

Brechfa Forest West Wind Farm (Requirement 26: Archaeology)

**Written Scheme of Investigation for Archaeological Walkover Survey,
Trial Trenching and Watching Briefs at Brechfa Forest West Wind Farm,
Carmarthenshire, South Wales.**

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Written Scheme of Investigation

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Brechfa Forest West Wind Farm (Requirement 26: Archaeology), Carmarthenshire, South Wales

Written Scheme of Investigation for Archaeological Walkover Survey, Trial Trenching and Watching Briefs at Brechfa Forest West Wind Farm, Carmarthenshire, South Wales. (Requirement 26)

Amec Foster Wheeler Environment & Infrastructure (UK) Limited

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Executive Summary

This Written Scheme of Investigation describes the requirements and methodology, as well as providing general background information, for a programme of archaeological works at the site of the proposed new wind farm at Brechfa Forest West.

The archaeological works comprise an archaeological walkover survey after tree clearance, which will help inform the location and sampling strategy of a subsequent trial trenching evaluation. The evaluation will, in turn, be used to inform any potential mitigation during construction works (e.g. archaeological watching briefs).

All archaeological work will be carried out in accordance with this WSI, which will be submitted to and approved by Carmarthenshire County Council (CCC), as the Local Planning Authority and Natural Resources Wales (NRW), as the land manager of Brechfa Forest which is subject to this development proposal prior to the start of the walkover survey. The walkover survey will inform on the extent of requirement for the trial trench evaluation phases of work and a trial trench location plan will be submitted and agreed by CCC and NRW once this has been undertaken.

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1. Introduction

1.1 Project Background

RWE Innogy UK Ltd (RWE) have been granted permission for a new wind farm at Brechfa Forest West, Carmarthenshire, South Wales (the 'site'). The new wind farm will comprise up to 28 new wind turbines, measuring a maximum of 145m in height and is designated a 'Nationally Significant Infrastructure Project', as defined in sections 14 and 15 of the Planning Act 2008. The proposal was granted a Development Consent Order (DCO) by the Secretary of State on 12th March 2013.

Amec Foster Wheeler have previously carried out an historic environment assessment (2011), which was included within the Environmental Statement (LUC, 2011, p.31-46).

As a result of consultations with Dyfed Archaeological Trust (DAT), who act as Carmarthenshire County Council's (CCC) archaeological advisors, an archaeological requirement has been attached to the DCO. This archaeological Written Scheme of Investigation (WSI) has been produced for *Requirement 26 – Archaeology*, which requires:

- (1) *No authorised development shall commence until a scheme of archaeological investigation has been submitted to and approved by the relevant planning authority.*
- (2) *The scheme of archaeological investigation shall incorporate:*
 - a. *A walkover survey before commencement of the authorised development;*
 - b. *Trial trenches at the sites of wind turbines W13, W17, W18, W19 and W23; and*
 - c. *A watching brief during construction to record both established archaeological remains and any remains subsequently identified at present.*
- (3) *The scheme of archaeological investigation shall be implemented as approved.*

This WSI details the archaeological works required to satisfy this requirement.

This WSI will be submitted for approval to Carmarthenshire County Council (CCC) as the Local Planning Authority (LPA) and Natural Resources Wales (NRW) as land manager). It sets out how RWE propose to fulfil Requirement 26, which covers the archaeological **walkover survey**, **trial trenching** and **archaeological monitoring**. Any amendments to the mitigation will be informed by consultation with CCC and NRW, in light of the results of the walkover survey and trial trenching, to agree the precise scope for any required archaeological mitigation (e.g. watching briefs) during construction.

Cadw will be consulted according to their statutory remit given the existence of Scheduled Monuments within the site, although no proposals directly impact on these designations.

1.2 Site Location

The site is located within Brechfa Forest, 10km northeast of Carmarthen, Carmarthenshire in south-west Wales, on a ridge of land forming the southwestern tail of the Cambrian Mountains. The site lies between the Cothi Valley (located to the south-east) and the Teifi Valley (located to the north-west). The elevation of the site ranges from 260m AOD (Above Ordnance Datum) in the south-west to 358m AOD in the north-east (LUC, 2011).

Brechfa Forest covers an area of approximately 5,273ha. The land is owned by the Welsh Government and managed by NRW. It is comprised of plantations of exotic tree species with Sitka spruce being the primary species, although there are some areas of native trees within the Forest (LUC, 2011). Tree felling has recently been undertaken on the site and therefore, the site consists of tree stumps with brash surrounding.

The Forest is divided into two parts by the common land of Mynydd Llanfihangel Rhos y Corn and Mynydd Llanllwni. The site of Brechfa Forest West Wind Farm is located in the western part of the Forest, which lies between the village of Brechfa to the southeast, and the A485, to the northwest. The site is intersected by the Afon Pîb river which flows south-east towards Brechfa.

The site occupies an area of approximately 1,041ha, although the actual development (including all infrastructure components such as access tracks, turbine bases, borrow pit, meteorological masts, and temporary and permanent compounds) will only occupy approximately 4.1% of this. The majority of the site is used for upland rotational forestry, with only 8% of the site being improved agricultural grassland used for sheep grazing.

There are several minor roads surrounding the site which provide links to the wider road network. The A485 to the west of the site runs south to Carmarthen. An unclassified minor road runs from Brechfa to the south-east of the site to New Inn on the A485 to the north-west. The M4 motorway network is accessible via the A48 from Carmarthen.

The site of Brechfa Forest West Wind Farm is also classed as dedicated open access land, whereby NRW has voluntarily dedicated the land for use for public access under the Countryside and Rights of Way Act 2000. There are five public footpaths within the site and numerous other footpaths surrounding the site, including a public footpath that runs along the western boundary of the neighbouring operational Alltwalis Wind Farm.

2. Archaeological and Historical Background

2.1 Historic Landscape Character

The landscape character of the area is described in the Landscape Character Map for Wales (2007). The site is covered by the Cambrian Mountains Landscape Character Area (LCA) which is characterized as a “...*landform of extensive undulating plateau and incised valleys... dense pattern of historic features and elements throughout in the form of funerary and ritual monuments*”. Further information on the landscape character can be found in Environmental Statement (LUC, 2011, Chapter 15).

No formal historic landscape characterization was held by Dyfed Archaeological Trust (DAT) at the time of the assessment. The current land use comprises 20th century upland rotational forestry, which has had a significant impact on the historic landscape. LANDMAP was reviewed and identified that the historic landscape of the site comprises planted over open moorland and at lower levels fields and abandoned farms and cottages. There is some semi-natural deciduous woodland on steep slopes, and pockets of farmland with farms within the forested areas (CRMRTL42424 and 42423).

2.2 Geology

2.2.1 Bedrock

The site predominantly lies on interbedded sedimentary mudstones and sandstones of the *Rhuddnant Formation*. These were formed around 428 to 436 million years ago, in the Silurian Period, when the area was dominated by deep seas. However, a small portion of the southernmost site (turbines 5 to 7, 11 and 12) is situated upon similar deposits, but of the *Glanyrafon Formation*. The linear site protrusion, to the north-west (main access), is located upon sedimentary mudstone of the Claerwen Group, laid down around 428 to 439 million years ago when the area was dominated by deep seas (BGS, 2014).

2.2.2 Superficial

No superficial deposits are recorded for the vast majority of the site. However, small pockets of glacial till are shown in limited areas.

The Devensian till (Diamicton) was formed around 2 million years ago in the Quaternary Period, when the area was dominated by ice age conditions. Moraines of this till, with outwash sand and gravel deposits from seasonal and post-glacial meltwaters, were formed in cold periods, when Ice Age glaciers scoured the landscape. Notable pockets of this glacial till have been recorded in the northernmost (near turbine 24) and easternmost (near turbines 27 and 28) portions of the site.

In the surrounding area, outside the proposed development site, small pockets of peat are recorded. This peat was formed from an accumulation of plant remains up to 3 million years ago, in the Quaternary Period (BGS, 2014).

2.3 Historic Environment Assessment

The following information has been summarised from the historic environment assessment carried out by Amec Foster Wheeler in 2011, which was included within the Environmental Statement (LUC, 2011, Chapter 7: Archaeology, p.31-46 and Figures 7.1-7.3). The study area for this assessment (AMEC, 2011) included a 1km search radius from the site boundary for non-designated archaeological remains; a 5km search radius for all Scheduled Ancient Monuments, Listed Buildings, Conservation Areas and registered landscapes. Landscapes on the Register of Landscapes of Historic Interest in Wales, Historic Character Areas and any historic landscapes were identified within a 10km search radius from the site boundary.

The assessment evaluated the impacts of the proposed Brechfa Forest West Wind Farm on the historic environment. The historic environment includes a wide range of features resulting from human intervention in the landscape, varying in scope from buried archaeological remains up to late 20th century extant industrial structures. For the purposes of the assessment it was divided into the categories of archaeology and built heritage.

2.3.1 Designations

Three Scheduled Monuments (SMs) are situated within the site, although these have been avoided through scheme design iteration and no direct effect on these will occur. CM033a&b and CM034 are located within densely forested areas and the intervisibility between the monuments and the wind farm is very restricted by non-native trees. Access to the monuments is currently not possible without removal of the trees. In this case the setting of these monuments must be considered as their immediate area and as such the operational wind farm will have an impact of negligible significance on their setting.

A further seven SMs are present within 5km of the site, two of which are within 600m. There will be no direct operational impacts on the archaeological deposits. Two of these lie on exposed hilltops (CM201 and CM163) and as such there will be an indirect impact on their setting as views from the monument will be altered. Due to the distances from the turbines the change to the setting will be very slight and as such the magnitude of change is considered to be no change, resulting in an impact of negligible significance. The intervisibility between SAM CM319 and the site is partially obscured by forestry and the impact of the turbines will be significantly lessened as they will lie over 3km from the southern boundary of the site. An impact of negligible significance is therefore identified for the operational stage. Impacts of negligible significance are also predicted for CM102, CM043, CM070 and CM114.

There are no Listed Buildings within the site and relatively few recorded in the surrounding area, with 22 Listed Buildings within 5km of the proposed wind turbines, all listed at grade II. No mitigation relevant to

Listed Buildings is entailed in this WSI as no effects on these were identified. No significant impacts on Listed Buildings were identified by the assessment.

No Historic Battlefields, Shipwrecks, Conservation Areas, Registered Parks & Gardens and World Heritage Sites were recorded within the study area.

2.3.2 Summary of Baseline Study

Bronze Age

Three round barrows are recorded on the HER (Historic Environment Record; 1816 to 1818) within the north-west part of the site, all of which are designated as SMs (CM033a, CM33b and CM034). A cropmark, which was identified as a possible round barrow, lies to the south of these monuments, within the site boundary (HER 10746).

Further scheduled round barrows were identified in the vicinity of the site, including one (CM035) 150m to the east of an existing access track and 900m north northeast of Turbine 23, and another (CM164) c. 1.25km north of Turbine 24. These are associated with a round barrow cemetery (HER 42592), also outside the site.

Although no known Bronze Age settlement sites are known in South West Wales (Regional Framework for the Archaeology of Wales), the number of round barrows and standing stones in the study area and surrounding landscape clearly indicate a landscape utilized in the Bronze Age period. Settlement would have largely been confined to the good quality soils of the lowlands or upland fringes (Lynch, 2000), so may not reasonably be expected within the proposed site.

Iron Age and Roman Periods

There are no known Iron Age or Roman remains within the site. However, such activity is known in the wider area: there is a possible Iron Age hillfort known as Nant-Y-Castell, c. 1.6km to the east of the site and a defended enclosure of possible Iron Age date (HER 11832) c. 2.3km to the southwest. This may also have been in use during the Roman period.

The presence of the Roman road along the Tywi Valley to the south, the known Roman forts at Carmarthen, Llandeilo and Llandovery, and the gold mine and fort at Pumsaint to the west of Llansawel suggest that the site would have been under Roman influence. However, there is no evidence to suggest any remains of this date within the site.

Early-medieval/Medieval

There are no known remains of post-Roman or Early-medieval dates in the site. During the 7th – 8th centuries the site lay within the region of Seisyllwg, annexed from the territory of Ystrad Towy by Seisyll,

a member of the Ceredig dynasty (Rees, 1951). This new kingdom formed the basis of the future kingdom of Deheubarth from the 11th century onwards.

It is likely that during the medieval period the site lay beyond the settlements and isolated dwellings present across the region, with settlement activity concentrated in the valley bottoms and along the Afon Cothi. The landscape may have remained predominantly wooded or have featured areas of open common used for grazing cattle or sheep.

Post-medieval and Modern

Of the previously recorded Post-medieval buildings/farmsteads originally recorded within the site boundary, all have since been removed (HER 30229, 30218, 30230, 22624, 22625, 36467). Two 'agricultural features' exist on the site (HER 30228, 30599), whilst five quarries are recorded (16585, 16593, 30650, 36455, 36468).

During the Post-medieval period, the character of Brechfa Forest was one of an agricultural community. As seen in the nearby Llanfynydd area (CA, 2003c) it is likely that as the local population grew, there was increased pressure on the historic parish common land on the high ground of the parishes. More land was put under the plough and new farmsteads and dwellings appeared. This is represented in the HER, with some fourteen 19th century or 20th century buildings located within 1km of the site boundary. Nineteenth century agricultural features are also recorded, along with a number of small quarry sites.

The parish tithe maps provide the earliest detailed mapping for the study area. The site predominantly remained open common with small areas of enclosed fields present across the south and western extent of the site and along the Afon Pib Valley.

The 1886-1891 OS map shows that the site was predominantly unenclosed, although areas of enclosed land had increased along the periphery of the study area and along the valley of the Afon Pib. Large parts of the study area are identified as rough pasture. The three SM round barrows (CM033-CM034) are marked. The Post-medieval farmsteads/cottages and quarry activity recorded in the HER are clearly shown. The 1907 OS shows little change, though some additional cottages are shown. Alterations are limited to the increased number of arable fields or varying fields of arable to pasture.

The 1948 Ordnance Survey shows widespread tree plantation across the site. The 19th century farmsteads and cottages previously present within the site have been removed. The 1986 Ordnance Survey shows increased woodland plantation across the site. Forestry tracks are clearly marked crossing the site.

Documentary and cartographic evidence indicates that the majority of the study area remained open common until the early 20th century. From this period onwards it was increasingly subject to enclosure and converted to arable land. Post-medieval settlement activity is limited to isolated farmsteads and cottages which are clearly marked on the HER and Ordnance Survey mapping. During the 1940s the site was subject to tree plantation, leading to the majority being forested by 1948 and almost completely forested by 1986. During this period, the Post-medieval farmsteads and cottages were abandoned and

then demolished. A high potential for Post-medieval/Modern deposits is associated with the localized known farm settlement sites. However, the majority of the site is subject to agricultural and later forestry activity and, therefore, has a low potential for post-medieval remains.

Previous Archaeological Work

No previous intrusive archaeological fieldwork has been carried out within the site boundary. Cambria Archaeological Trust carried out a programme of field visits to selected archaeological sites within Forest Enterprise's Llandovery Forest District during 2001-2003. The project assessed the condition of archaeological sites within the Brechfa Forest and established the existence of unevaluated sites. A Prehistoric Funerary Sites Project was carried out by Cambria Archaeology for Cadw in 2002-3 which recorded and assessed all prehistoric monument types in East Carmarthenshire (CA, 2003b).

3. Project Aims and Objectives

3.1 Aim

The aims of this archaeological work are to:

- confirm the presence or absence of archaeological remains within the site; and
- gain sufficient information on any archaeological remains which may be present to inform an appropriate programme of archaeological mitigation.

3.2 Objectives

3.2.1 Walkover Survey

The objectives of the walkover survey are to:

- Identify and record any previously unknown archaeological features visible within the site subsequent to deforestation; and
- gain additional information on any known archaeological remains within the site.

The trial trenching layout will also be adjusted if necessary according to the results of the walkover survey.

3.2.2 Trial Trenching

The objectives of the archaeological trial trenching evaluation are to:

- Establish the presence or absence of any archaeological features or deposits which may be present within the footprint of turbines 13, 17, 18, 19 and 23;
- characterise the nature, extent, date, integrity, state of preservation and quality of any known, suspected and as yet unknown archaeological remains thus identified;
- prepare a fully illustrated report on the results of the trial trenching that is compliant with all relevant guidance and good practice;
- provide sufficient information within the report to enable the formulation of a suitable mitigation strategy and appropriate management of the archaeological resource, as far as this may be affected by the proposed development; and
- disseminate the above report, in a timely manner, to the Planning Archaeologist and HER at DAT, CCC, NRW and RWE.

3.2.3 Watching Briefs

The objectives of the archaeological watching briefs are to:

- monitor intrusive construction works where these have the potential to impact on archaeological remains;
- determine presence/absence of archaeological deposits;
- undertake investigation of any archaeological deposits encountered in order to characterise these and make an appropriate record;
- prepare a fully illustrated report on the results of the watching briefs that is compliant with all relevant guidance and good practice; and
- disseminate the above report, in a timely manner, to the Planning Archaeologist and HER at DAT, CCC, NRW and RWE.

4. Archaeological Methodology

This project will comply with the Chartered Institute for Archaeologists (CIfA) *Code of Conduct* (2014), *Standards and Guidance for Archaeological Field Evaluation* (1994, rev. 2014) and *Standards and Guidance for an Archaeological Watching Brief* (1994, rev. 2014). All archaeological works will be carried out in compliance with this WSI, which is subject to approval from CCC and NRW.

4.1 Walkover Survey

The walkover survey will be undertaken subsequent to the removal of forestry from the site. It is assumed that the scope of the walkover survey will be to cover all land within the development footprint of the deforested area. This will be walked in suitable parallel transects, anticipated to be every 30-50m with the aim of confirming the presence, condition and extent of visible archaeological remains and other features of historic environment interest, whether or not previously recorded, in addition to noting the general ground conditions within the site. It is anticipated that:

- The progress and conditions of the walkover survey will be recorded in a daily log;
- For each identified feature, as detailed above, the record will include:
 - A sketch plan;
 - written description;
 - location recorded by handheld GPS, where possible; and
 - digital photographs.

Any areas which cannot be covered in regular transects (e.g. due to boggy ground etc.) will be mapped and reported as far as is possible given the ground conditions after deforested. When required, any localised covering of brash will be scraped back manually to allow for visual inspection of the ground.

Following the Walkover Survey, any additional areas deemed worthy of further investigation by the Project Team in consultation with the County Archaeologist will be subject to trial trenching.

4.2 Trial Trenching

4.2.1 General

The trial trenching will be undertaken after forestry operations are completed, after the site walkover. The requirement specifies that trial trenching is undertaken in the locations of the following five wind turbines: W13, W17, W18, W19 and W23.

Trial trenches will need to cover the turbine foundation and any associated intrusive works in the above turbine locations, such as the crane pads and any construction lay-down areas. Two archaeological trial trenches (on opposing orientations), are proposed at each turbine location, to amount to an approximate 5% sample of the footprint of intrusive works in these locations. This reflects a standard sampling strategy for this type of development.

4.2.2 Machine Excavation

Prior to trial trench excavation, the archaeological contractor will carry out a visual inspection of the entire area to be evaluated by trial trenching. This will include examination and recording of any available exposures, such as recently cut field ditches and geological test pits.

The excavation of trial trenches will be carried out in a staged manner to prevent over-weathering and will be back-filled as soon as possible once CCC and NRW have been given reasonable opportunity to examine any possible archaeological deposits which may be present.

The trenches will be excavated using a **tracked, backward-pulling machine**, of an appropriate size, equipped with a **toothless ditching bucket**. The topsoil and/or recent overburden will be removed using the machine, down to the first (latest) significant archaeological horizon or the undisturbed natural subsoil, whichever is encountered first (highest in the stratigraphical sequence). Supervision and direction of the machine excavation of trenches will be carried out by suitably qualified archaeologists from the appointed archaeological sub-contractor, who will halt machine excavation should possible archaeological features/deposits be encountered. Surface deposits will be hand cleaned as required for the proper identification of archaeological deposits. A sample of archaeological features or deposits will then be excavated by hand in order to evaluate the nature and extent of the archaeological resource. On rare occasions, such as when investigating large linear features etc, then it may be necessary to machine excavate a section of the features, in agreement with CCC and NRW.

When determining the level to which machine excavation can be carried out, it will not be assumed that the most recent archaeological features/deposits on the site are the least important. All archaeological remains will be considered of the same importance, until they are fully characterised, interpreted and assessed.

Spoil arising from machine excavation will be stored on site, adjacent to the evaluation trenches and backfilled in reverse order of excavation following completion of fieldwork, with the brash covering replaced. No other reinstatement will be undertaken by the archaeological contractor.

4.2.3 Archaeological Investigation and Recording

Investigation

All exposed archaeological features/deposits will be cleaned and investigated by hand, in an archaeologically controlled and stratigraphic manner, and fully recorded by context as per the Chartered

Institute for Archaeologists *Standard and Guidance for Archaeological Field Evaluation* (1994, rev. 2014). As a minimum, the sampling strategies will be:

- small discrete features, such as stakeholes, will be 100% excavated;
- larger discrete features, such as pits/postholes, will be half-sectioned (50%). Where possible, a complete section will be excavated across a feature to record its full profile;
- linear features will be sample investigated along their length (10%), with excavated sections being no less than 1m in length, provided circumstances permit;
- burials and features suspected of being burials will not be excavated unless it is unavoidable. Where necessary, and in adherence to the relevant legislation, they will be fully excavated in plan; and
- one long face of each trench will be cleaned by hand as necessary to allow the site stratigraphy to be better understood and for the identification of archaeological features, where appropriate.

Should an insufficient proportion of an archaeological feature be exposed within an evaluation trench, then it may be necessary to extend the trench in order to allow the form and function of archaeological features/deposits to be determined. Additional, small-scale excavation in existing trenches may also be required for the taking of palaeoenvironmental samples and recovery of artefacts. The above works will only be carried out after consultation with Amec Foster Wheeler, CCC, NRW and RWE.

Should deposits be exposed that potentially contain palaeoenvironmental or datable elements, particularly waterlogged deposits, appropriate sampling and post-excavation analysis strategies will be initiated, after consultation with Amec Foster Wheeler, CCC and NRW. The project will be organised so that specialist consultants who might be required to conserve or report on finds or advise or report on other aspects of the investigation (e.g. palaeoenvironmental analysis) can be called upon and undertake assessment and analysis of such deposits, if required. On-site sampling and post-excavation assessment and analysis will be undertaken in accordance with English Heritage's guidance in *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (2nd edition, 2011).

Human remains must initially be left in-situ, covered and protected. Removal can only take place under the appropriate Ministry of Justice and environmental health regulations. CCC and NRW will be informed of the presence of any human remains within 48 hours of discovery. Human remains will normally be cleaned and recorded in situ and not excavated or removed at the evaluation stage, although this will be reviewed in the event of any such finds. The removal of any human remains will be undertaken in accordance with the approach cited in Clause 16 of The Brechfa Forest West Wind Farm Order 2013 (12th March 2013).

Any find or artefact which can be defined as 'Treasure', under the terms of the Treasure Act 1996 as amended by the Treasure (Designation) Order 2002, will be reported to the local coroner within 14 days

of discovery. Treasure will also be reported to the local Portable Antiquities Scheme (PAS) Finds Liaison Officer, via the local reporting officer (Gavin Evans, Carmarthenshire County Museum, Carmarthen SA31 2JG, 01267 228696) who can provide guidance on the Treasure Act procedures. Such artefacts that may be considered 'Treasure' include; precious metals, groups of coins or Prehistoric metalwork. These will be archaeologically excavated and removed to a safe place, according to the procedures relating to the Treasure Act 1996 Code of Practice (2nd Revision). Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.

All identified finds and artefacts will be collected, normally by bulk context and removed from site for processing. These will be washed, marked and stored in the appropriate packaging and storage conditions. Certain classes of material, such as modern pottery and building material, will be discarded after recording.

Samples of material suitable will be considered, where appropriate, for scientific dating techniques including AMS C14 dating, archaeomagnetism (for example, charred seeds or in-situ burnt clay from appropriate contexts) or thermoluminescence.

Recording

The site will be given a unique site code by the archaeological sub-contractor, which is to be written on all finds, artefact bags, sample containers, context sheets, drawings and plans. A unique museum accession number will also be sought from the relevant recipient museum for deposition of the documentary and finds archive.

The locations of trial trenches and significant features will be recorded on a site plan of prescribed scale, tied in to Ordnance Datum (OD) and show sufficient information to allow comparison to the national grid, with OD heights recorded in metres (mAOD).

A full written, drawn and photographic record will be kept, using a single-context recording system on an appropriately archivable medium. All archaeological features/deposits shall be assigned individual context numbers and suitably described on a separate pro-forma context sheet. A record of the 'natural' geological deposits, direction and dimensions for each trench will also be made.

Archaeological features/deposits will be recorded in plan and section and recorded at a scale appropriate to the complexity of the deposit/feature, to allow accurate depiction and interpretation. A plan, sample section and sequence description of each trench will also be produced, at an appropriate scale, including for those trenches where no archaeological interest is identified. Plans will normally be at scales of 1:20 or 1:50 and sections at 1:10 or 1:20. Each drawing will be assigned a unique drawing number.

A full photographic record of the evaluation will be prepared at a minimum of 35mm format, with digital images (to minimum 300dpi) acceptable. This will include photographs illustrating the principal features and finds discovered, in detail and in context. The photographic record will also include working shots to

illustrate more generally the nature of the archaeological evaluation. All photographs of archaeological details will feature an appropriately-sized scale and visible context numbers and site code. A written register of all photographs will also be kept.

A site diary, or day book, will be maintained by the archaeological contractor to include details of liaison and monitoring meetings, visits, a record of staff on site and details of progress.

4.3 Monitoring (Watching Briefs)

Dependent on the results of the archaeological walkover survey and trial trenching, archaeological monitoring (watching briefs) may be required by CCC and NRW on construction works, at sites where archaeological features are shown to be present. A watching brief may also be undertaken during construction of the related infrastructure to record any previously unknown archaeological remains that may be present. Archaeological monitoring will be carried out by the archaeological contractor, during construction works. Specific requirements for the monitoring will be discussed and agreed with CCC and NRW.

A suitably qualified archaeologist will monitor all ground intrusive works at those locations where discussed and agreed with CCC. This will entail continuous presence on site whilst any ground stripping is being undertaken. The suitably qualified archaeologist will have the ability to halt works if potential archaeological or archaeological remains are recovered. Archaeological investigation and recording will normally proceed in a manner similar to that described for trial trench archaeological evaluation, described above (Section 4.2), although with consideration of the requirements of construction activities. As an example, a toothless ditching bucket will normally be expected to be used during construction in areas where archaeological features/deposits are anticipated, unless there are sound reasons to deviate from this methodology.

Should archaeological deposits be encountered during the watching brief, then the on-site archaeologist will be afforded reasonable time and resources by the main contractor to adequately clean, investigate and record any archaeological deposits, in line with the requirements detailed in Section 3.2.3, above. The top and subsoil will be scanned for any archaeological material.

4.4 Other Items

As discussed in the introduction (Section 1.1) above, forestry work, including the removal of trees, has implications for the archaeological works, particularly for the efficacy of the site walkover and forestry works should be undertaken in a manner suited to the subsequent archaeological works. Namely, tree stumps being left in place to avoid unnecessary ground disturbance and as much brushwood as possible should be removed from areas of tree clearance to allow un-obscured observation of the ground may be

possible to offer escorted visits to a limited number of interested individuals. However, once the site has been closed off to public access, no immediate right will exist.

The level of public dissemination of the results of the archaeological work would also depend on the nature of the archaeology encountered, although it may be appropriate to publish an article in a local journal.

4.5 Reporting

Upon completion of each stage of the archaeological works a written report will be produced by the archaeological contractor responsible for that stage of work, with those from sub-contractors to be reviewed by Amec Foster Wheeler or the archaeological contractor appointed by RWE prior to issue.

The level of reporting of the evaluation will be commensurate with the results, but as a minimum these will stand as sufficiently detailed reports on which to base future decisions on the treatment of any archaeological remains within the site, and future research. The report on the trial trench evaluation will be produced in accordance with The Chartered Institute for Archaeologists *Guidance for Archaeological Field Evaluation* (1994, rev. 2014), and as a minimum will include;

- QA sheet detailing, as a minimum, title, author, version, date, checked by, approved by, copyright;
- Non-technical summary;
- Introduction; to include site codes, accession number, project number, dates and OS National Grid numbers (eight digit);
- Site and trench location plans and description;
- Topography and geology;
- Archaeological and historical background;
- Methodology;
- Aims and objectives;
- Results; to include full description, assessment of condition, quality and significance of any archaeological remains;
- A statement of the significance of the results in their local, regional and national context, cross referenced to the regional research agendas, as appropriate;
- References;
- General and detailed plans showing the location of all excavated areas, accurately positioned on an OS base map (to a standard scale);

- Detailed plans and sections illustrating any archaeological features (to a standard scale), as required, showing the location and position of any photographic views;
- A table summarising the deposits (contexts), features, finds, classes and numbers of artefacts encountered and spot dating of significant finds; and
- Appendices to include all method statements, as appropriate.

Three hard, bound copies will be issued to the DAT HER (no later than 6 months after completion of the site work). Copies will also be sent to CCC, DAT, NRW, Cadw and RWE. Amec Foster Wheeler will maintain a digital .pdf copy of the final report.

A summary note will be submitted to the editor of relevant local journal and any relevant period journals, no later than one year following completion of the site work.

4.6 Archiving

An overall project archive will be compiled for archaeological investigations within the site. The archive will comprise the documentary and digital records and archaeological material generated during the fieldwork. All materials produced will be appropriately conserved, quantified, ordered, indexed, internally consistent and marked with the context number, where relevant, site code and the museum accession number. The archive will be kept secure at all stages of the project.

The archive will be stored in a suitable, secure location by the archaeological contractor until it is deposited with the appropriate recipient museum. It will be the contractor's responsibility to arrange the deposition of finds, subject to the landowners' permission, ascertaining the costs of the storage and deposition with the designated repository. If finds are not to be donated to the recipient body identified, arrangements will be made for a comprehensive record of all materials (including detailed drawings, photographs and descriptions of individual finds), which can instead constitute the archaeological archive. CCC will be informed of the arrangement which has been made. It is intended that the archive will be deposited with the recipient museum within 6 months of the submission of the final report on archaeological fieldwork. Written confirmation will be sent to CCC once the archive has been deposited.

An online form and a digital version of the report will be placed with OASIS (Online Access to the Index of Archaeological Investigations) at <http://www.oasis.ac.uk/>. This will allow the inclusion of the works within the national database maintained by the Archaeological Investigations Project.

5. Monitoring, Progress and Staffing

All stages of the archaeological work will be carried out by suitably experienced and competent archaeological practitioners. All Staff will be aware of the requirements of this Written Scheme of Investigation (WSI) and will understand the aims, objectives and methodologies of the project. It is anticipated that the site walkover will be undertaken by suitably qualified archaeologists, who have extensive experience of this type of work, including that gained in upland locations and similar developments in Wales. The trial trench evaluation and watching brief or other mitigation is likely to be undertaken by a suitable commercial archaeological contractor. The Amec Foster Wheeler or the archaeological contractor appointed by RWE will ensure that the archaeological work is being carried out in accordance with this WSI and the relevant legislation and guidance, in order to achieve the stated aims and objectives. The Amec Foster Wheeler archaeologist or the archaeological contractor appointed by RWE will act as liaison between RWE, CCC and NRW.

CCC will be kept informed of the programme and progress of archaeological works and of any archaeological remains that are encountered. Amec Foster Wheeler or the archaeological contractor appointed by RWE will offer CCC the opportunity to carry out monitoring visits, and will accompany them on site. Two weeks' notice will be given to the Planning Archaeologist prior to commencement of the archaeological trial trench evaluation, to allow for appropriate monitoring.

The Amec Foster Wheeler or the archaeological contractor appointed by RWE will also provide regular updates of the works to RWE and will attend meetings when required. RWE will be notified of any site meetings and invited to attend.

Where necessary to achieve the objectives of this investigation within the overall project programme, variations to the scope of works will be agreed in advance with CCC and RWE.

All tools, materials, machinery and plant necessary for the archaeological fieldwork, post-ex processing/reporting and archiving will be provided by the archaeological contractor.

6. Health and Safety

The archaeological walkover will adhere to the Amec Foster Wheeler Health and Safety Policy and thereafter, the works will be undertaken in accordance with CDM regulations. A risk assessment and method statement (RAMS) will be produced by the Amec Foster Wheeler or archaeological contractor appointed by RWE and will be reviewed and approved by RWE prior to site works commencing. A conditional aspect of all archaeological work is that it provides both safe access to the area of work and a safe working environment.

In light of the proposed revision to CDM regulations, we note that the clear view of the HSE is that virtually all development-led archaeological site investigation (trial trenching) is notifiable under the CDM Regulations.

The project will be carried out in accordance with safe working practices and under the defined health and safety policy of the client. Staff will attend general and/or site specific health and safety inductions and produce relevant documentation as required by the client.

Attention will be paid to the detection and location of underground utilities and of overhead electricity/telephone cables. A review of available utility plans and the use of a Cable Avoidance Tool (CAT), by a suitably qualified staff member, will be carried out, prior to the excavation of every trench. Any 'positive' responses will be marked using spray paint and avoided.

Also, particular caution will be paid to the health and safety implications of earth-moving machinery, which will be addressed in the archaeological contractor's risk assessment and method statement.

The archaeological contractor will maintain and leave the site in a tidy and workman-like condition and remove any materials brought onto the site, including grid pegs and/or other markers.

It is intended to backfill the evaluation trenches as soon as possible after the archaeological investigation/recording has been completed. However, this will be dependent on approval from CCC, who may wish to inspect individual trenches prior to backfilling.

All archaeological contracting staff should adhere to the site safety policies at all times and shall wear the correct safety clothing and equipment. The following PPE is anticipated to be required at all times during the evaluation:

- High visibility vest / jacket;
- Safety helmet;
- Safety boots with ankle support and sole protection; and
- Light eye protection and ear defenders should be available and used where necessary.



In undertaking the work the archaeological sub-contractor's personnel are to abide by all statutory provisions and by-laws relating to the work in question, especially the Health and Safety at Work Act 1974.

7. General Provisions

7.1 Confidentiality and Publicity

In the event of any enquiries by the public, the archaeological contractor will refer all enquiries to Amec Foster Wheeler without making any unauthorised statements or comments. The archaeological contractor will not disseminate information or images associated with the project for publicity or information purposes, without prior consent from RWE.

7.2 Vehicle Movement and Access

All vehicles used by Amec Foster Wheeler or the archaeological contractor will adhere to all access routes and site speed limits, as agreed in advance with RWE and NRW.

7.3 General

No variation from, or changes to, the above methodology will occur except by prior agreement with RWE, in consultation with CCC. All communications on archaeological matters will be directed through the Amec Foster Wheeler or RWE appointed archaeological contractor.

We are aware that the site is affected by *Phytophthora ramorum*. Our Archaeological contractor will undertake their activities in accordance with any control measures introduced to prevent the spread of this organism.

8. References

AMEC (2011) *Brechfa Forest West Wind Farm: Environmental Statement*. Chapter 7: p.31-46.

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CCC (2006) Carmarthenshire County Council. *Unitary Development Plan*.

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CA (2003b) Cambria Archaeology. *Prehistoric Funerary and Ritual Sites Project. East Carmarthenshire. 2002-2003*. report 2002/94.

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ClfA (1994, rev. 2014a) Chartered Institute for Archaeologists. *Standards and Guidance for Archaeological Field Evaluation*. Reading: ClfA.

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LUC (2011) Land Use Consultants. *Brechfa Forest West Wind Farm, Volume 1: Environmental Statement*.

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Rees W (1951) *An Historical Atlas of Wales - From Early To Modern Times*.

WAG (2011) Welsh Assembly Government. *Planning Policy Wales, Edition 4*.

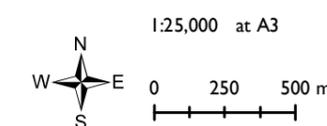
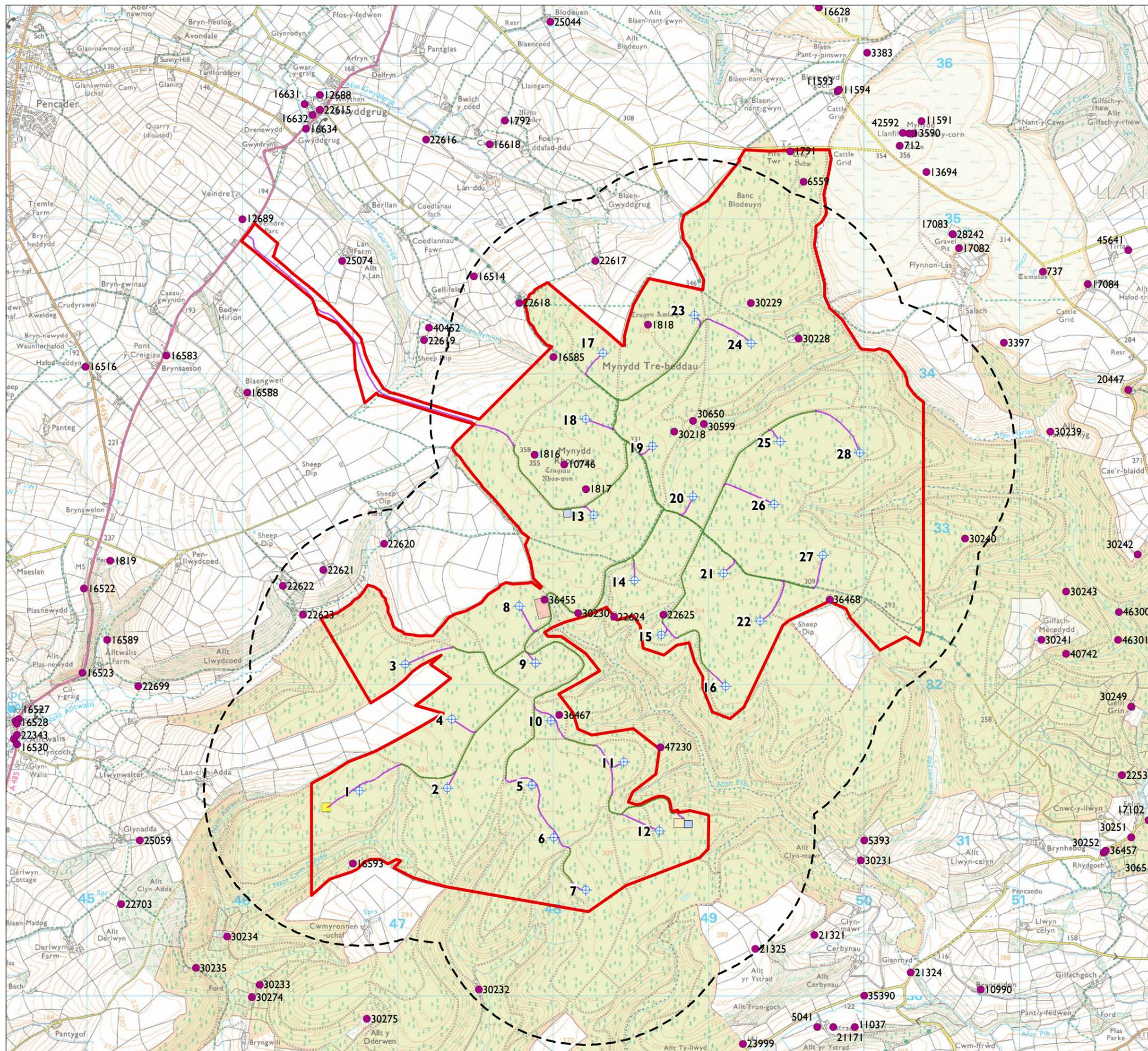
Appendix A Figures

Brechfa Forest West Wind Farm

Figure 7.1: HER sites within 1km of turbines

Key

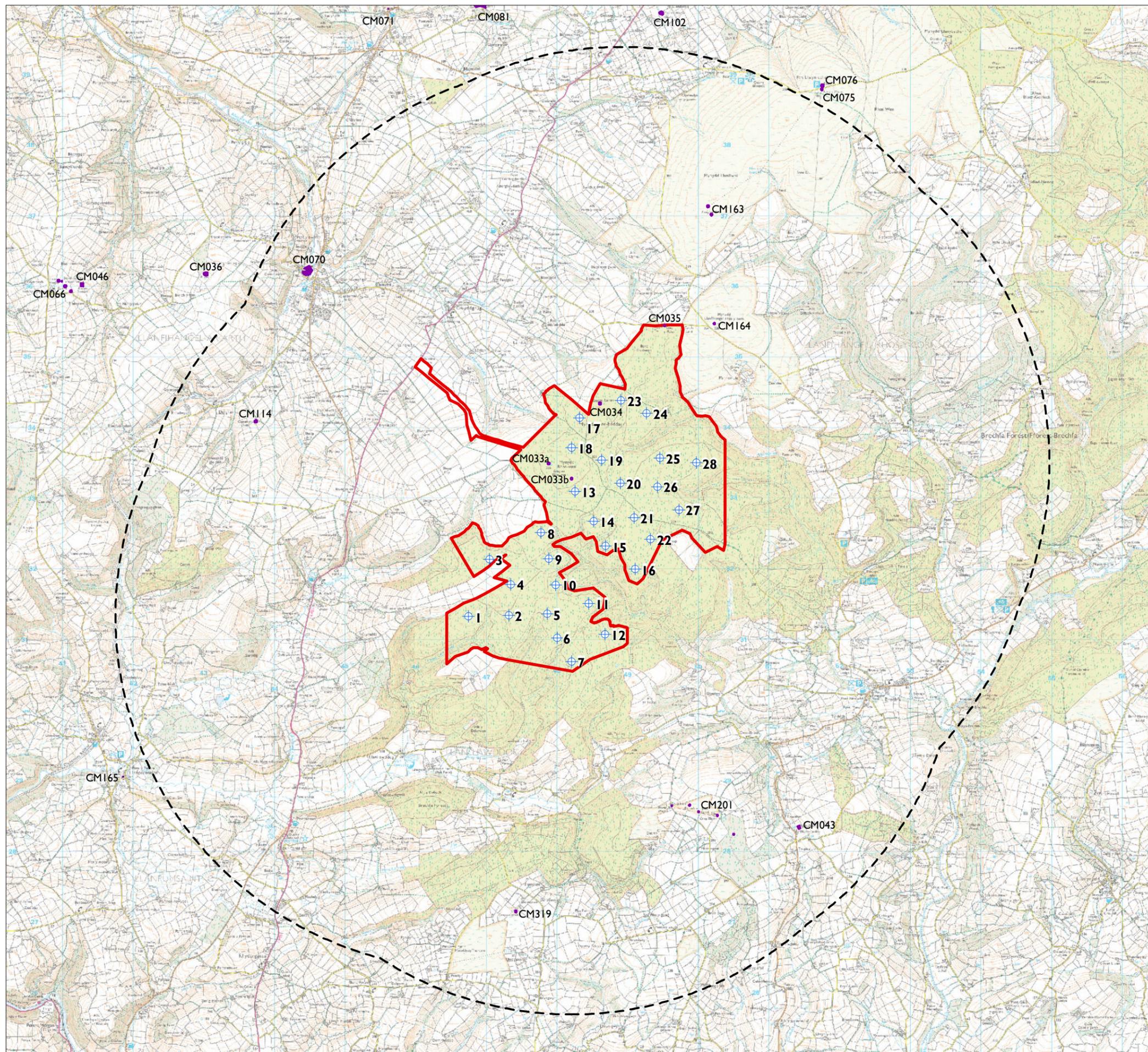
- Site boundary
- HER sites
- ⊕ Turbine locations
- 1km buffer around turbines
- New tracks
- Existing tracks
- Met mast
- Substation
- Borrow pit
- Construction compounds



Source: CgMs

Date: 26/08/2011
Revision: A





Brechfa Forest West Wind Farm
Figure 7.2: Scheduled Ancient Monuments within 5km of turbines

Key

- Site boundary
- + Turbine locations
- 5km buffer around turbines
- Scheduled Ancient Monuments

1:55,000 at A3

Source: CgMs

Date: 15/07/2011
 Revision: A

Brechfa Forest West Wind Farm

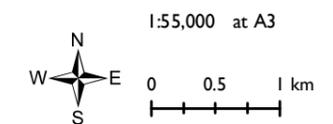
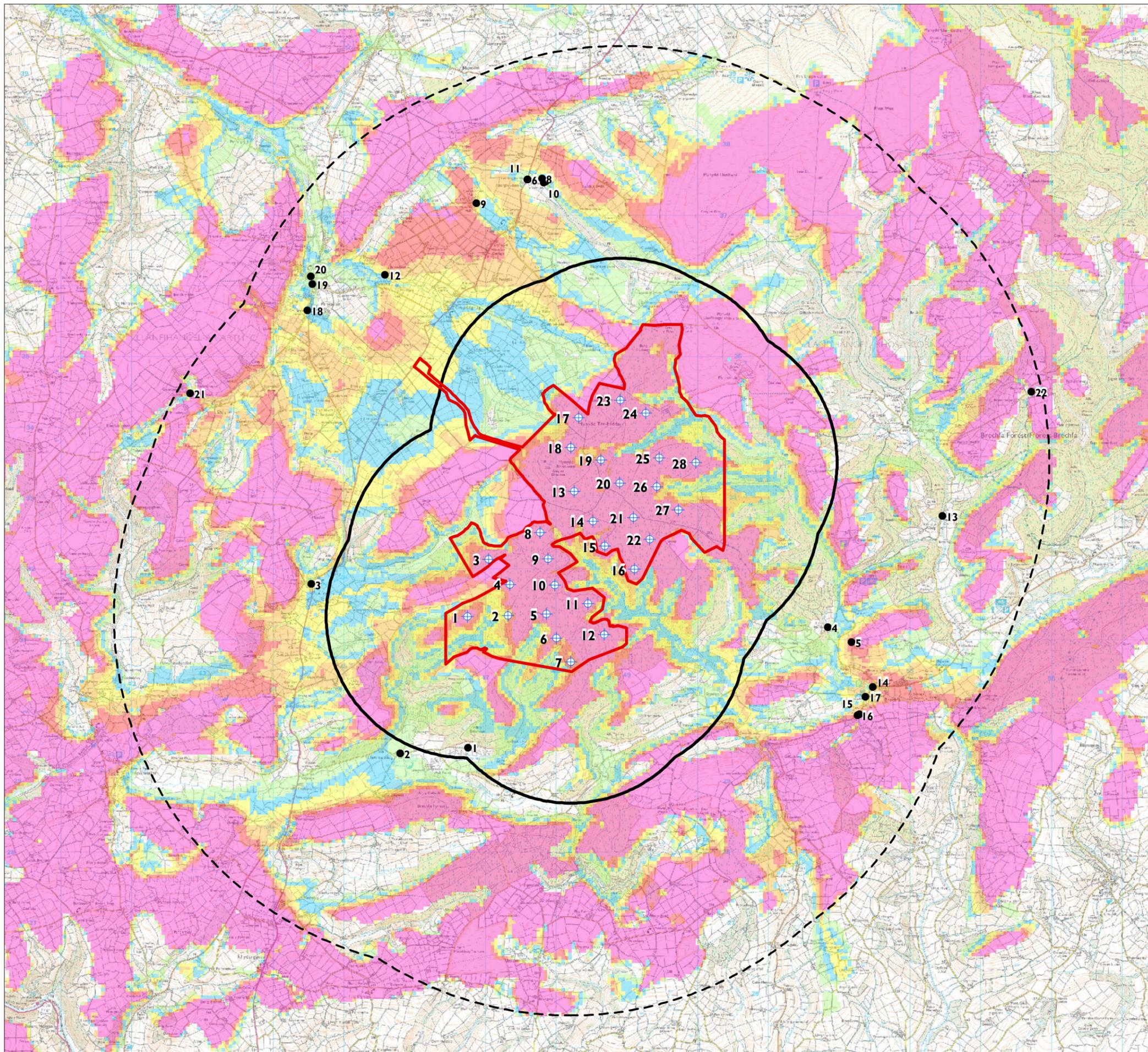
Figure 7.3: Built Heritage Assets (all of which are Grade II listed buildings) within 2km and 5km of turbines

Key

-  Site boundary
-  Turbine locations
-  2km buffer around turbines
-  5km buffer around turbines
-  Grade II listed buildings

Potential number of visible turbines:

-  1 - 5 turbines visible
-  5 - 10 turbines visible
-  10 - 15 turbines visible
-  15 - 20 turbines visible
-  20 - 24 turbines visible
-  24 - 28 turbines visible



Source: CgMs

Date: 15/07/2011
Revision: A

