

# Mynydd Carn-y-Cefn Wind Farm

## Appendix 8G: Information to support an assessment against Regulation 63 of the Conservation of Habitats and Species Regulations 2017

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### 1. Introduction

#### 1.1 Overview of Proposed Development

- 1.1.1 Pennant Walters Ltd is seeking planning permission for the construction and operation of a wind farm of up to eight turbines on land at Mynydd Carn y Cefn, Abertillery ('MCyC' or 'the Site') which qualifies as a Development of National Significance (DNS).
- 1.1.2 The Mynydd Carn y Cefn Wind Farm ('the Proposed Development') consists of a maximum of eight wind turbines, and also comprises associated infrastructure including internal wind farm tracks off a main access corridor, crane pads at each turbine location, turbine foundations, laydown and storage areas, underground power cables linking the turbines and the on-site substation, temporary construction compounds, and grid connection infrastructure, including an on-site substation and control building together with construction enabling works.
- 1.1.3 The Applicant has accepted a firm grid connection offer from Western Power Distribution (WPD), as the Distribution Network Operator (DNO) for a 33kV connection at Crumlin. The connection is likely to comprise between 1.5km and 2km of new line on wooden poles and a further 7.5km underground via ducting in the highway network. The 2019 amendments to the DNS legislation<sup>1</sup> specify that an overhead line would be a DNS where the voltage is 132kV or less and where it would be connected to a Welsh generating station, in this case the proposed wind farm.
- 1.1.4 The grid connection between the on-site substation and electricity grid will be agreed and delivered as a separate DNS application. Notwithstanding this, the potential environmental effects arising from this have been considered in this Habitat Regulations Assessment (HRA) for the proposed wind farm, using currently available information on the proposals.
- 1.1.5 The Site location is shown on **Figure 1.1 (Appendix A)**.

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<sup>1</sup> The Developments of National Significance (Procedure) (Wales) (Amendment) Order 2019 [online]. Available at <https://www.legislation.gov.uk/wsi/2019/290/contents/made> [Accessed 15 September 2021].

## 1.2 This report

- 1.2.1 There are three European designated nature conservation sites within 10km of the Proposed Development site boundary, Aberbargoed Grasslands SAC, Cwm Clydach Woodlands SAC and Usk Bat Sites/ / Safleoedd Ystlumod Wysg SAC.
- 1.2.2 Regulation 63 of The Conservation of Habitats and Species Regulations 2017 (as amended)<sup>2</sup> (the 'Habitats Regulations') states that if a plan or project is "(a) is likely to have a significant effect on a European site<sup>3</sup> or a European offshore marine site<sup>4</sup> (either alone or in combination with other plans or projects); and (b) is not directly connected with or necessary to the management of the site" then the competent authority must "...make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives" before undertaking, consenting or permitting the plan or project.
- 1.2.3 The process by which Regulation 63 is met is known as Habitats Regulations Assessment (HRA)<sup>5</sup>. An HRA determines whether there will be any 'likely significant effects' (LSE) on any European site as a result of a project's implementation (either on its own or 'in combination' with other plans or projects)<sup>6</sup> and, if so, whether there will be any 'adverse effects on site integrity'<sup>7</sup>.

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<sup>2</sup> The 2017 Regulations have been amended by the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* to reflect the UK's exit from the EU, although these largely carried forward the provisions and terminology of the 2017 Regulations and do not fundamentally alter their interpretation. The following sections therefore refer to the 2017 Regulations and (where appropriate for clarity) the relevant provisions of the Habitats Directive.

<sup>3</sup> The *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* largely carried forward the provisions and terminology of the 2017 Regulations, and so the term 'European site' is currently retained and for all practical purposes the definition is essentially unchanged. European sites are therefore: any Special Area of Conservation (SAC) from the point at which the European Commission and the UK Government agreed the site as a 'Site of Community Importance' (SCI) (if this was before 31 Jan 2020); any classified Special Protection Area (SPA); and any candidate SAC (cSAC). However, the term is also commonly used when referring to potential SPAs (pSPAs), to which the provisions of Article 4(4) of Directive 2009/147/EC (the 'new wild birds directive') are applied; and to possible SACs (pSACs) and listed Ramsar Sites, to which the provisions of the Habitats Regulations are applied a matter of Government policy (TAN 5 para. 5.1.3) when considering development proposals that may affect them. This also applies to areas identified, or required, as compensatory measures for adverse effects on any of the above sites. "European site" is therefore used in this document in its broadest sense, as an umbrella term for all of the above designated sites. Note, it is likely that this term will be supplanted at some point in the future although an appropriate UK-wide alternative has not yet been agreed (e.g. the NPPF in England has adopted the term 'Habitats sites' to refer collectively to those sites defined by Regulation 8; the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 has renamed the Natura 2000 network of sites as the 'National Site Network').

<sup>4</sup> 'European offshore marine sites' are defined by Regulation 18 of *The Conservation of Offshore Marine Habitats and Species Regulations 2017*; these regulations cover waters (and hence sites) over 12 nautical miles from the coast.

<sup>5</sup> The term 'Appropriate Assessment' has been historically used to describe the process of assessment; however, the process is more accurately termed 'Habitats Regulations Assessment' (HRA), with the term 'Appropriate Assessment' limited to the specific stage within the process.

<sup>6</sup> Also referred to as the 'test of significance'.

<sup>7</sup> Also referred to as the 'integrity test'.

- 1.2.4 The Welsh Ministers are the competent authority for the purposes of the Habitats Regulations in relation to applications for DNS.
- 1.2.5 Wood Group UK Ltd (Wood) has been commissioned by Pennant Walters Ltd to assist with the evidence gathering and assessment required to meet Regulation 63. This report is intended to provide the data and assessment information required for the screening of the Proposed Development, which can be referred to by Welsh ministers and the statutory consultees when assessing the proposals against Regulation 63. It includes:
- details of the scheme and identification of those environmental changes that could potentially affect European sites or interest features<sup>8</sup>;
  - details of the European sites considered at the screening stage, including information on the conservation objectives and the interest feature characteristics, distribution and sensitivities; and
  - an assessment of the effects of the scheme on those European sites and interest features that are vulnerable (i.e. both exposed and sensitive) to the effects of the scheme, alone and in combination with other plans and projects, to determine whether the scheme will result in any significant effects on any European sites.
- 1.2.6 This report is structured as follows:
- Section 2 – Scheme Proposals and Assessment Scope; this section summarises the proposals, setting out the anticipated construction methods and timings, and the potential pathways and 'zone of influence' for environmental changes associated with the scheme. The spatial scope of the assessment is then identified.
  - Section 3 – Screening: this section summarises the approach to screening and the results of the screening assessment.
  - Section 4 – Summary: this section summarises the results of the assessment, and suggests a conclusion for the screening assessment.

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<sup>8</sup> The European site interest features are the qualifying features for which the site is classified under the Habitats Directive (EC Directive 92/43/EEC), the Birds Directive (EC Directive 2009/147/EC) or the Ramsar convention; and the 'typical species' (for SACs) or within-site supporting habitats; note that features not associated with the site itself (e.g. non-designated habitats outside the site boundary) may also be important for the integrity of the site but may not be interest features of the site.

## 2. Scheme Proposals and Study Area

### 2.1 Development description

#### Wind Farm development proposals

- 2.1.1 The Proposed Development is a wind farm consisting of a maximum of eight wind turbines, each with a three-bladed rotor with a rotor diameter of up to 150m, a hub height of 105m and maximum height to blade tip of 180m.
- 2.1.2 The application also comprises associated infrastructure including internal wind farm tracks, crane pads, temporary construction compounds, laydown and storage areas and grid connection infrastructure, including an on-site substation.
- 2.1.3 The wind farm will be designed with an operational life of 25 years. At the end of this period the developer has three options: to decommission the wind farm and dismantle and remove the turbines; to apply for an extension to the operating period using existing equipment; or apply to install new equipment on the site. For the purposes of this assessment it is assumed that the wind farm would be decommissioned.
- 2.1.4 The current wind farm layout, including access tracks, temporary construction compound and substation are shown on **Figure 2.1a** and **2.1b (Appendix A)**.

#### Site access

- 2.1.5 The principal point of access into the site is via a forestry haul road off the A4046 Aberbeeg Road to the west of the Site.

#### Grid connection

- 2.1.6 The applicant has received an offer of a grid connection from WPD. The connection between the on-site substation and the electricity grid at Crumlin will be the subject of a separate application, however potential effects from the grid connection are considered in this technical note for clarity and completeness.
- 2.1.7 **Figure 2.2 (Appendix A)** illustrates the corridor (approximately 27.4ha) within which the proposed connection would be routed, between the Site and a point which intersects with the existing national grid overhead line network, near the proposed access to the Site.
- 2.1.8 The assessment of potential effects from the grid connection is based on desk-based assessments and a worst-case scenario of a 33kV overhead line on wooden poles. However this is subject to change and will be confirmed in the application for the grid connection works.

## 2.2 Construction Activities

### Enabling works

- 2.2.1 Enabling works will be necessary prior to the main construction phase commencing, including:
- Geotechnical investigations: excavation of trial pits or boreholes.
  - Upgrading of existing tracks and construction of new access tracks and passing places inter-linking the turbine locations and sub-station; this will require import of suitable roadstone.
  - Any required upgrades to public roads, including road widening to allow the abnormal loads to negotiate corners, protection of any below ground services and the temporary removal or resiting of infrastructure (i.e. signage).
  - Establishment of site compounds.

### Wind turbines

- 2.2.2 The turbines of the Proposed Development would be three bladed variable speed pitch regulated, with the rotor and nacelle mounted on a cylindrical tower. For the reference turbine used to inform this assessment, an indicative 4.2MW machine has been considered with a hub height of up to 105m and rotor diameter of 150m.
- 2.2.3 Wind turbine towers, nacelles and blades will be transported to site via low bed trailers, come incorporating rear steering. The towers will be delivered in three or four sections, which will be stored at each turbine lay-down area until lifted into position. Some storage of components may also be required at the site compound dependent on weather conditions and access track construction progress at the time of delivery.
- 2.2.4 Two teams will carry out erection, each using either two road-going cranes (of approximately 100 tonne capacity and 500 or 800 tonne capacity) or crawler cranes. The construction contractors would determine the actual cranes used, together with the exact programme and number of teams on site.

### Wind turbine foundations

- 2.2.5 Foundations will usually comprise a reinforced concrete base slab with dimensions of approximately 20m diameter x 4m depth. This will include a circular steel support plinth to suit the base profile of the wind turbine steel tower and will then be overlaid by stone and previously excavated overburden and dressed back with topsoil to allow re-vegetation.

### Crane pads

- 2.2.6 Each wind turbine requires an area of hardstanding to be built adjacent to the turbine foundation. The total area of hardstanding at each turbine location including the turbine foundations and the crane pad will be sized to suit the turbine manufacturer's requirements but will be approximately 2,500m<sup>2</sup>.

## Internal wind farm tracks

- 2.2.7 Approximately 6.3km of site access tracks will be required which includes 2.9km of existing site tracks and forestry track from the proposed Site access off the A4046. The track construction will be generally approximately (~) 5m wide, ~0.6m deep (dependent of ground conditions), with a ~2m grass verge either side.

## Electrical connection

- 2.2.8 Underground cables will link the turbines to each other and to the on-site substation. Detailed construction and trenching specifications will depend on the ground conditions encountered at the time, but typically cables will be laid in a trench ~750mm deep and ~450mm wide. The site substation will connect the wind farm into the national distribution system on site (to be via a 33kv connection in the substation compound).
- 2.2.9 The arrangement of the substation, to be located adjacent the Hafod y Dafal farm buildings, would depend on WPD's requirements and shall be determined by the rating of the grid connection and requirement for a step-up transformer.

## Site accommodation and construction compounds

- 2.2.10 A temporary site office comprising a portacabin, a single parking space and a vehicle layby would be located as close to the Site entrance off the A4046 as possible. The location of the main construction compound is illustrated on **Figure 2.1 (Appendix A)**. This would be a maximum of 50m x 50m in area but this may be reduced depending on site requirements at the start of the construction phase. The construction compound would be lit with security lighting, which would face inwards to minimise light pollution.

## Development timescales and programme

- 2.2.11 It is anticipated that the construction period for the Proposed Development would be approximately 22 months in duration. The start date for construction activities is largely dependent upon the date that consent might be granted and grid transmission availability. Construction activities have been assumed to take place between 07:00 to 19:00 hours on weekdays and 07:00 to 13:00 on Saturdays.

## 2.3 Operation

- 2.3.1 Wind turbines start to generate electricity at a wind speed of about 4m/s, their output increasing up to their maximum rated power at a wind speed of about 12m/s. As the wind speed increases further, the output is limited to the maximum until the wind speed reaches 25m/s when the wind turbine shuts down automatically.
- 2.3.2 Turbines would be maintained by a local team of technicians. Turbines would be typically maintained at 6 monthly internals, with each service requiring on average two technicians over two days per turbine. Technicians operate in transit vans or 4x4 vehicles.

## 2.4 Decommissioning

### Wind farm decommissioning requirements

- 2.4.1 There are three options available at the end of the operational lifetime of the Proposed Development. As wind energy is a renewable resource and thus a sustainable method of generation, the first to apply for an extension to the operating period using existing equipment the second is to re-power the site with new machines, which would require a new application and a further ES. The third option is to remove the wind turbines and re-instate the Site.
- 2.4.2 Wind turbines (towers, nacelle, hub, blades and electrical kiosk) can be dismantled using a crane and removed from site. When dismantling and removing the turbines the bases would be broken out to below ground levels and all cables cut at depth below ground level and left in the ground. Roads would either be left for use by the landowner or covered with topsoil. No stone would be removed from the Site. The decommissioning works are estimated to take six months. This approach is considered to be less environmentally damaging than seeking to remove foundations and cables entirely.
- 2.4.3 The control building, substation and associated equipment would be removed and the components reused or recycled. The buried distribution cables would be de-energised and would be cut off below ground level at the ends. Any disturbed areas would be reinstated and re-vegetated.
- 2.4.4 Following decommissioning of the Proposed Development, some wind farm tracks may remain in perpetuity for future use by landowners, other stakeholders and for recreational purposes. It is also considered that the disturbance associated with their removal and disposal of the material would have a much greater environmental effect than leaving them in situ.
- 2.4.5 There may well be other users of the wider transmission system at the end of the project. In this case, the relevant circuits would not be removed when the Proposed Development is decommissioned.

### Embedded environmental measures

- 2.4.6 A number of standard construction best-practice measures are incorporated into the proposals; these are detailed in the Draft Construction Environment Management Plan (CEMP)<sup>9</sup> but will include:
- dust and run-off control measures;
  - control of fuels and oils, including drip trays beneath plant and storage in designated locations with appropriate bunds;
  - pre-works surveys for protected or conservation-notable species; and
  - traffic speeds will be limited to 10mph on site.

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<sup>9</sup> Wood (2022). *Mynydd Carn y Cefn Wind Farm: Draft Construction Environmental Management Plan*. Wood Group UK Limited.

- 2.4.7 It should be noted that these are standard control measures that would be implemented irrespective of the presence (or not) of specific ecological receptors, including designated sites, and so are considered to be an inherent part of the proposal being screened<sup>10</sup>.

## 2.5 Environmental changes and the 'zone of influence'

### Principal environmental changes associated with scheme

- 2.5.1 The integrity of ecological receptors, including the features of designated sites, may be put under pressure by various environmental changes associated with the construction and operation of developments if the receptor is both exposed and sensitive to those changes. The 'zone of influence' of the Proposed Development due to these aspects will depend on a number of factors, although it is possible to estimate precautionary areas where environmental changes due to the scheme may be measurable and sufficient to affect an ecological receptor.
- 2.5.2 The integrity of ecological receptors, including the features of designated sites, may be put under pressure by various environmental changes associated with the construction and operation of developments if the receptor is both exposed and sensitive to those changes (see **Table 2.1** for common environmental changes or effect pathways associated with schemes in the terrestrial environment). The 'zone of influence' of the Proposed Development due to these aspects will depend on a number of moderating factors, although it is possible to estimate precautionary areas where environmental changes due to the scheme may be measurable and sufficient to affect an ecological receptor.

Table 2.1 Typical effect pathways and environmental changes associated with terrestrial development

Environmental aspect / pressure	Common environmental changes / pathways associated with aspect
<b>Hydrological changes</b>	Temperature changes Salinity changes Water flow changes Flood regime changes
<b>Pollution and other chemical changes</b>	Non-synthetic and synthetic compound contamination Radionuclide contamination Introduction of other substances (solid, liquid or gas) De-oxygenation Nutrient enrichment Organic enrichment
<b>Physical loss</b>	Physical loss of habitat Physical change to another habitat

<sup>10</sup> This is relevant in the context of the "People Over Wind" judgement (*Court of Justice of the European Union (ECJ) Case C-323/17 - People over Wind, Peter Sweetman v Coillte Teoranta*, preliminary ruling) which has altered how mitigation and avoidance measures are accounted for in an HRA; see also Section 3.

Environmental aspect / pressure	Common environmental changes / pathways associated with aspect
<b>Physical damage</b>	Habitat structure changes Changes in suspended solids Siltation rate changes
<b>Other physical pressures</b>	Litter Electromagnetic changes Noise changes Introduction of light Barrier to species movement Death or injury by collision
<b>Biological pressures</b>	Visual disturbance Genetic modification and translocation of indigenous species Introduction or spread of non-indigenous species Introduction of microbial pathogens Exploitation / harvesting of species Removal of non-target species during exploitation / harvesting

## 3. Screening

### 3.1 Overview of Approach

#### Data collection

- 3.1.1 A baseline for each European site within the study area (see Sections 4-6 below) is established. This includes a contextual overview of the site; and information on the interest features; their condition; and the current pressures and threats identified for each site. These are based on the citations, Core Management Plans, information on the condition of the underlying SSSIs (where this information is available), and any supplementary advice provided by Natural Resources Wales.
- 3.1.2 'Typical species' (for SACs), within-site supporting habitats, and designated or non-designated 'functional habitats' that may be relevant to site integrity are identified where possible.
- 3.1.3 A 'typical species' is broadly described by EC guidance as being any species (or community of species) which is particularly characteristic of, confined to, and/or dependent upon the qualifying Annex I habitat feature at a particular site. This may include those species which:
- are critical to the composition or structure of an Annex I habitat (e.g. constant species identified by the National Vegetation Classification (NVC) community classification);
  - exert a critical positive influence on the Annex I habitat's structure or function (e.g. a bioturbator (mixer of soil/sediment), grazer, surface borer or predator);
  - are consistently associated with, and dependent upon, the Annex I habitat feature for specific ecological needs (e.g. feeding, sheltering), completion of life-cycle stages (e.g. egg-laying) and/or during certain seasons/times; or
  - are particularly distinctive or representative of the Annex I habitat feature at a particular site.
- 3.1.4 Within-site supporting habitats are those which support the population(s) of the qualifying species and which are therefore critical to the integrity of the feature.
- 3.1.5 'Functional habitats' are generally taken to be habitats or features outside a European site boundary that are important or critical to the functional integrity of the site habitats and / or its interest features. These might include, for example:
- 'buffer' areas around a site (e.g. dense scrub areas preventing public access; areas of land that reduce the effects of agricultural run-off; etc.);
  - specific features or habitats relied on by mobile species during their lifecycle (e.g. high-tide roosts for waders; significant maternity colonies for bats known to hibernate within an SAC; areas that are critical for foraging or migration; etc).

- 3.1.6 Where appropriate, baseline survey data is also collected to inform the screening and (if necessary) appropriate assessment. The scope of such surveys is set out in the assessment sections for each site.

## Assessment

- 3.1.7 The 'screening' test or 'test of significance' is a low bar, intended as a trigger rather than a threshold test: a proposal should be considered 'likely' to have an effect if the competent authority is unable (on the basis of objective information) to exclude the possibility that the proposal could have significant effects on any European site, either alone or in combination with other plans or projects; an effect will be 'significant' simply if it could undermine the site's conservation objectives.
- 3.1.8 An 'appropriate assessment' stage (if required) allows for a closer examination of the project where the effects are significant or uncertain<sup>11</sup> to determine whether any European sites will be subject to 'adverse effects on integrity' as a result of the plan's implementation. The scope of any 'appropriate assessment' stage is not set, however, and such assessments need not be extremely detailed: they must simply be 'appropriate' to the effects and proposal being considered, and sufficient to ensure that there is no reasonable doubt that adverse effects on site integrity will not occur (or sufficient for adverse effects to be appropriately quantified should Stages 3 and 4 be required).
- 3.1.9 The geographic scope of the screening assessment is based on the anticipated environmental changes associated with the scheme (see Section 2). The screening assessment initially excludes those sites or features that will self-evidently be unaffected by the proposals due to the interest features either being clearly not exposed to the likely effects, or (more commonly) not sensitive to them (taking into account any relevant 'moderating factors' but not specific mitigation measures (see below).
- 3.1.10 Potential pathways for effects (i.e. where a feature is potentially exposed and sensitive to a particular environmental change) are then examined to determine whether the possibility of the site's conservation objectives being undermined can be objectively excluded. 'Effect pathways' (e.g. increases in dust deposition) are considered for the scheme 'alone' and (where the effect alone is not nil or entirely nugatory) 'in combination' with other activities locally.
- 3.1.11 In combination effects might occur where the environmental impacts associated with two or more schemes overlap spatially and temporally (and so operate additively to increase the magnitude of change, e.g. dust deposition from two developments affecting the same habitats), are sequential (so increasing the duration of an impact), or synergistic in some way (e.g. changes in both lighting and noise that affect bat species, perhaps at different locations or points in their lifecycle). In this instance, the 'zone of influence' for the Proposed Development is 10km and so the in combination assessment has included a review of extant planning applications within 10km to identify any that may result in environmental changes that coincide with the 'zone of influence' for the Proposed Development, taking into account the sensitivities of the European site interest features.

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<sup>11</sup> i.e. 'likely significant effects', where the possibility of significant effects cannot be excluded.

- 3.1.12 It should be noted that the “People Over Wind” judgement<sup>12</sup> has altered how mitigation and avoidance measures are accounted for in an HRA. The judgement states that “...it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site”. This contrasts with established practice in this area whereby avoidance and mitigation measures were typically considered at screening.
- 3.1.13 The broader context of the ‘People over Wind’ case suggests that the judgement is principally focusing on those instances where specific measures are included in a scheme or otherwise relied on to avoid a specific effect that has been identified, and which would otherwise be significant; the judgement argues that this presupposes that it is likely that the site is affected significantly, and that the effectiveness of any such measures should therefore be examined through an appropriate assessment stage. The use of “intended to...” in the judgement therefore has some relevance.
- 3.1.14 Many fundamental aspects of a scheme might be interpreted as ‘avoidance’ or ‘mitigation’ measures if viewed solely in terms of their implications for European sites. For example, selecting LED lighting for a site would likely be made purely on performance grounds, although it might be interpreted as mitigation if there is an SAC designated for bats nearby. Clearly, however, a detailed examination of the engineering choices made during design to see if they might count as ‘mitigation’ for screening purposes would not be proportionate, or (arguably) consistent with the intent of the Habitats Directive.
- 3.1.15 In this instance, therefore:
- The screening **does not** take account of any measures that are included in response to a specific identified effect on a European site, and which are intended to avoid or reduce that effect.
  - Design or implementation choices made for engineering reasons, or which would be required irrespective of the presence of any European sites (either legally, or as a matter of standard practice), are considered to be an inherent part of the proposal being screened.
  - External anthropogenic moderating factors or protocols that incidentally ensure that potential effects are avoided (e.g. the absence of drainage pathways due to existing drainage layouts; or the ongoing implementation of agreed pollution-prevention measures for existing or coincident operations) are simply taken to be part of the baseline.

## Study Area

- 3.1.16 The ‘zones of influence’ for a development will vary according to the aspect being considered (for example, noise effects would rarely extend more than a few hundred metres from the source), and so it is not usually appropriate to employ ‘arbitrary’ spatial buffers to determine those European sites that should be considered within an HRA.

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<sup>12</sup> Court of Justice of the European Union (ECJ) Case C-323/17 - People over Wind, Peter Sweetman v Coillte Teoranta, preliminary ruling.

- 3.1.17 However, as distance is a strong determinant of the scale and likelihood of most effects, the considered use of a suitably precautionary search area as a starting point for the screening (based on a thorough understanding of both the development outcomes and European site interest features) has some important advantages. Using buffers allows the systematic identification of European sites using GIS, so minimising the risk of sites or features being overlooked, and also ensures that sites where there are no reasonable impact pathways can be quickly and transparently excluded from any further screening or assessment. It also has the significant advantage of providing a consistent point of reference for consultees following the assessment process, allowing the 'screening' to focus on the potential effects, rather than on explaining why certain sites may or may not have been considered in relation to a particular aspect of the plan.
- 3.1.18 The study area for the HRA is based on the scale, type and location of the Proposed Development, the moderating factors outlined in **Table 2.1**, and information on the habitats within the 'zone of influence' for the scheme (and hence their likely value to mobile European site qualifying features); the screening therefore explicitly considers:
- all European sites within 10km of the site boundary (see **Table 3.1**); and
  - any additional sites identified by NRW following consultations undertaken for the EIA of this development.
- 3.1.19 This is considered to be a suitably precautionary starting point for the assessment of the scheme. This area includes the following European sites:

**Table 3.1** European sites within the study area

Site	Summary and location relative to MCyC
<b>Aberbargoed Grasslands SAC</b>	Grassland site designated for marsh fritillary butterfly ~4.5km to the south-west of MCyC; not hydrologically linked.
<b>Cwm Clydach Woodlands SAC</b>	Beech woodland ~7.1km to the north of MCyC; not hydrologically linked.
<b>Usk Bat Sites/ Safleoedd Ystumod Wysg SAC</b>	Limestone uplands with caves supporting lesser horseshoe bat ~7.1km to the north of MCyC; not hydrologically linked.

- 3.1.20 **Note, it assumed that there will be 'no effect' (and hence no possibility of 'in combination' effects) on European sites not included within the study area.**
- 3.1.21 The following sections summarise the screening assessments for the sites noted in **Table 3.1**.

## 4. Screening: Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC

### 4.1 Site Overview

- 4.1.1 This site is primarily a large limestone cave system with associated upland habitats including moorland, bogs and woodland; the site includes a number of important roosts (hibernation and maternity) for lesser horseshoe bats.
- 4.1.2 The SAC consists of four component SSSIs:
- Mynydd Llangatwg/ Mynydd Llangattock SSSI;
  - Siambre Ddu SSSI;
  - Buckland Coach House & Ice House SSSI; and
  - Foxwood SSSI.
- 4.1.3 A broad mosaic of habitats is present across the SAC including bogs, marshes and fens (40.2%), heath and scrub (32.2%), alpine and sub-alpine grassland (3.9%), dry grassland and steppes (3.8%), broad-leaved deciduous woodland (3.4%) and inland rocks (3%).
- 4.1.4 Large parts of the SAC are made up by Mynydd Llangatwg which comprises open moorland and bog, and represents one of the largest areas of exposed upland limestone crag in south Wales.
- 4.1.5 A large portion of the limestone escarpment is comprised by Craig y Cilau National Nature Reserve (NNR), which comprises areas of limestone grassland, woodland, scree and scrub with a network of caves and sinkholes which have formed beneath the Mynydd Llangatwg.
- 4.1.6 The NNR has been established primarily to protect the lesser horseshoe bat roosts in the caves, a primary reason for selection of this site as a SAC. The site also supports a notable plant assemblage including alpine enchanter's-nightshade, small-leaved lime, limestone fern, several species of whitebeam and endemic hawkweeds.
- 4.1.7 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site also include areas of European dry heath, degraded raised bogs and blanket bog, and Tilio-Acerion forest along the cliffs, which support rare whitebeams and are intermixed with beechwood in the Clydach Gorge.

### 4.2 Interest Features and Conservation Objectives

- 4.2.1 The SAC has the following qualifying features<sup>13</sup>:
- Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

<sup>13</sup> [Usk Bat Sites/ Safleoedd Ystlumod Wysg - Special Areas of Conservation \(jncc.gov.uk\)](https://jncc.gov.uk) (Accessed on 16/03/2022)

- ▶ European dry heaths
- ▶ Degraded raised bogs still capable of natural regeneration
- ▶ Blanket bogs
- ▶ Calcareous rocky slopes with chasmophytic vegetation
- ▶ Caves not open to the public
- ▶ Tilio-Acerion forests of slopes, screes and ravines
- Annex II species that are a primary reason for selection of this site
  - ▶ Lesser horseshoe bat *Rhinolophus hipposideros*.

4.2.2 The Core Management Plan for the site identifies typical species for some of the qualifying habitats, or species that are taken as 'positive indicators' of feature quality; these are typically included in the 'vision' for the conservation objectives.

4.2.3 The Core Management Plan does not identify specific non-designated 'functional habitat' that may be critical to site integrity, although the importance of the surrounding habitats to **Lesser horseshoe bats** is noted and it is likely that many non-SAC roost sites in the region (certainly most maternity and hibernation sites) would be considered 'functionally linked' to the site (i.e. important to site integrity).

4.2.4 The Core Management Plan for the SAC sets out Conservation Objectives that benchmark Favourable Conservation Status for each feature; for the Welsh European sites these objectives comprise a 'vision' for the the feature (the key component of the objective) and (where relevant) performance indicators by which the objectives may be measured. These objectives are available in the Core Management Plan for the site<sup>14</sup>.

## 4.3 Pressures and Threats

4.3.1 The main pressures and threats to site integrity are not explicitly identified in the Core Management Plan for the site, but can be inferred from the management techniques that are required to achieve the conservation objectives for the SAC; the main threats and pressures to the site integrity of the SAC are the following:

- Recreational disturbance (fly-tipping)
- Inappropriate habitat management
- Inappropriate grazing levels; and
- Invasive species.

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<sup>14</sup> <https://naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%202008.pdf>  
(Accessed on 16/03/2022)

## 4.4 Assessment of Effects

### Effect Pathways and Excluded Features

- 4.4.1 The **Usk Bat Sites/ Safleoedd Ystumod Wysg SAC** is located over 7km from MCyC; there are no pathways by which the Conservation Objectives for the site's habitat interest features (i.e. qualifying habitats and typical species) could be undermined by environmental changes associated with the proposed development (e.g. dust, run-off, hydrological changes, etc.). Therefore, **the MCyC scheme will have 'no effects' on the following qualifying features** (and so no possibility of 'in combination' effects):
- European dry heaths.
  - Degraded raised bogs still capable of natural regeneration.
  - Blanket bogs.
  - Calcareous rocky slopes with chasmophytic vegetation.
  - Caves not open to the public.
  - Tilio-Acerion forests of slopes, screes and ravines.
- 4.4.2 These features are not considered further.
- 4.4.3 The potential for the MCyC development to undermine the conservation objectives for the site in relation to **Lesser horseshoe bats** is considered in the following sections; this might occur through:
- loss of habitats used for foraging, commuting or roosting;
  - disruption to roosting bats, flight lines or behavioural alterations due to construction and operation noise and lighting and / or
  - increased mortality through barotrauma<sup>15</sup> or collisions with turbines.
- 4.4.4 It should be noted that these effects will typically operate 'in combination' to affect the use of the landscape by bats, and therefore the assessment of effects considers the overall effect of these factors on lesser horseshoe bat populations.

### Baseline Survey and Consultation

- 4.4.5 To inform the baseline data collection, HRA and EIA process consultation with Natural Resources Wales (NRW) has been undertaken including submission of scoping report and a technical engagement meeting as detailed in **Table 4.1** and **Table 4.2**.

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<sup>15</sup> Damage to lungs caused by air pressure variations associated with the blades.

Table 4.1 Summary of NRW Scoping Direction response on HRA/Usk Bat SAC

Consultee	Consideration	How addressed in this HRA
NRW	<p>Designated Sites:</p> <p><i>"We note the location of the Usk Bat SAC within 7.4km of the proposal. We also note bat surveys to date have identified a lesser horseshoe hibernation roost within 800m of the proposal. As identified within the report, we welcome a Habitat Regulations Assessment to be undertaken as part of the ES. We would advise that the hibernation roost identified is included in this consideration (supported with the additional surveying as referred to above) as it is likely to include bats that form the SAC population even though it is not within the SAC boundary."</i></p>	<p>A Habitat Regulations Assessment has been undertaken with regards to the Usk Bat SAC. The lesser horseshoe hibernation roost outside the Site boundary is included in this consideration and supported with additional surveying as referred to by NRW. The surveys conducted to establish the status of this roost and lesser horseshoe bat populations on are site are detailed in the bat survey report (<b>ES, Appendix 8B</b>).</p>

Table 4.2 Technical engagement on the biodiversity assessment

Consultee	Consideration	How addressed in this HRA
NRW	<p>Wood held a technical meeting with NRW on 7<sup>th</sup> September 2021. The bat survey approach was discussed outlining surveys completed to date and where surveys had taken into account the NRW scoping response including with regards to the lesser horseshoe hibernation roost and surveys in support of the HRA.</p>	<p>The bat survey approach agreed within the meeting is presented as part of the Draft ES and HRA. Impacts on lesser horseshoe bats are considered as discussed in relation to the Usk bat sites Special Area of Conservation.</p>

- 4.4.6 A comprehensive suite of bat surveys have been undertaken on and adjacent to the Proposed Development to inform the HRA on the **Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC** and the environmental impact assessment (EIA) and overview of these surveys is presented in **Table 4.3** below.

Table 4.3 Data sources used to inform the biodiversity assessment

Survey type	Scope of survey	Survey status	Location of survey report
Bat roost	<p>Bat roost surveys have focussed on establishing which trees and built structures inside the Site boundary and within 275m of it support roosting bats. This has been achieved via a mix of external and internal inspections and static monitoring on built structures and ground based and climbing inspections on</p>	<p>Survey complete (May 2020 to October 2021)</p>	<p><b>Draft ES Appendix 8B<sup>20</sup></b></p>

<sup>20</sup> Wood (2022). *Mynydd Carn y Cefn Wind Farm: Draft Environmental Statement*. Wood Group UK Limited.

Survey type	Scope of survey	Survey status	Location of survey report
	<p>trees with emergence/re-entry surveys on both trees and built structures as required.</p> <p>Surveys have followed the Bats and Onshore Wind Turbines Guidelines (2019)<sup>16</sup>, Bat Conservation Trust Good Practice Guidelines (2016)<sup>17</sup>, Bat Tree Habitat Key, 2013<sup>18</sup>, and British Standard 8596:2015: Surveying for bats in trees and woodland, 2016<sup>19</sup>.</p>		
<b>Bat activity</b>	<p>Automated detector surveys were completed over 10 days at turbine locations in spring, summer and autumn 2021 and three manual transect surveys were completed monthly between May and October 2020. Additional automated detector surveys were undertaken at the eight turbine locations between April and June 2021, completing 10 days monitoring in each month to provide activity data where turbine locations had moved since monitoring was undertaken. An additional transect survey was undertaken between August and October 2021 in proximity to a lesser horseshoe bat hibernation roost to determine levels of activity.</p> <p>Surveys have followed the Bats and Onshore Wind Turbines Guidelines (2019) and Bat Conservation Trust Good Practice Guidelines (2016).</p>	Survey complete (May 2020 to October 2021)	<b>Draft ES Appendix 8B</b>

## Survey Results

- 4.4.7 Surveys have recorded lesser horseshoe bats on and adjacent to the Site, due to the proximity to the SAC these bats are considered to contribute to the population for which the **Usk Bat Sites/ Safleoedd Ystumod Wysg SAC** is notified. The relevant survey results are detailed in **Appendix 8B to the ES**, with key information (locations of roosts, and tree removal areas) provided in **Appendix A to this report**.
- 4.4.8 A lesser horseshoe hibernation and assumed maternity roost (**reference B6, Figure 3.1, Appendix A**) was recorded outside the Site boundary (750m north-west from the nearest turbine (turbine 1) and 900m north of the Grid Connection corridor); this comprised a

<sup>16</sup> SNH, NE, NRW, Renewable UK, Scottish Power Renewables, Ecotricity Ltd, University of Exeter and BCT *et al.* (2019) *Bats and onshore wind turbines: survey, assessment and mitigation*.

<sup>17</sup> Collins (ed.). Bat surveys for professional ecologists: Good practice guidelines. 3rd Edition. London: Bat Conservation Trust, 2016.

<sup>18</sup> H. Andrews. Bat roosts in trees: a guide to identification and assessment for tree-care and ecology professionals. Exeter: Pelagic Publishing, 2018

<sup>19</sup> British Standards Institution. BS 8596:2015: Surveying for bats in trees and woodland. London: BSI. 2015.

fissure/cave structure located in woodland. During static detector monitoring in January and February 2021, 77 lesser horseshoe passes were recorded at the cave entrance; between August to October 2021, 5958 lesser horseshoe passes were recorded showing high levels of use by this species over the summer/autumn period.

- 4.4.9 A static detector was placed adjacent to built structure **B13 (Figure 3.1, Appendix A)**, located outside the Site boundary approximately 300m east of the closest turbine (8) in a woodland valley which separates the two southern halves of the Site. Over June, July and September a total of 425 lesser horseshoe passes were recorded; these were outside the average emergence time for lesser horseshoe bats indicating the structure was unlikely to be a roost although the results showed this wooded valley is used for commuting and foraging by lesser horseshoe bats.
- 4.4.10 Static monitoring at turbine locations across 2020 and 2021 identified an overall 'low'21 level of activity at turbine locations. Lesser horseshoe bats were recorded at all turbine locations with the exception of Turbines 4 and 5, with the highest number of passes recorded at Turbine 2 in 2020 (an average of 1.8 passes per night across May, July and September) and Turbine location 1 and 2 in 2021 (an average of 0.33 passes per night across April, May and June). Although lesser horseshoe bats can be under recorded during detector surveys, high levels of activity were recorded at woodland locations outside the Site boundary using the same static detector recording method, and so the low level of activity at the turbine locations is considered accurate.
- 4.4.11 Walked monthly transect surveys conducted across the Site between May and October 2020 incorporating turbine locations and working areas recorded no lesser horseshoe passes. In 2021 a transect was designed to incorporate potential bat flight lines which may link the confirmed hibernation roost B6 to the Site and nearest turbine location; one lesser horseshoe pass was recorded over the survey period (transects in August, September and October 2021).
- 4.4.12 Lesser horseshoe bats are associated with sheltered valleys with extensive deciduous woods or dense scrub, close to roost sites (Bontadina et al., 200222); this corresponds with the data recorded during surveys, with high levels of activity in the sheltered broadleaved and mixed woodland areas outside the Site boundary and low levels of activity within the Site where habitats are sub-optimal for this species, being dominated by well grazed, open, semi improved and improved grasslands with limited connective features.
- 4.4.13 In summary although lesser horseshoe bats have been recorded on Site, the habitats within the Site boundary are used only infrequently by this species with low or no activity at turbine locations. The broadleaved woodland habitats outside the Site boundary are more suitable and support higher levels of activity including a confirmed maternity/hibernation roost to the northwest. The confirmed roost B6 outside the Site is considered of 'National (Wales)' importance, the habitats within the Site boundary is considered to be of 'county' importance for lesser horseshoe bats.

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<sup>21</sup> Based on Ecobat criteria, ecobat is a standardised method of interpreting bat activity data, it provides a numerical indicator of the relative importance of a nights' worth of bat activity by comparing it with a regional and national database.

<sup>22</sup> Bontadina, F., H. Schofield & B. Naef-Daenzer. 2002. Radio-tracking reveals that lesser horseshoe bats (*Rhinolophus hipposideros*) forage in woodland. *Journal of Zoology* 258: 281-290.

- 4.4.14 The habitats within the Grid Connection corridor are considered suboptimal for lesser horseshoe comprising predominantly of managed conifer plantation with Scots pine and Sitka spruce dominant with minimal species and canopy layer diversity, and a bare understorey.

## Conservation Objectives

- 4.4.15 The Core Management Plan for the SAC sets out Conservation Objectives that benchmark Favourable Conservation Status for each feature; for the Welsh European sites these objectives comprise a 'vision' for the feature (the key component of the objective) and (where relevant) performance indicators by which the objectives may be measured.
- 4.4.16 The vision for the **Lesser horseshoe bat** feature is set out in **Table 4.4** below:

**Table 4.4** Vision for favourable conservation status for features within or near extension area

Feature	Conservation Objectives / Vision for Favourable Conservation Status
<b>Lesser horseshoe bats</b>	<p>The feature will be at FCS where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• The site will support a sustainable population of lesser horseshoe bats in the River Usk area;</li> <li>• The population will be viable in the long term, acknowledging the population fluctuations of the species;</li> <li>• Buildings, structures and habitats on the site will be in optimal condition to support the populations;</li> <li>• Sufficient foraging habitat is available, in which factors such as disturbance, interruption to flight lines, and mortality from predation or vehicle collision, changes in habitat management that would reduce the available food source are not at levels which could cause any decline in population size or range;</li> <li>• Management of the surrounding habitats is of the appropriate type and sufficiently secure to ensure there is likely to be no reduction in population size or range, nor any decline in the extent or quality of breeding, foraging or hibernating habitat;</li> <li>• There will be no loss or decline in quality of linear features (such as hedgerows and tree lines) which the bats use as flight lines;</li> <li>• There will be no loss of foraging habitat use by the bats or decline in its quality, such as due to over-intensive woodland management; and</li> <li>• All factors affecting the achievement of the above conditions are under control</li> </ul>

- 4.4.17 The effects of the scheme are considered in the context of these objectives.

## Permanent or temporary land-take/changes to habitats

### Wind Farm development

- 4.4.18 The Wind Farm Development would affect open upland habitats (grassland etc.) small areas of plantation woodland and isolated trees. Some of these habitat changes would be long-term (either permanent for the lifetime of the scheme or involving tree removal that will not be offset in the short-term) and could affect the value of the site for foraging bats; however, the effects of habitat loss on the lesser horseshoe bats would be negligible as discussed below.

- 4.4.19 Loss of roosts or roosting opportunities: the tree areas adjacent to the access tracks which would be felled (**Figure 3.2, Appendix A**) have been surveyed for bats and there is no evidence of potentially notable bat roosts. The confirmed hibernation/maternity roost is 750m NW from the closest works location (Turbine 1). There are no features within the development footprint of the wind farm area that are suitable for roosting lesser horseshoe bats. As a result, the Wind Farm development would have no effect on the availability or quality of roosting opportunities locally.
- 4.4.20 **Loss of foraging or commuting habitat:** the direct effect of habitat loss due to the Wind Farm development on lesser horseshoe foraging and commuting opportunities would be inconsequential. The existing network of farm tracks on the Site would be utilised where possible (only 3.4km of the 6.3km of track required for the wind farm would be new), and vegetation removal required for access track installation and for Turbines and crane pads would primarily affect semi-improved grazed grassland habitats. Any woody vegetation removal would be very limited and restricted to isolated trees which are not part of key foraging or connective habitat for lesser horseshoe bats. Tree removal areas are shown on **Figure 3.2, Appendix A**.
- 4.4.21 Approximately 0.4ha of commercial conifer plantation would require felling to facilitate vehicle turning where the Site is accessed off the A4046 Aberbeeg Road to the west of the Site. The conifer woodland here is dominated by Scots pine and Sitka spruce with minimal species and canopy-layer diversity, and a bare understorey; it is considered sub-optimal for lesser horseshoe bats. The habitat removal required along the access would not sever any linear features (e.g. treelines) that may be used by lesser horseshoe bats for commuting. The habitats to be lost are not unique or otherwise notable in a site or local context, and their loss will have no effect on the availability or value of lesser horseshoe foraging habitat locally.

## Grid Connection

- 4.4.22 The Grid Connection would connect the wind farm through plantation woodland to the west of the Site; this will be the subject of a separate application by WPD but the assumed worst-case scenario is a 33kV overhead line on wooden poles. The Grid Connection would result in the loss of a strip of productive plantation woodland and may (subject to the final route at the time of application) cross through a small block of broadleaved woodland bordering the west of the Site. The trees within the Grid Connection corridor area are not suitable for lesser horseshoe bat roosts.
- 4.4.23 The 33kV overhead line would require a strip of plantation woodland to be cleared to ground level to facilitate the wayleaves, the width of the wayleave is not known and would be contained in a separate application however it is not considered the wayleave for 33kV route on wooden poles through plantation woodland would create fragmentation for lesser horseshoe bats.
- 4.4.24 It is considered the managed wayleaves under a 33kV line would improve floristic and habitat diversity within the plantation woodland, creating a ride and edge habitat which would increase invertebrate diversity and provide an improved foraging resource for bats. Overall it is considered the effect of the land-take/changes to habitats associated with the Grid Connection on lesser horseshoe bats would be negligible and therefore it can be

concluded that there will be no significant effects (alone) on the interest features of the SAC through this mechanism.

## Increased light levels and production of aural and visual stimuli and vibration

### Construction

- 4.4.25 The lesser horseshoe maternity/hibernation roost is located underground in dense woodland, approximately 750m from the nearest works location; it would not be subject to any disturbance from construction activities.
- 4.4.26 Construction activities are located within sub-optimal habitat for lesser horseshoe bats, with the Turbine locations in open upland habitats where low levels of lesser horseshoe bat activity were recorded. The areas of optimal broadleaved woodland habitat where greater levels horseshoe bat activity were recorded are off Site and would not be subject to any disturbance from construction activities.
- 4.4.27 Any changes in habitat use due to site lighting or construction activities, would be short-term and limited to areas of sub-optimal habitat for foraging or commuting lesser horseshoe bats and so displacement effects via this mechanism would be negligible and therefore it can be concluded that there will be no significant effects on the interest features of the SAC through this mechanism.

### Operation

- 4.4.28 Some studies have suggested that active avoidance of wind farms by some bats may occur (e.g. Roeleke et al. 2016<sup>23</sup>), there is also evidence that some bat species are attracted to wind turbines (Cryan et al. 2014<sup>24</sup>) through a range of potential mechanisms. As a result, it is difficult to predict how bats would respond to the installation of turbines at this site.
- 4.4.29 The survey data demonstrates that the vast majority of the lesser horseshoe bat activity is associated with woodland blocks bordering the Site (which provide roosting, commuting routes and foraging opportunities). There may be some displacement effects due to the general proximity of new structures, but the effects of this are considered likely to be negligible and it is certain that bats would continue to use features around the Site margins for roosting foraging and commuting. It is not considered that the turbines would attract lesser horseshoe bats, with this species being associated with sheltered, cluttered and dark habitats, and therefore it can be concluded that there will be no significant effects on the interest features of the SAC through this mechanism.

### Physical changes to the spatial environment

- 4.4.30 The principal mechanism for significant effects on bats is from fatalities/injuries caused by collision with wind turbines or barotrauma (collectively referred to herein as 'collision risk').

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<sup>23</sup> Roeleke, M., Blohm, T., Kramer-Schadt, S., Yovel, Y., and Voigt, C. C. (2016). Habitat use of bats in relation to wind turbines revealed by GPS tracking. *Sci. Rep.* 6:28961. doi: 10.1038/srep28961

<sup>24</sup> Cryan PM, Gorreson PM, Hein C, Schirmacher MR, Diehl RH, Huso MM, Hayman DTS, Fricker PD, Bonaccorso FJ, Johnson DH, Heist K, Dalton DC. 2014. Behavior of bats at wind turbines. *Proceedings of the National Academy of Sciences* 111:15126–15131.

The method for quantifying collision risk for bats from onshore wind turbines has been detailed in 'Bats and Onshore Wind Turbines' (2021)<sup>25</sup>. Following this guidance, as illustrated in **Table 4.5** lesser horseshoe bats in Wales are considered a 'rarer' species with low collision risk and an overall 'low population vulnerability' to collision.

**Table 4.5** Level of potential vulnerability of Welsh bat populations to wind farms

Relative abundance in Wales	Collision Risk		
	Low	Medium	High
<b>Common species</b>			Common pipistrelle Soprano pipistrelle
<b>Rarer species</b>	Brown long-eared bat Daubenton's bat Natterer's bat Lesser horseshoe		
<b>Rarest species</b>	Alcathoe bat Bechstein's bat Brandt's bat Greater horseshoe Grey long-eared bat Whiskered bat	Barbastelle Serotine	Nathusius' pipistrelle Noctule bat Leisler's bat

Extracted from *Bats and Onshore Wind Turbines* (2021): Yellow = low population vulnerability, Orange = medium population vulnerability, Red = high population vulnerability.

4.4.31 Lesser horseshoe bats are a low collision risk species due to their flight pattern and behaviour which is low and typically outside the swept path of a turbine blade, and they are categorised as having an overall 'low population vulnerability' to collision. The levels of lesser horseshoe bat activity at each of the turbine locations is presented in **Table 4.6**.

**Table 4.6** Relative levels of lesser horseshoe bat activity at turbine locations based on Ecobat outputs of automated detector data

Turbine location	Ecobat Median Category
1	Low
2	Low
3	No bats recorded
4	Low
5	No bats recorded
6	Low - Moderate

<sup>25</sup> SNH, NE, NRW, Renewable UK, Scottish Power Renewables, Ecotricity Ltd, University of Exeter and BCT *et al.* (2019) *Bats and onshore wind turbines: survey, assessment and mitigation*.

Turbine location	Ecobat Median Category
7	Low
8	Low

4.4.32 Due to the combination of lesser horseshoe bats being a low collision risk species, with an overall 'low population vulnerability' to collision and activity levels being recorded as low or low to moderate (at the turbines where they were recorded), the overall risk of significant effects on lesser horseshoe bat populations due to collision/barotrauma fatalities associated with the Proposed Development is considered to be negligible and therefore it can be concluded that there will be no significant effects on the interest features of the SAC through this mechanism.

### Within-scheme in combination effects

4.4.33 The potential for the effect pathways considered above to operate synergistically to affect the interest features of the SAC has been considered. In summary, it is considered that the ecological effects of the above environmental changes will be small, and they will not interact synergistically to affect the functional value of the local habitats such that such that the integrity of the SAC bat population could be affected. Therefore, no 'within scheme' in combination effects will occur.

### In combination effects with other schemes

4.4.34 The potential for the Proposed Development to operate in combination with other developments to affect the interest features of the SAC has been considered. Wind farms which are either built, consented or with submitted planning applications within 10km of the Proposed Development are considered for in combination effects, these listed in **Table 4.7**.

Table 4.7 In combination effects wind energy developments within 10km of the Site boundary

Name of wind farm	Local Authority	Number of wind turbines	Height to blade tip (m)	Approximate distance from boundary of Proposed Mynydd Carn-y-Cefn Wind Farm (km)	Status
<b>Abertillery Wind Farm</b>	Blaenau Gwent	7	180m	1.2km	Proposed
<b>Manmoel Wind Farm</b>	Blaenau Gwent	5	180m	1.5km	Proposed
<b>Mynydd Llanhilleth Wind Farm</b>	Torfaen/ Blaenau Gwent County Borough Councils	12	180m	2.0km	Proposed
<b>Coed y Gilfach Farm</b>	Blaenau Gwent	2	45	1.8 km	Operational

Name of wind farm	Local Authority	Number of wind turbines	Height to blade tip (m)	Approximate distance from boundary of Proposed Mynydd Carn-y-Cefn Wind Farm (km)	Status
Pen Y Fan Ganol Farm	Caerphilly County	1	73.5	2.2 km	Operational
Cruglwyn	Caerphilly County	1	86.5	2.2 km	Operational
Pen-y-Fan Industrial Estate	Caerphilly County	1	124	2.5 km	Operational
Oakdale Business Park	Caerphilly County	2	130	3.4 km	Operational
Penrhiwgwaith Farm	Blaenau Gwent	1	86.5	3.4 km	Operational
Blaentillery Farm	Blaenau Gwent	2	45	3.7 km	Operational
Gelli-wen Farm	Caerphilly County	1	77	3.9 km	Operational
Pen-yr-heol Farm	Caerphilly County	1	77	4.0 km	Operational
Bedlwyn Farm	Caerphilly County	1	86.5	4.7 km	Operational
Cefn Bach Farm	Caerphilly County	1	78	6.2 km	Operational
Groesfaen Farm	Caerphilly County	1	77	6.3 km	Operational
Eurocaps Premises, Crown Business Park	Blaenau Gwent	2	45	7.8 km	Operational
Pen Bryn Oer	Caerphilly County	3	110	8.3 km	Operational
Rassau Industrial Estate (Unit 18)	Blaenau Gwent	1	78	8.4 km	Approved
Rassau Industrial Estate (Former Tech Board Site)	Blaenau Gwent	1	78	8.4 km	Operational
Rassau Industrial Estate (Unit 15)	Blaenau Gwent	1	72	8.5 km	Operational
Tafamaubach Industrial Estate	Blaenau Gwent	1	74	9.5 km	Operational

- 4.4.35 Based on available data the wind farms within 10km are unlikely (on their own) to have any significant effects on either local bat populations, or their usage of the sites (this is also the conclusion reached by the assessment for Mynydd Carn y Cefn).
- 4.4.36 The primary in combination effects of multiple wind farms are considered to be increased collision risk (and hence direct effects on population size) and the possibility of indirect effects on habitat use (i.e. the displacement of bats from foraging areas due to the presence of turbines, or 'barrier effects').

- 4.4.37 The available bat survey data for the wind farms within 10km of the Proposed Development (summarised in the **ES, Section 8.22**) indicate that bat activity across these upland sites is generally low, and that the qualitative risk of collision is therefore also low (provided that turbines are sited away from features typically used by bats). Where data is available it is apparent the wind farms have or will benefit from bat surveys and subsequent siting of turbines to avoid features used by bats. It is therefore considered that the existing or proposed wind farms have taken appropriate measures to minimise collision risk and so avoid potentially significant effects on local bat populations.
- 4.4.38 Furthermore, the wind farms are sited in predominantly upland or upland margin habitats, away from the valley environments that are likely to provide the most significant foraging and roosting habitats locally, and the principal commuting and migration routes. The inter-connectivity of the valley systems in this area will not be meaningfully affected by the wind farms, and so the general 'permeability' of the landscape to bats is unlikely to be significantly reduced. There is little evidence to suggest that the upland areas (particularly on Mynydd Carn y Cefn) provide a significant habitat resource for local bat populations. It is therefore not considered that the wind farms within 10km of Mynydd Carn y Cefn Wind Farm will operate in combination such that the integrity of the SAC bat population could be affected. Therefore, no in combination effects with other schemes will occur.

## 4.5 Conclusion

- 4.5.1 The **Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC** is located over 7km from MCyC; there are no pathways by which the Conservation Objectives for the site's habitat interest features (i.e. **European dry heaths; Degraded raised bogs still capable of natural regeneration; Blanket bogs; Calcareous rocky slopes with chasmophytic vegetation; Caves not open to the public; Tilio-Acerion forests of slopes**, screes and ravines; and their typical species) could be undermined by environmental changes associated with the proposed development.
- 4.5.2 **Lesser horseshoe bats** associated with the SAC are potentially exposed to environmental changes associated with the scheme as (a) this species has been recorded roosting, commuting and foraging at the MCyC site and (b) individuals from the MCyC site are likely to be part of the population associated with the SAC. However, the MCyC scheme will not undermine the conservation objectives for this feature and will therefore have no significant effect (alone or in combination) on the **Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC**.

## 5. Screening: Aberbargoed Grasslands SAC

### 5.1 Site Overview

5.1.1 This site is an ~40 ha. grassland site with areas of impeded drainage and a mixture of marshy grassland communities; it is primarily designated for its population of Marsh fritillary butterfly.

### 5.2 Interest Features and Conservation Objectives

5.2.1 The SAC has the following qualifying features<sup>26</sup>:

- Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
  - ▶ *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- Annex II species that are a primary reason for selection of this site
  - ▶ Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*

5.2.2 The Core Management Plan for the site identifies typical species for the qualifying habitat; these include purple moor-grass *Molinia caerulea*; meadow thistle *Cirsium dissectum*; devil's bit scabious *Succisa pratensis*; carnation sedge *Carex panicea*; saw wort *Serratula tinctoria*; and lousewort *Pedicularis sylvestris*. Devil's bit scabious is the main foodplant of the marsh fritillary caterpillar.

5.2.3 The Core Management Plan does not identify specific non-designated 'functional habitat' that may be critical to site integrity, although the importance of nearby non-designated habitats for the **Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*** feature is recognised within the conservation objectives (marsh fritillary are relatively sedentary (adults rarely rarely disperse more than 50 – 100m) and colonies are typically reliant on networks of discrete and transient patches of suitable vegetation that collectively contribute to a stable metapopulation).

5.2.4 The Core Management Plan for the SAC sets out Conservation Objectives that benchmark Favourable Conservation Status for each feature; for the Welsh European sites these objectives comprise a 'vision' for the the feature (the key component of the objective) and (where relevant) performance indicators by which the objectives may be measured. These objectives are available in the Core Management Plan for the site<sup>27</sup>.

### 5.3 Pressures and Threats

5.3.1 The main pressures and threats to site integrity are not explicitly identified in the Core Management Plan for the site, but can be inferred from the management techniques that

<sup>26</sup> [Usk Bat Sites/ Safleoedd Ystumod Wysg - Special Areas of Conservation \(jncc.gov.uk\)](https://jncc.gov.uk) (Accessed on 16/03/2022)

<sup>27</sup> <https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf> (Accessed 08/04/2022)

are required to achieve the conservation objectives for the SAC; the main threats and pressures to the site integrity of the SAC are the following:

- Recreational disturbance.
- Inappropriate habitat management and grazing levels.

## 5.4 Assessment of Effects

### Effect Pathways and Excluded Features

- 5.4.1 The **Aberbargoed Grasslands SAC** is located over 4.5km from MCyC; there are no pathways by which the Conservation Objectives for the site's habitat interest features (i.e. ***Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)*** and the supporting habitats of the **Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia***) could be undermined by environmental changes associated with the proposed development (e.g. dust, run-off, hydrological changes, etc.).
- 5.4.2 In addition, the MCyC site will not provide 'functional habitat' for the **Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia*** feature:
- The distance between the MCyC site and the SAC is substantially over the typical dispersal distance for this species (as noted, marsh fritillary are notably sedentary, with adults rarely dispersing more than 50 – 100m).
  - The habitats affected by construction at MCyC are unsuitable for this species (either for a colony or as part of a wider network of transient habitat patches), and do not support the larval foodplant.
- 5.4.3 There are consequently no pathways by which the pathways by which the Conservation Objectives for the site could be undermined by the MCyC development; there will therefore be 'no effects' on the **Aberbargoed Grasslands SAC**, and so no possibility of 'in combination' effects.

## 6. Screening: Cwm Clydach Woodlands SAC

### 6.1 Site Overview

6.1.1 This site is an ~25 ha. woodland located on the southern side of the River Clydach valley; its main interest features are associated with stands of beech woodland and more open areas which support a number of rare and scarce vascular plants.

### 6.2 Interest Features and Conservation Objectives

6.2.1 The SAC has the following qualifying features:

- Annex I habitats that are a primary reason for selection of this site:
  - ▶ *Asperulo-Fagetum* beech forests.
- Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
  - ▶ Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Illici-Fagenion*).

6.2.2 The Core Management Plan for the site identifies typical species for the qualifying habitats; these include those characteristic of calcareous beech woodland including (*inter alia*) beech, ash and oak; and ground flora such as dog's mercury; Enchanter's-nightshade; Lords-and-Ladies; woodruff; Male fern; Sanicle; and wood melick.

6.2.3 The Core Management Plan does not identify specific non-designated 'functional habitat' that may be critical to site integrity, although the SAC is part of a larger SSSI that also includes beech woodland and which will be important to the integrity of the SAC.

6.2.4 The Core Management Plan for the SAC sets out Conservation Objectives that benchmark Favourable Conservation Status for each feature; for the Welsh European sites these objectives comprise a 'vision' for the feature (the key component of the objective) and (where relevant) performance indicators by which the objectives may be measured. These objectives are available in the Core Management Plan for the site<sup>28</sup>.

### 6.3 Pressures and Threats

6.3.1 The main pressures and threats to site integrity are not explicitly identified in the Core Management Plan for the site, but can be inferred from the management techniques that are required to achieve the conservation objectives for the SAC; the main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate habitat management and grazing levels.
- Non-native invasive species.

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<sup>28</sup> <https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf> (accessed 08/04/2022)

## 6.4 Assessment of Effects

### Effect Pathways and Excluded Features

- 6.4.1 The **Cwm Clydach Woodlands SAC** is located over 7km from MCyC; there are no pathways by which the Conservation Objectives for the site's interest features could be undermined by environmental changes associated with the proposed development (e.g. dust, run-off, hydrological changes, etc.). The scheme will therefore have 'no effects' on the **Cwm Clydach Woodlands SAC**, and so there is no possibility of 'in combination' effects.

## 7. Assessment Summary and Conclusions

- 7.1.1 Pennant Walters Ltd is seeking planning permission for the construction and operation of a wind farm of up to eight turbines on land at Mynydd Carn y Cefn, Abertillery. There are three European designated nature conservation sites within 10km of the Proposed Development site boundary, Aberbargoed Grasslands SAC, Cwm Clydach Woodlands SAC and Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC. As a result, an assessment of the scheme against the provisions of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') has been completed.
- 7.1.2 The distance between Aberbargoed Grasslands SAC and Cwm Clydach Woodlands SAC and the Proposed Development, and the lack of hydrological or ecological connectivity, means that there is a lack of a clear effect pathway with regard to the habitats for which these sites have been designated. Therefore, it is not considered there will be significant impacts on the ecological interest of these sites (alone or cumulatively) as a result of the wind farm proposal.
- 7.1.3 Bat surveys have recorded lesser horseshoe bats on and adjacent to the Site, due to the proximity to the Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC these bats are considered to contribute to the population for which the Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC is notified.
- 7.1.4 A HRA screening assessment has concluded that the **construction of the wind farm (and future operation) will have no significant effects (alone or in combination)** on the interest features of Usk Bat Sites/Safleoedd Ystlumod Wysg SAC.
- 7.1.5 There is an absence of effect pathways on the SAC due to the:
- Distance of the Proposed Development from the SAC; and
  - The distance of known lesser horseshoe roosts and important commuting or foraging habitat (located outside the Site) from construction and operational areas.
- 7.1.6 Additionally lesser horseshoe bats are a low collision risk species due to their flight pattern and behaviour which is low and outside the swept path of a turbine blade and are categorised as having an overall 'low population vulnerability' to collision or barotrauma from interaction with turbines.
- 7.1.7 It is considered that the 'alone' effects are so limited in scale that there is, in reality, no possibility of 'in combination' effects with other developments that may occur in the same period.

**Issued by***Chris Hill*.....  
**Chris Hill****Approved by**.....  
**Mike Frost****Copyright and non-disclosure notice**

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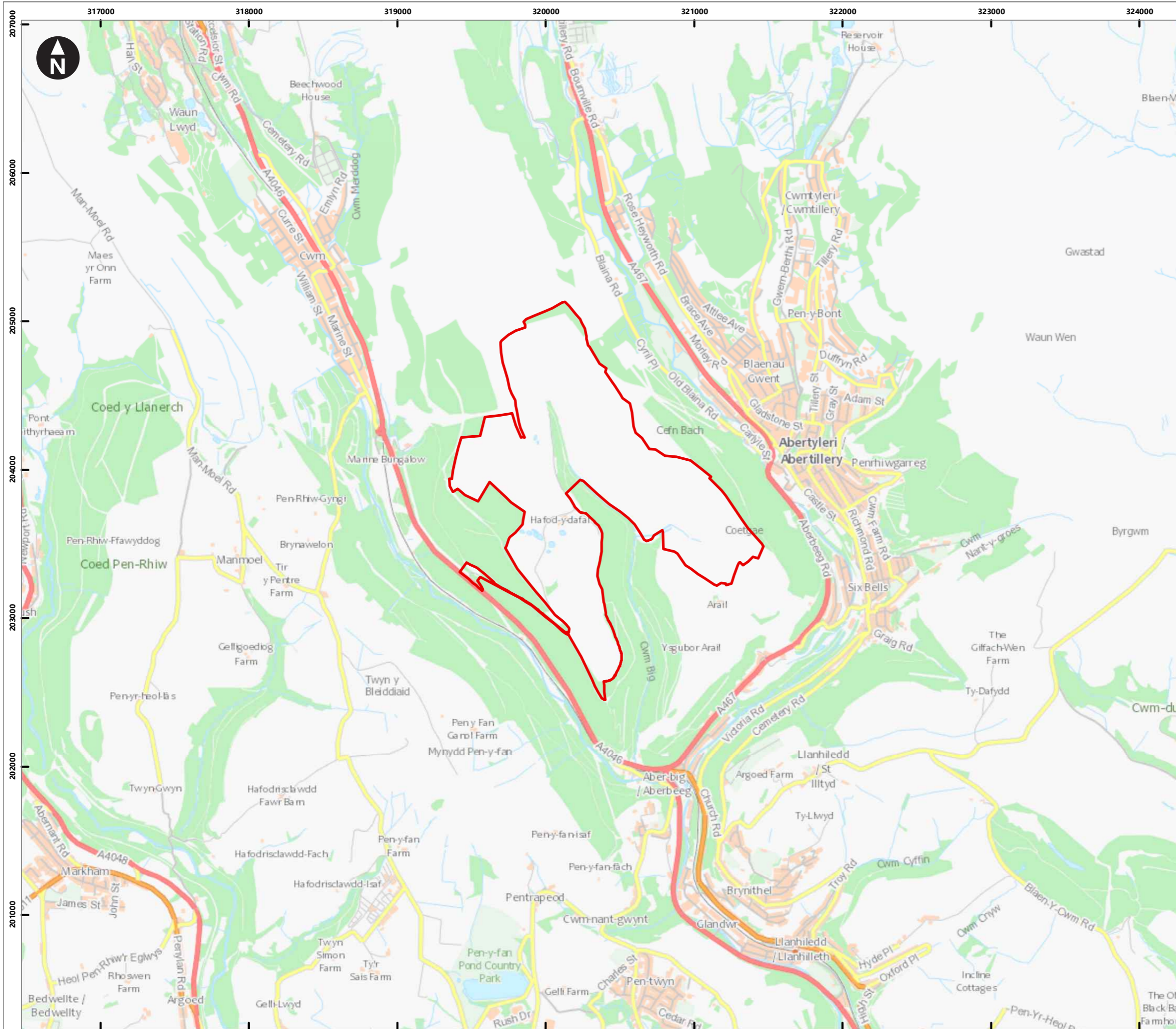
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This document has been produced by Wood Group UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

# Appendix A

## Figures

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Key

Site boundary

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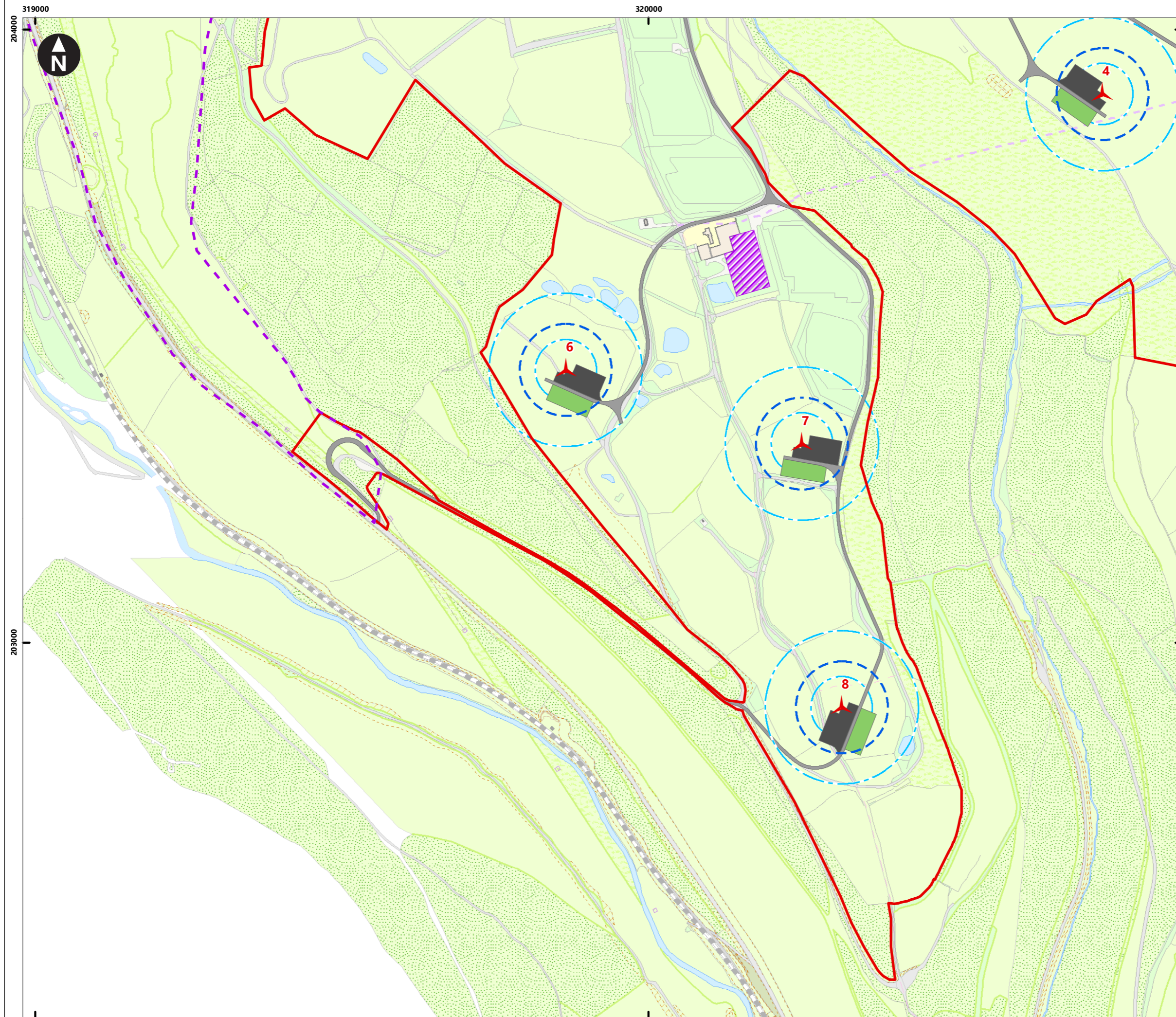
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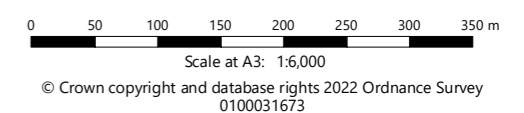
**Figure 1.1**  
Site location



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- Key
- Site boundary
  - ▲ Proposed turbine location
  - Proposed grid connection corridor
  - 150m rotor
  - 50m micrositing
  - Contractor's compound and electrical substation
  - Track
  - Crane pad
  - Blade storage area

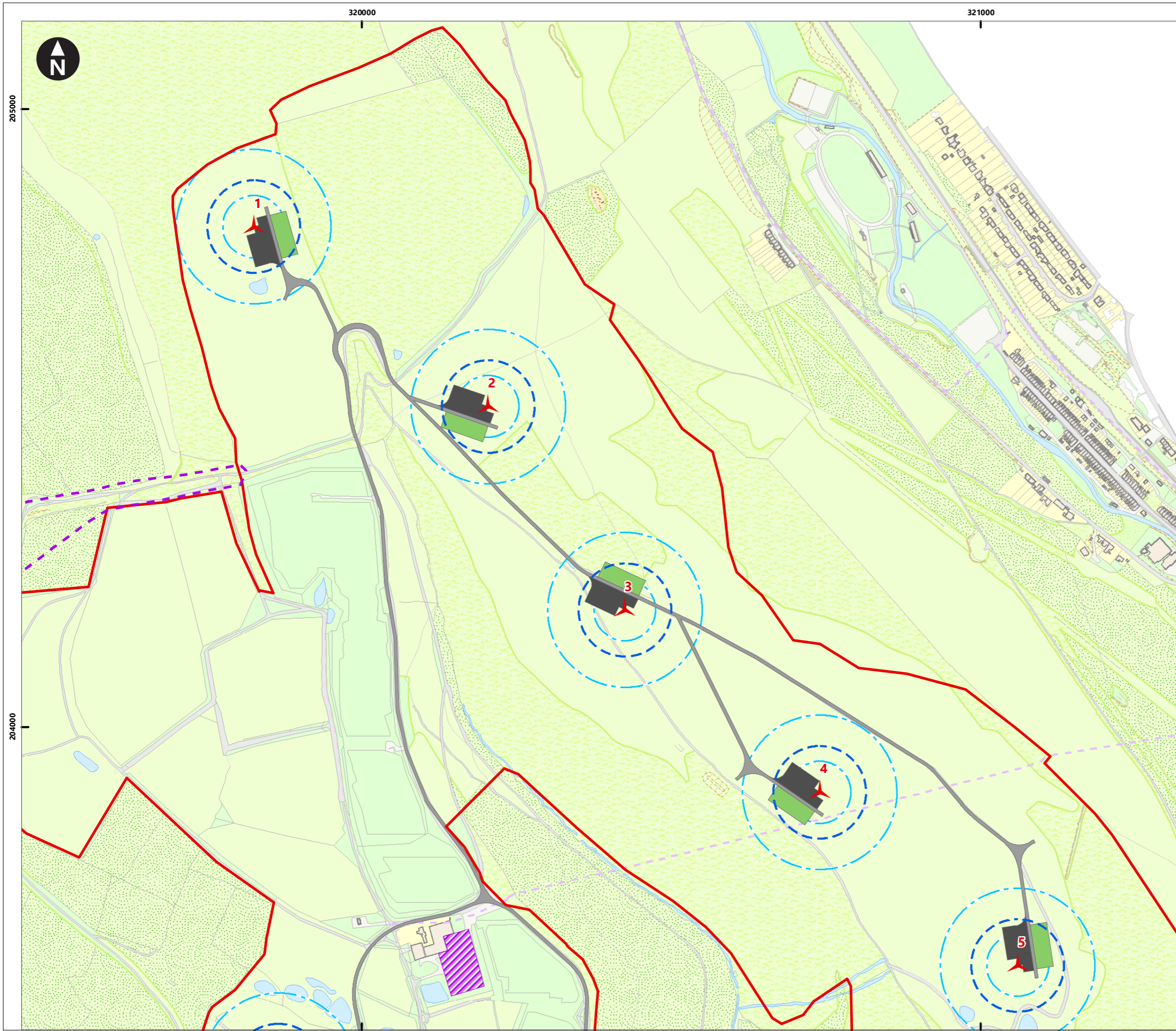


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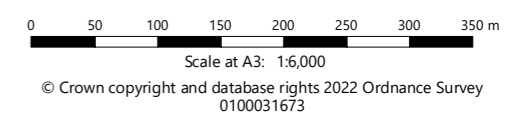
**Figure 2.1a**  
**Site layout - western extent**

April 2022





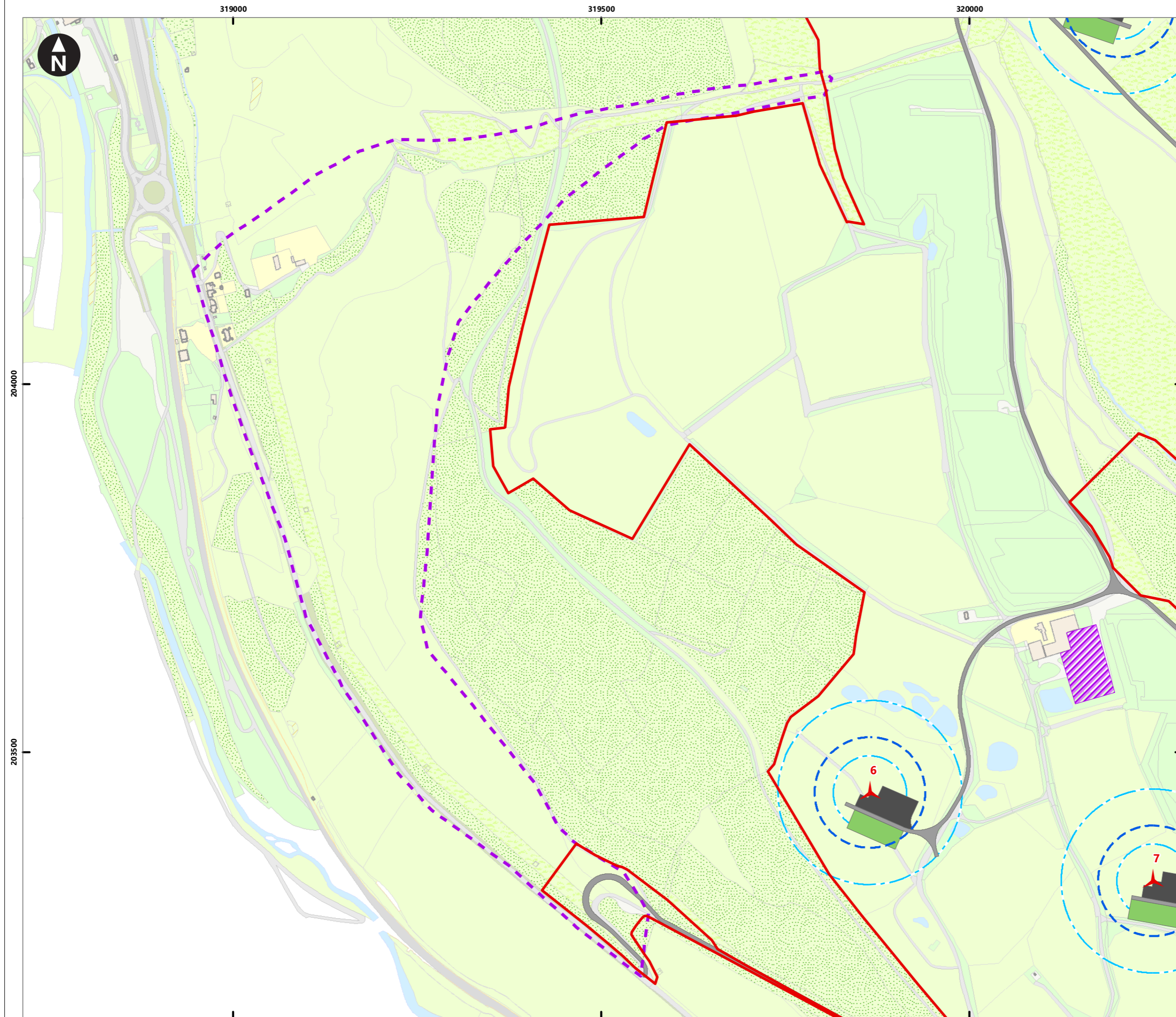
- Key
- Site boundary
  - Proposed turbine location
  - Proposed grid connection corridor
  - 150m rotor
  - 50m micro-siting
  - Contractor's compound and electrical substation
  - Track
  - Crane pad
  - Blade storage area












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**Figure 2.1b**  
Site layout - eastern extent

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- Key
-  Site boundary
  -  Proposed turbine location
  -  150m rotor
  -  50m micrositing
  -  Contractor's compound and electrical substation
  -  Track
  -  Crane pad
  -  Blade storage area
  -  Proposed grid connection corridor

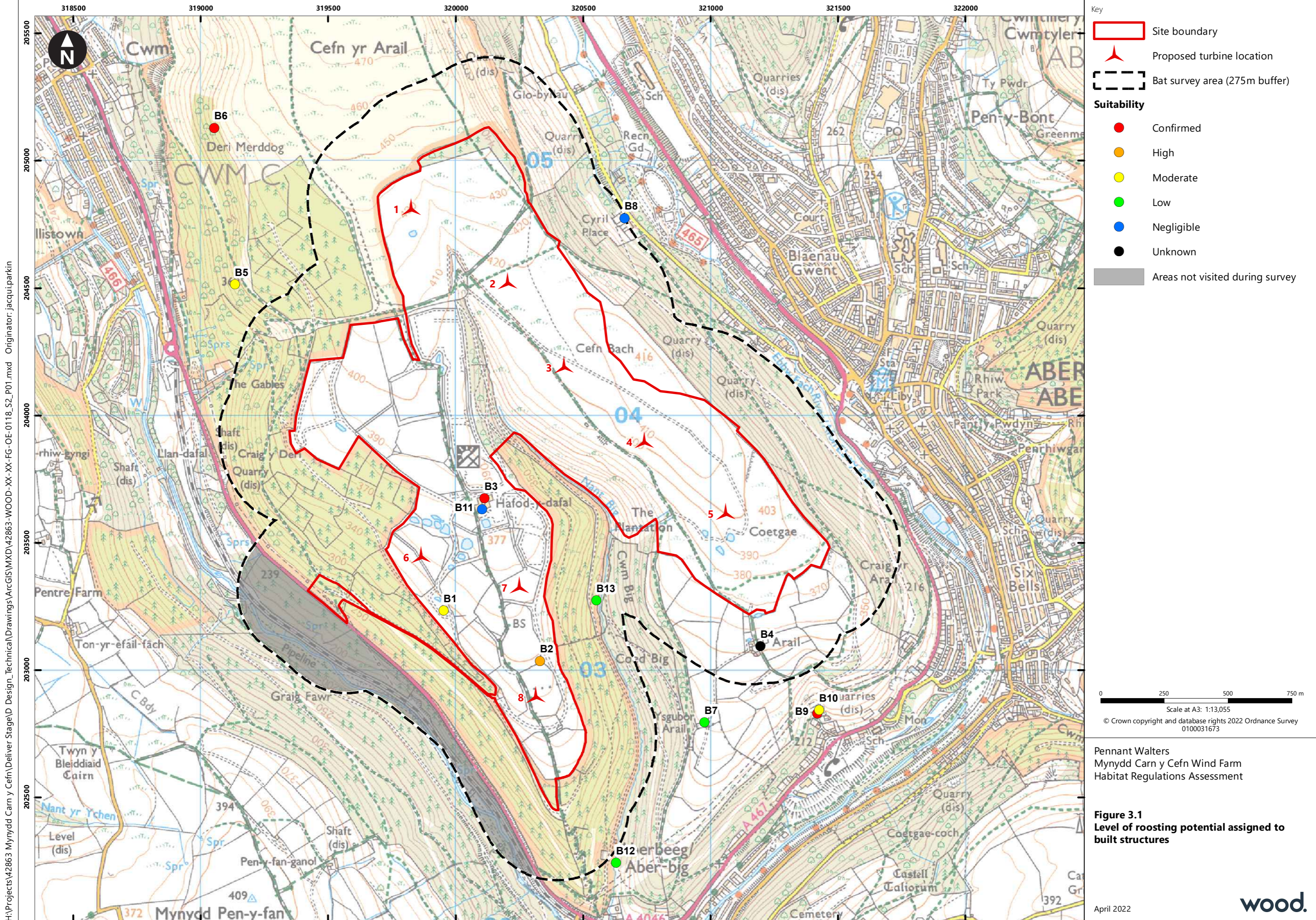
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**Figure 2.2**  
**Proposed grid connection corridor**

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Key

- Site boundary
- ▲ Proposed turbine location
- Bat survey area (275m buffer)

**Suitability**

- Confirmed
- High
- Moderate
- Low
- Negligible
- Unknown
- Areas not visited during survey

0 250 500 750 m  
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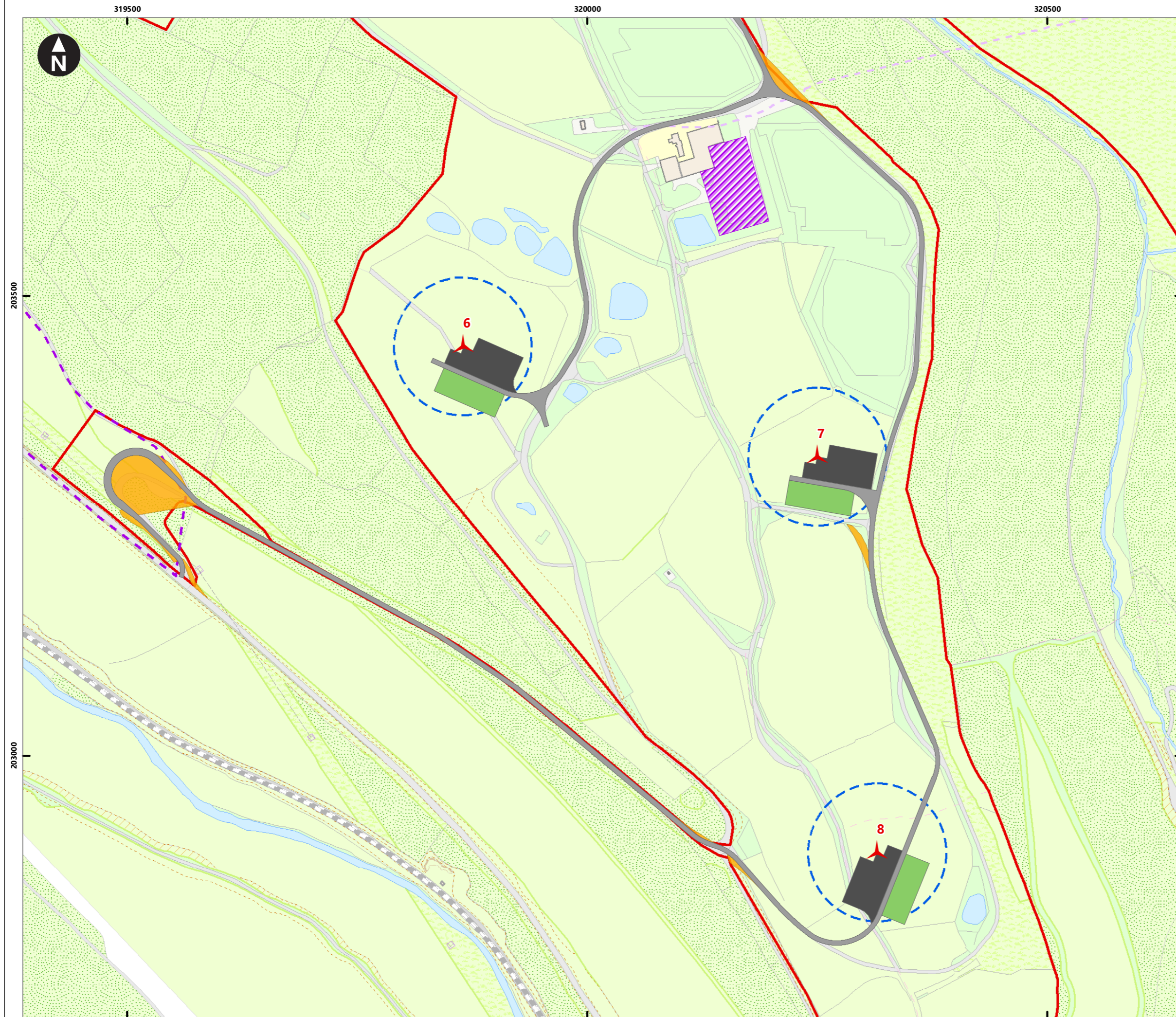
**Figure 3.1**  
 Level of roosting potential assigned to  
 built structures

April 2022

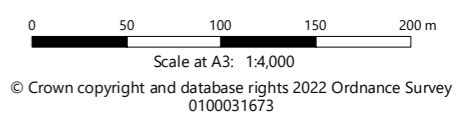


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- Key
- Site boundary
  - ▲ Proposed turbine location
  - 150m rotor
  - Contractor's compound and electrical substation
  - Track
  - Crane pad
  - Blade storage area
  - Proposed grid connection corridor
  - Tree clearance area



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**Figure 3.2**  
**Tree clearance areas**

April 2022

