, although the assessment has identified nine previously unrecorded cultural heritage assets, none of them protected through statutory designation or through being registered. These are listed in Table 1 together with their perceived value/importance, while brief descriptions can be found in Appendix 1. Since none was previously recorded in the regional HER they do not carry a distinguishing and unique Primary Record Number (PRN). Instead each has been allotted a simple sequential number.



Fig. 2 Cultural Heritage Assets within the Development Area and nearby designated sites



*Table 1: Cultural Heritage Assets within the Development area*

No	Name	Type	Period	NGR	Value
1	Erw-Cadwgan	Cottage	Post Medieval	SH8191267280	C (Local)
2	Ty-y-mynydd feature	Enclosure?	Post Medieval	SH8241167079	D (Negligible)
3	Erw-Cadwgan strip fields	Non antiquity	Not applicable	SH8217767430	D (Negligible)
4	Erw-Cadwgan triangulation pillar	Triangulation Pillar	Post Medieval	SH8232567562	D (Negligible)
5	Ty'n-y-mynydd quarry	Quarry	Post Medieval	SH8244367313	D (Negligible)
6	Ty'n-y-mynydd pond	Pond	Post Medieval	SH8238167096	D (Negligible)
7	Erw-Cadwgan quarry	Quarry	Post Medieval	SH8193267265	C (Local)
8	Bryn-gwian building	Building	Post Medieval	SH8212567870	D (Negligible)
9	Bryn-gwian earthwork	Building?	Post Medieval?	SH8205967823	E (Unknown)



Fig. 3 The overgrown remains of Erw-Cadwgan (Site 1). Photo CPAT 3711-0003



Fig. 4 Bryn-gwian earthwork (Site 9). Photo CPAT 3711-0027

#### ***Historic hedgerows and boundaries***

- 5.2 The field boundaries in the Development Area comprise either post and wire fences (on the late enclosed high ground) or field banks with varying numbers of trees and bushes on them, reinforced by later fences. Several of the embanked boundaries emphasise the extent of earlier holdings, but visually unexceptional.
- 5.3 Under the Hedgerow Regulations of 1997, the embanked boundaries might have qualified as 'historic', on the basis of the fifth criterion which defines such a hedgerow as one (or more) 'recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Inclosure Acts'. The last phrase is glossed in *The Guide to the Law and Good Practice* as meaning before 1845, regardless of whether there is an Inclosure Act for the area. However, it is questionable whether these boundaries are 'hedgerows' in terms of the set of definitions laid down in the regulations, and as a consequence they may not be covered by the 1997 regulations regardless of their antiquity. In most cases the hedges topping the banks are no longer continuous and no longer function as barriers, this role being fulfilled by contiguous post-and-wire fences.

#### ***LANDMAP***

- 5.4 The significance of the area is reinforced by LANDMAP, the Welsh methodology employed in landscape assessment. This indicates that the proposed wind turbine lies within a landscape (Aspect Area CNWHL060) classed as being of high value in terms of the historic landscape. The area comprises the elongated ridge forming the eastern side of the Conwy valley and a secondary parallel valley of the Hiraethlyn, one of its tributary systems. It is characterized by an irregular pattern of enclosure, mostly comprising straight-sided, hedged fields, some isolated woodland block, some wooded valleys and a little along its eastern fringes. There are numerous scattered farms and houses of medieval and later date and a handful of minor



nucleated settlements, the largest being Llandugoe, Eglwsbach and Pentrefelin. Given the area's size there are surprisingly low numbers of recorded archaeological sites.

**Cultural Heritage Assets within 5km of the proposed turbine**

5.5 The study seeks to include designated and registered cultural heritage assets within 5km of the proposed turbine in order to assess potential visual impacts (known in Wales as indirect impacts). Distances provided in the tables below are from the base of the proposed turbine to the closest point on the defined boundary of the asset.

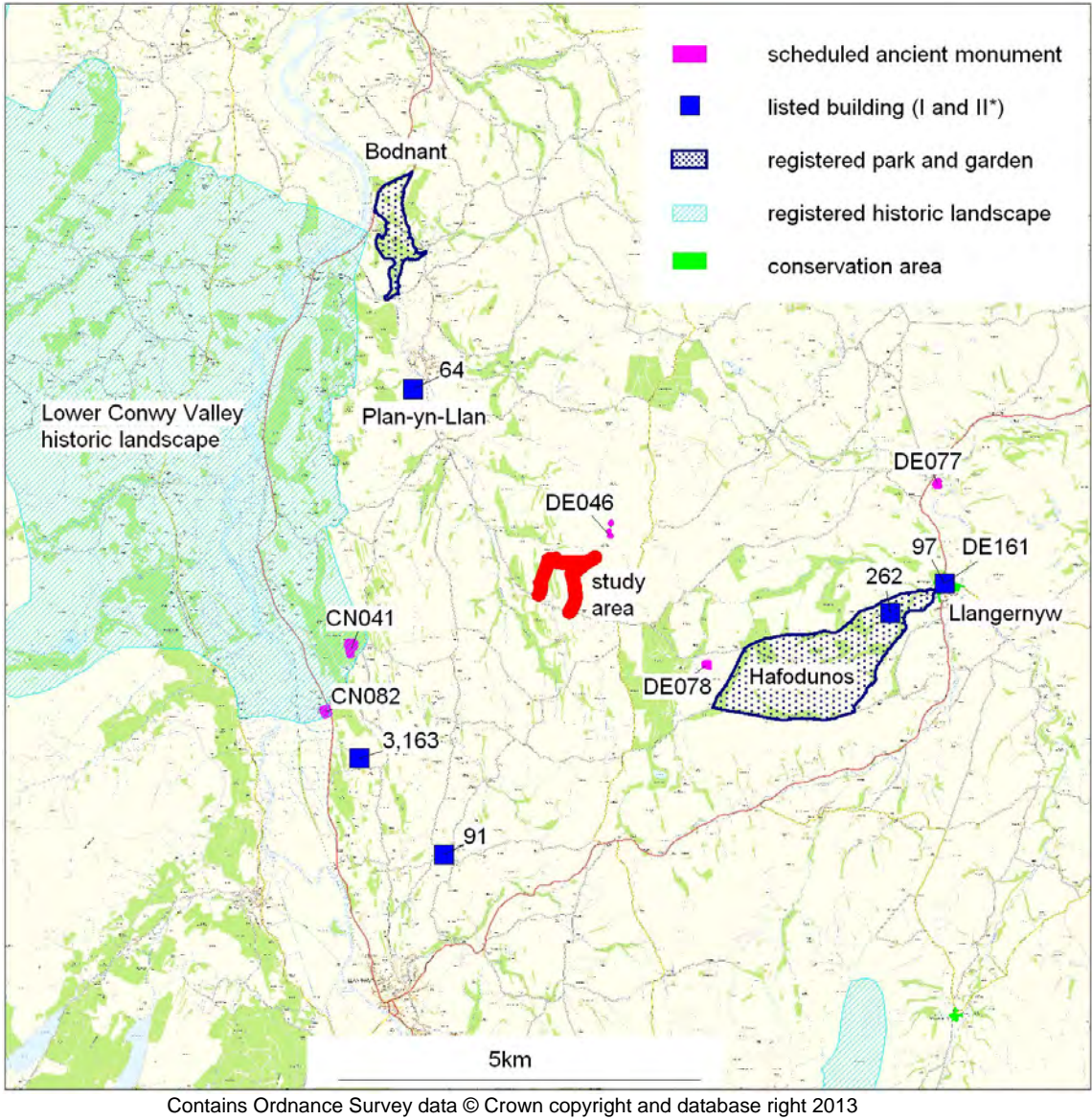


Fig. 5 Designated and Registered Cultural Heritage Assets within 5km of the proposed turbine

*Table 2: Designated and Registered Cultural Heritage Assets within 5km of the proposed turbine: Summary*

Designated site	Within the Development Area	Within 1km	Within 2km	Within 5km
World Heritage Site	0	0	0	0
Scheduled Ancient Monument	0	1	2	6
Listed buildings (grades I and II*)	0	0	0	5
Registered historic parks and gardens	0	0	0	3
Registered historic landscapes	0	0	0	0
Conservation areas	0	0	0	1

It should be noted that in Table 1 the figures are cumulative, i.e. the listed building in 2km column is the same as the listed building in the 1km column.

### ***World Heritage Sites***

- 5.6 There are no World Heritage Sites within 5km of the proposed turbine.

### ***Scheduled Ancient Monuments***

- 5.7 There are six scheduled ancient monuments within 5km of the proposed turbine, including one group within one kilometre of it. These are listed in Table 3.

*Table 3: Scheduled Ancient Monuments within 5km of the proposed turbine*

Number	Name	Type	Period	NGR	Distance
CN041	Caer Oleu Camp	Hillfort	Prehistoric	SH793665	3.5km SW
CN082	Site of Aberconwy Abbey, Maenan	Abbey	Medieval	SH789656	4.3km SW
DE046	Mwdwl Eithin round barrows	Round barrow	Prehistoric	SH828681	0.35km NE
DE077	Hendre-Isaf Castle Mound	Motte	Medieval	SH874688	4.7km NE
DE078	Pant-y-Rhedyn earthwork	Enclosure	Prehistoric	SH842663	2.0km SE
DE161	Two Cross-Incised Stones in Llangernyw Churchyard	Cross-marked stone	Early Medieval	SH875674	4.8km E

### ***Higher Grade Listed Buildings***

- 5.8 There are 71 listed buildings within the Development area of which only 5 are higher graded (I and II\*). None is less than 3km away. These are listed in Table 4.

*Table 4: Higher Grade Listed Buildings within 5km of the Development Area*

Listed Building Number	Name	Locality	Grid Reference	Grade	Distance
262	Hafodunos Hall	Llangernyw	SH86756703	I	4.1km E
3163	Maenan Hall	Maenan	SH79435672	I	4.3km SW
64	Plas-yn-Illan	Eglwysbach	SH80187013	II*	3.4km NW
91	Church of St Ddaged	Llanddaged	SH80596370	II*	4.6km S
97	Church of St Digain	Llangernyw	SH87516744	II*	4.8km E

**Registered Parks and Gardens**

- 5.9 The assessment has identified three Registered Parks and Gardens within 5km of the turbine location, including Bodnant which is registered as grade I: these are listed in Table 5.

*Table 5: Registered Parks and Gardens within 5km of the Proposed Turbine*

Reference Number	Name	Locality	Grid Reference	Grade	Distance
GD5	Bodnant	Eglwysbach	SH7999772244	I	4.5km NW
GD51	Plas-yn-Llan	Eglwysbach	SH8017770106	II	3.4km NW
GD57	Hafodunos	Llangernyw	SH85916654	II	2.4km E

**Registered Historic Landscapes**

- 5.10 The only Registered Historic Landscapes within 5km of the proposed turbine is the Lower Conwy Valley (HLW (Gw) 4), which at its closest point lies 3.3km from the proposed turbine.

**Conservation Areas**

- 5.11 The only Conservations Area within 5km of the proposed turbine is that at Llangernyw, 4.6km to the east.

## 6 Assessment of Impacts

**Project Description**

- 6.1 The proposals consist of the construction of a single wind turbine, together with an access road and underground grid connection. The turbine hub will be around 40m high, while the blade tips will be at a maximum height of 67m.

**Assessment of Impacts**

- 6.2 A wind farm can have one of four types of impact on a cultural heritage asset. These are:
- i) **Direct Impacts:** A direct impact upon a cultural heritage asset involves its physical alteration or destruction as a result of the construction, operation or decommissioning of a wind farm. Direct impacts could include the construction of turbine and crane bases, of new or upgraded access tracks, substations, transformers, cabling and the like.
  - ii) **Indirect Impacts:** An indirect impact involves an impact on a cultural heritage asset or area, or its setting, regardless of whether it is designated or not.
  - iii) **Cumulative** – where incremental effects arise due to the presence of other proposed schemes or from the interaction of different effects over time.
  - iv) **Uncertain** – where there is a risk that the works may affect a cultural heritage asset, for example, when it is unclear where the location or boundaries of a site lie, or where the baseline condition of a site cannot be established satisfactorily.
- 6.3 The report does not consider undesignated assets beyond the boundary of the Development area, although the visual impact of the development will be apparent beyond the Development area, and this is considered below in relation to statutorily designated and non-statutorily registered sites and landscapes.
- 6.4 It is considered that the possibility of physical impacts on the cultural heritage resource of the area will be at its greatest during the construction phase of the development. There is also the possibility of impacts during the decommissioning phase in the future, but the likelihood of significant impacts at that stage is no greater than at the construction stage. The details of any

monitoring and mitigation during decommissioning are best defined at the time that the detailed decommissioning method statement is prepared. It appears unlikely that there will be any significant direct impact during the operational phase of the development.

- 6.5 The assessment of visual impacts on designated and registered cultural heritage assets within 5km of the proposed turbine has been conducted using data provided by the client, in the form of Zones of Theoretical Visibility (ZTV), and on the basis of observations made during field visits to those assets. Two aspects need further commentary.
- 6.6 A visual impact can result from different effects, individually or in combination. Firstly, the height of a development may lead to visual intrusion, because it is disproportionate to other features in the landscape. Secondly, the spread of the development may intrude, effectively impacting on the texture of the existing landscape.
- 6.7 The second aspect is that of setting. The definition provided by Cadw in its *Conservation Principles* (2011, 38) identifies the setting as ‘the surroundings in which an historic asset is experienced, its local context, embracing present and past relationships to the adjacent landscape’. Further guidance is provided by the *Guide to Good Practice on using the Register of Historic Landscapes* (2007) which defines a) the immediate or essential setting as the land or curtilage associated with an asset; and b) a wider setting which is not defined but carries the unstated assumption that there is some visual link or association with the asset. England has the English Heritage guidance of 2011 which defines ‘setting’ in extremely broad terms as ‘the surroundings in which [the asset] is experienced’.
- 6.8 Information provided by the client indicates that the turbine hub will be at a height of 40m, while the blade tips will be at a height of 67m. The grid connection will be via an underground cable which, once completed, will have no visual impact, while the new access track will not have a significant visual impact except within the immediate area. The following assessment of visual impacts is restricted to those assets within 5km of the Development and is based on field observations. Although the turbine is likely to be visible for some distance beyond this it has been assumed that the significance of any visual impact will decrease significantly with distance.

### Physical Impacts

- 6.9 On the basis of the desk-top and walkover surveys, no known cultural heritage asset will be damaged or destroyed by the erection of the proposed turbine or the construction of the access track. The proposed underground grid connection lies within 45m of earthworks which may represent the remains of a post-medieval building (site 9), as well as in close proximity a ruined building (site 1) and a former quarry (site 7), although these should not be affected by the proposals. If these are varied at a subsequent date, the issue of physical impact may need to be re-addressed.
- 6.10 We are led to believe that the existing field structure will be retained and that no modifications or alterations will be made to any of the field boundaries.

### Visual Impacts

#### *Scheduled Ancient Monuments*

- 6.11.1 *CN041 Caer Oleu Camp 3.5km*  
The small, late prehistoric hillfort occupies a narrow ridge in an area of woodland. Although on topographical grounds there would be a direct line of sight to the proposed turbine from this location, the tree cover mitigates any visual impact on the asset or its setting.



6.11.2 *CN082 Site of Aberconwy Abbey, Maenan 4.3km*

A Cistercian abbey was founded here in 1283-4, having been relocated from Aberconway. Today there are few if any visible remains, the site being occupied by later buildings. The local topography restricts distant views, such that the proposed turbine will have no visual impact on the asset or its setting.

6.11.3 *DE046 Mwdwl Eithin round barrows 0.35km*

The three prominent burial mounds, presumed to be Bronze Age in date, are positioned on the highest point of Mwdwl Eithin and extend south along the crest, with a possible fourth barrow at the south-eastern end of the group which is also scheduled. The proposed turbine will be located 350m south-west of the nearest barrow in the group. The integrity of the barrow group and views between its constituent monuments will not be affected to any significant degree and there would be no adverse affect to a receptor's appreciation of the group as a whole, as shown in Wireframe 1. In views from the largest and northernmost barrow towards the rest of the group the turbine hub and blade tips would be visible over the horizon, but to the right of the line of sight towards the remaining barrows. This is demonstrated in Wireframe 1 which depicts the view from the eyeline of a receptor stood on top of the barrow and as such indicates the likely worst case visual impact from this viewpoint, being the highest point on Mwdwl Eithin. In views from the north along the Mwdwl Eithin ridge towards the barrow group the turbine will not be visible owing to the curvature of the topography, with the ground falling away northwards from the asset. There would, however, be a visual impact on views from the barrows to the south-west, although this is considered to be moderate.

The issue of setting must also be addressed and in this respect it would not be unreasonable to assume that the setting of the barrow group encompasses the immediate area of the Mwdwl Eithin ridge and its upper slopes. Arguably the setting be extended a considerable distance beyond. The position of the turbine is such that it would have a significant visual impact on the setting of the barrows, more so than on the barrows themselves, particularly in relation to views towards the monuments from the south-west. There is no public access to the barrows and the visual impact on the asset and its setting would not be permanent, but for the duration of the turbine's operation which is expected to be around 25 years, after which there will be no residual visual impact once the turbine has been removed.

The issue of intervisibility with another barrow, further to the south-east (but not scheduled) was considered, but the proposed turbine would not be in the direct line of sight, which in any case is interrupted by woodland, thus negating this as a concern.

6.11.4 *DE077 Hendre-Isaf Castle Mound 4.7km*

The motte – a medieval earthwork castle – with its putative bailey, is located at the edge of a gravel terrace on the west bank of the River Elwy. There will be no visual impact on the asset or its setting owing to the screening effect of the local topography.

6.11.5 *DE078 Pant-y-Rhedyn earthwork 2.0km*

The Iron Age defended enclosure is sited on a slight rise with its main views principally to the south; it is defined by a semi-circular bank and ditch with a simple causewayed entrance. There is likely to be some intervisibility between the asset, to the south-east, and the development over the shoulder of an intervening hill, but any visual impact is currently restricted by large blocks of forestry planting, though these are mature and some felling has already taken place. The main view southwards from the site takes in an existing windfarm on Moel Maelogen where twelve turbines are visible on the horizon at a distance of around 5.2km. There will therefore be some cumulative impact, although this is considered to be of limited significance.

6.11.6 *DE161 Two Cross-Incised Stones in Llangernyw Churchyard 4.8km*

The two cross-incised stones lie within the churchyard of St Digain's church. Their precise location close against the external south wall of the church and thus masked by the building itself, as well as the local topography means that the proposed turbine will have no visual impact on the asset or its setting (and see 6.12.5, below).

**Listed Buildings**6.12.1 *262 Hafodunos Hall, Llangernyw 4.1km*

Hafodunos Hall is a grade I listed country house in Venetian-inspired Gothic style, which was built in 1864 and is set within the grade II registered park and garden. The significant view from the hall as defined by Cadw in the *Register of Parks and Gardens* is to the south-east, away from the Development area and there is no intervisibility between the hall and the proposed turbine. The potential impact on its setting, the registered park and garden, is considered below (see 6.13.3).

6.12.2 *3163 Maenan Hall, Maenan 4.3km*

Maenan Hall is a late 15<sup>th</sup>-century, timber-framed, grade I listed building, sited on the east side of the Afon Conwy, the river presenting its main aspect. The landscape of rolling hills to the east of the house effectively prevents any direct view of the proposed turbine so that there will be no visual impact.

6.12.3 *64 Plas-yn-llan, Eglwysbach 3.4km*

The 17<sup>th</sup>-century manor house is grade II\* listed and is set within a modest garden which forms its setting (see below). The proposed turbine will be visible on the horizon to the south-east at a distance of 3.4km, the same direction as a prominent overhead power line carried on metal pylons which is 1.2km distant. The house, however, faces north-east and its principal view is in this direction, away from the development.

6.12.4 *91 Church of St Ddoged, Llanddoged 4.6km*

St Ddoged's church is a late medieval, double-naved church set within a raised, circular churchyard and located in the centre of the village. In the direction of the proposed turbine the land initially falls slightly, only to rise towards the outskirts of the village so that a number of houses, trees and telegraph poles will tend to obscure or interrupt any line of sight.

6.12.5 *97 Church of St Digain, Llangernyw 4.8km*

St Digain's church is a much altered late medieval church which, because of the intervening topography, will suffer no visual impact as a result of the proposed development.

**Registered Parks and Gardens**6.13.1 *GD5 Bodnant 4.5km*

Bodnant is renowned as an outstanding garden in an extremely picturesque position. The garden dates initially from the late 18<sup>th</sup> century, with 19<sup>th</sup>-century additions, while the formal terraces were laid out in 1905-14. Of the two significant views from the garden, one faces west towards the river and away from the development. The other, however, is directed from the Rose Terrace, adjacent to the house, across parkland to the south-south-east. From the majority of the terrace any view of the proposed turbine would be severely inhibited by mature trees within the garden, although a clearer line of sight would be present at the western end of the terrace. The garden falls away below the terrace to a ha-ha from where the turbine would be completely obscured by intervening trees. At a distance of 4.5km any visual impact is likely to be slight and arguably no greater than that already presented by the existing overhead powerline and attendant pylons at around 3km distant.

6.13.2 *GD51 Plas-yn-llan 3.4km*

The grade II registered garden surrounding Plas-yn-llan dates from the late 17<sup>th</sup> century and was probably created for the use of Sir John Wynn of Wynnstay. There are no specific significant views from the garden, which is very much focused on the house. The proposed turbine would, however, be clearly visible to the south-east, along the valley of the Afon Hiraethlyn, in the same direction as a prominent overhead power line carried on metal pylons. At a distance of 3.4km the significance of the visual impact is likely to be slight.

6.13.3 *GD57 Hafodunos 2.4km*

The large Victorian mansion is set within parkland containing picturesque woodland walks and with a garden in front of the house. The significant view from the house is to the south-east, away from the proposed development, while the parkland lies to the west-south-west of the house and consists of blocks of woodland to either side of the drive. The majority of the park has no intervisibility with the development, with the exception of the western fringes, which are generally wooded. The park presents a landscape which is focused inwards, dictated by the topography and woodland planting, with the exception of the only significant view, which is to the south-east, away from the proposed turbine.

***Registered Historic Landscapes***

- 6.14 The Registered Historic Landscape of the Lower Conwy Valley lies, at its closest point, 3.3km from the proposed turbine. However, the majority of the valley's eastern slopes and the valley floor would be screened from the development by the local topography. The location of the proposed turbine is such that it is unlikely to impact on views into the registered landscape, but would be visible in the distance of views across the landscape from the western side of the valley. However, any impact would arguably be no greater than that presented by the existing overhead powerlines which cross the landscape from west to east, and arguably less than that resulting from the prominent off-shore windfarm. The significance of any impact would inevitably decrease with distance and any cumulative impact is considered to be slight.

***Conservations Areas***

- 6.15 The only Conservation Area within 5km of the proposed turbine is Llangernyw, 4.6km to the east, which will have no direct line of sight with the proposed turbine owing to the intervening topography.

***Summary***

- 6.16 Based on available information and evidence from field observations it appears that only the scheduled barrows on the summit of Mwdwl Eithin are likely to be subject to a moderate visual impact on the asset itself, but with a significant effect on the setting, for the duration of the turbine's working life, after which no residual visual impact is expected once the turbine has been dismantled. Minor visual impacts might also be expected for the enclosure at Pant-y-Rhedyn, Bodnant and Plas-yn-Llan garden, although these would all, to some extent, be mitigated by intervening features and topography. The proposed turbine lies outside the Lower Conwy Valley registered historic landscape, although a minor visual impact is likely, particularly when considering the cumulatively visual impact in relation to existing windfarms.

## 7 Mitigation

### Mitigation Measures – Direct Impacts within the Development Area

- 7.1 Based on the assessment of potential impacts on cultural heritage assets contained within this report an outline mitigation strategy is presented below, although it is the task of the regional archaeological curator to determine requirements for any further stages of pre-planning assessment and post-consent mitigation where the cultural heritage is concerned and to advise the local planning authority accordingly.
- 7.2 No visible cultural heritage assets can be identified in the immediate area of the proposed turbine, nor on the access track that serves it. Three assets have been identified within 50m of the proposed underground grid connection and while they should remain unaffected the recommended mitigation is avoidance through demarcation in two instances (sites 1 and 9) and no mitigation is recommended in one instance (site 7).

*Table 6: Mitigation measures for undesignated assets*

Site	Name	Type	Value	Potential Impact	Mitigation
1	Erw-Cadwgan	Building	C (Local)	Underground cable	Avoid / demarcate
7	Erw-Cadwgan quarry	Quarry	D (Negligible)	Underground cable	None
9	Bryn-gwian earthwork	Building?	E (Unknown)	Underground cable	Avoid / demarcate

### *Watching brief*

- 7.3 As with virtually any area of land, it is possible that there are unknown and unrecorded archaeological features and deposits buried beneath the surface. A watching brief is therefore recommended during all significant groundworks in order to ensure the preservation by record of any cultural heritage assets which may be revealed by the disturbance of the ground surface. In order for this to be achieved satisfactorily there must be sufficient opportunity for an appropriate level of recording, including detailed excavation, should significant remains be revealed. It is understood that the trench for the underground cable connection will be no more than 0.3m wide and excavated as a 'cut and fill', rather than through topsoil stripping along a wider wayleave. Consequently, the potential for identifying previously unrecorded, buried archaeological deposits is considered to be low.

### Mitigation Measures – Indirect Visual Impacts beyond the Development Area

- 7.4 The assessment suggests that the visual impact on the scheduled group of barrows on Mwdwl Eithin, based on the assessment criteria laid down by the DMRB, could be large, but on other protected assets in the region will be slight. No obvious mitigation can be suggested for this visual impact.

## 8 References

### Published and unpublished sources

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- Cadw/CCW, 2007. *Guide to good practice on using the Register of Landscapes of Historic Interest in Wales in the planning and development process*.
- Davies, E., 1929. *The Prehistoric and Roman Remains of Denbighshire*. Cardiff.
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- Roberts, R., 1996. *Bryn Cowlyd to Gors Wen Link Main (G1401): Archaeological Assessment*. Gwynedd Archaeological Trust Report No. 203.
- Smith, G., 2002. *Prehistoric Funerary and Ritual Sites Project: West Conwy and North Gwynedd*. GAT Report No. 449.

### **Cartographic Sources**

- 1797 Pennant demesne. National Library of Wales Misc Vol 34
- 1812 Eglwysbach Enclosure Act. Ruthin Record Office DD/DM/101/10-11
- 1819 Ordnance Survey surveyor's drawing for St Asaph area (No 309)
- 1841/3 Tithe map and apportionment for Eglwysbach, townships of Bodnod, Pennant etc
- 1875 Ordnance Survey 1<sup>st</sup> edition 1:2500 Denbighshire 06.14; 06.15; 11.02; 11.03
- 1900 Ordnance Survey 2<sup>nd</sup> edition 1:2500 Denbighshire 06.14; 06.15; 11.02; 11.03
- 1913 Ordnance Survey 3<sup>rd</sup> edition 1:2500 Denbighshire 06.14; 06.15; 11.02; 11.03

### **Vertical Aerial Photography held by NMR**

- 1946 RAF 3G/TUD/UK/34/5157-8, 5281-5
- 1947 RAF CPE/UK/1996/1266
- 1972 Ordnance Survey 72/394/448-9, 542-4

### **Oblique Aerial Photography held by NMR**

- 2002 RCAHMW 2002/5009-44

### **Remote Sensing Coverage**

- Bing (Microsoft) Vertical Aerial Photography
- LiDAR (limited coverage) – viewed on the Geomatics Group website

## APPENDIX 1

### Gazetteer of assets

#### Site No 1

Erw-Cadwgan                                      SH8191267280      Cottage                                      Post Medieval  
Cottage with adjacent plots showing on Ordnance Survey 1<sup>st</sup> edition 25" of 1875. It survives as an overgrown ruinous structure measuring about 8m E/W by 6m and up to 1m high, and comprising two adjoining (to east and west) compartments of approximately equal size. The walls are of friable local shale, probably with clay silt used as mortar.

#### Site No 2

Ty-y-mynydd feature                                      SH8241167079      Enclosure?                                      Post medieval  
Small, near rectangular feature, about 11m by 7m, showing on Ordnance Survey 1<sup>st</sup> edition 25 map of 1875 (Denbs 11.03). It may have been an enclosure, perhaps a pound, but is no longer visible.

#### Site No 3

Erw-Cadwgan strip fields                                      SH8217767430      Non antiquity                                      Not recorded  
Strips running along contours, some wooded, are visible on the Ordnance Survey 1<sup>st</sup> edition 25" map of 1875. These are entirely natural in origin and are caused by harder layers in the bedrock, which have created natural terraces running along the contours of the hillside. From a cultural heritage viewpoint they are of negligible importance, to a geologist they might be of greater significance.

#### Site No 4

Erw-Cadwgan triangulation pillar                                      SH8232567562      Triangulation Pillar                                      Post Medieval  
Triangulation station showing on Ordnance Survey 2<sup>nd</sup> edition 25" map of 1900. No longer extant.

#### Site No 5

Ty'n-y-mynydd quarry                                      SH8244367313      Quarry                                      Post Medieval  
Old quarry, so named on Ordnance Survey 2<sup>nd</sup> edition 25" map of 1900 and apparent on 1<sup>st</sup> edition mapping of 1875 though not named. It is still evident as a small quarry scoop in the west side of a low ridge.

#### Site No 6

Ty'n-y-mynydd pond                                      SH8238167096      Pond                                      Post Medieval  
Pond shown on Ordnance Survey 2<sup>nd</sup> edition 25" map of 1900, but not the 1<sup>st</sup> edition mapping of 1875. Not visible on the ground, so probably filled in.

#### Site No 7

Erw-Cadwgan quarry                                      SH8193267265      Quarry                                      Post Medieval  
Quarry cut into the slope above the public road, approximately 10m deep at its upslope end. Bisected by the stream that runs underneath the road. The rock seems to split into thin slabs and is quite shaley; it might have been used as poor quality roofing material.

#### Site No 8

Bryn-gwian building                                      SH8212567870      Building                                      Post Medieval  
A small building is depicted on the Ordnance Survey 1<sup>st</sup> edition 25" map of 1875 to the south of Bryn-gwian. This has since been replaced by a modern barn.

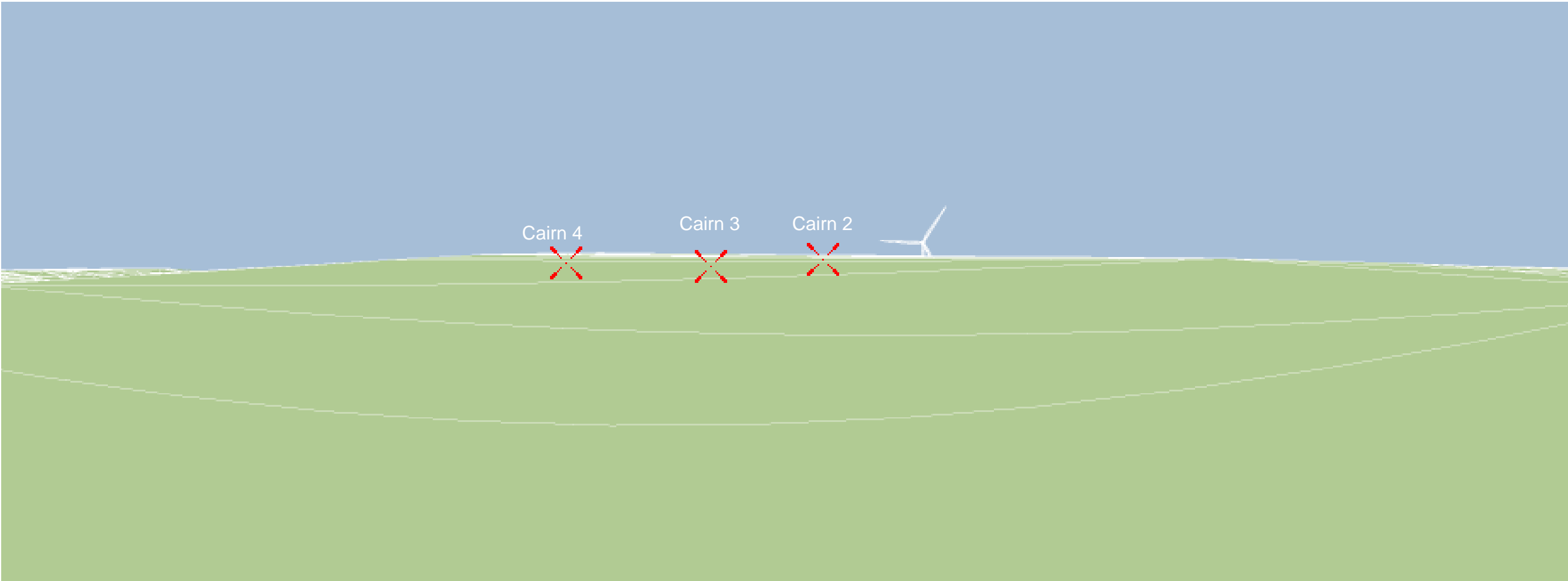
#### Site No 9

Bryn-gwian earthwork                                      SH8205967823      Building?                                      Post Medieval ?  
A pair of parallel banks 4m long, 0.5m high and 12m apart, along the west side of track, suggest the remains of a building, possibly of post-medieval date, although this cannot be determined with any certainty without further investigation.

## **APPENDIX 2**

### **WIREFRAME 1**

Wireframe



Location (OS Grid ref.)	SH 82900 68280
Viewer Height	1.75m above existing Ground Level*
Direction to View	352 <sup>0</sup>
Distance to Turbine	0.58Km
Hub Height	40m
Blade Length	27m
Maximum Height	67m

\* Existing Ground Level Calculated from next map britain 2m DTM

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Project:

Bryn Gwian

Title:

Wireframe 1 - Top of Northern Cairn at Mwdwl Eithin

Scale:

@A3

22/10/13

Drawn By:

RAH

Dwg No: **BGPM1/11/B**

Recommended Viewing Distance 300mm @ A3