



RWE Renewables UK Swindon Ltd.

Pen March Wind Farm

**Non-Technical Summary of the Environmental Statement
(Volume 1)**

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1 INTRODUCTION

1.1 Introduction

- 1.1.1 RWE Renewables UK Swindon Ltd. (referred to as 'the Applicant') is seeking to obtain consent for the construction and operation of Pen March Wind Farm (referred to as the 'Proposed Scheme'), which would be located north of the A465 Heads of the Valleys road, north-west of the small town of Rhymney and north-east of Merthyr Tydfil. The location of the area proposed for development (referred to as 'the Site') is shown on **Figure 1.1**.
- 1.1.2 The Site is located within the administrative boundary of two local authorities, Caerphilly County Borough Council and Merthyr Tydfil County Borough Council. The Site is located approximately 1 kilometre north-east of Dowlais, on the north-eastern fringe of Merthyr Tydfil, and 2 kilometres north-west of Rhymney town centre.
- 1.1.3 The Proposed Scheme is deemed to be a Development of National Significance in accordance with The Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016. The application will be submitted to Planning and Environment Decisions Wales and will be determined by Welsh Ministers.
- 1.1.4 The majority of the Site is registered as Common Land and makes up part of Common Land Unit 38 Gelligaer and Merthyr Common, as shown on **Figure 1.2**. Therefore, the planning application will be accompanied by applications for consent to deregister and offer exchange Common Land and consent to carry out restricted works on Common Land (pursuant to sections 16 and 38 of the Commons Act 2006).

1.2 Environmental impact assessment

- 1.2.1 Environmental Impact Assessment is the process that identifies the key environmental effects of a development and suggests ways that these effects can be avoided, reduced, or managed. It is a requirement of UK law for certain developments that are likely to cause significant environmental effects. The findings of this process are reported within an Environmental Statement.
- 1.2.2 In line with Regulation 17(4)(a) – (b) of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, the Environmental Statement and technical assessments which inform it have been prepared by persons who have sufficient expertise to ensure the completeness and quality of the Statement.
- 1.2.3 The findings of the Environmental Impact Assessment (including methodologies of assessment, existing information about the area and environment and the outputs of the environmental assessments) are presented in this Environmental Statement, which is split into four volumes:
- **Volume 1: this Non-Technical Summary;**
 - **Volume 2: Environmental Statement;**

- **Volume 3: Supporting Figures and Plans; and**
- **Volume 4: Supporting Technical Appendices.**

1.2.4 This document provides a non-technical summary of the environmental assessments presented in Volumes 2 to 4 of the Environmental Statement. It includes a summary of the outcomes of these assessments and an explanation of how environmental issues will be addressed by the Applicant. A greater level of detail is available in Volumes 2 to 4 of the Environmental Statement.

2 THE PROPOSED SCHEME

2.1 The Proposed Scheme

2.1.1 The Proposed Scheme is illustrated on **Figure 1.3** and will consist of the following principal components:

- Up to six three-bladed horizontal axis wind turbines up to 180 metres to blade tip height. Each turbine has an internal transformer and aviation lighting.
- Wind turbine foundations and hardstanding areas which will include crane hardstanding areas and laydown / storage areas.
- An electrical and control building compound with battery storage facilities.
- New site access off the Common Road and associated bell mouth junction.
- On-site access tracks, passing places, and turning heads.
- Two gas pipeline crossings, one water main crossing and three main watercourse crossings.
- Underground power cables (and fibre optic communication cables) linking the wind turbines and the on-site electrical substation and control building.
- A main temporary construction and storage compound with associated lay down areas near to the site entrance.
- Construction working areas associated with turbine locations and access tracks which will be restored after construction is complete.
- Off-site works to enable the movement of abnormal loads during construction (such as the creation of a new slip track from A465 and temporary modifications to street furniture etc).
- On-site Habitat Management Area.

2.1.2 Access to the Proposed Scheme will be via a new access junction from the Common Road. The access junction would be designed to accommodate all predicted loads and traffic for all phases of the Proposed Scheme.

2.1.3 The expected operational life of the Proposed Scheme is 35 years from the date of commissioning. At the end of this period, a decision is made whether to refurbish, remove or replace turbines. If refurbishment or replacement were to be chosen, relevant planning applications will be made.

2.1.4 The Applicant has received a grid connection offer for the Proposed Scheme from the district network operator, Western Power Distribution (now part of National Grid), including an indicative grid connection method. The point of connection is located at the Dowlais Bulk Supply Point Substation, located approximately 500 metres south-west of the Site. The grid connection does not form part of this application.

2.2 Existing use of the Site

- 2.2.1 The majority of the Site is registered as Common Land and makes up part of Common Land Unit 38 (Gelligaer and Merthyr Common), which also extends to the south of the A465 Heads of the Valleys Road. The Site is grazed, predominantly by sheep and horses.
- 2.2.2 The Site comprises a broadly sloping area of purple moor grass dominated grassland, with small, scattered areas of dense scrub, exposed rock, dry heath and standing open water habitats.

2.3 Environmental designations

- 2.3.1 There are no statutory landscape designations located within the Site, however, the Bannau Brycheiniog National Park, formerly the Brecon Beacons National Park, is located adjacent to the northern edge of the Site.
- 2.3.2 There are no statutory ecological designations located within the Site.
- 2.3.3 There are no statutory heritage designations located within the Site. However, a monument on Site, comprising remains of an enclosure and adjacent circle hut settlement, has been recommended for scheduling. A number of non-statutory Historic Environment Records have been identified within the Site and are considered as part of the assessment.

2.4 Need for the development

- 2.4.1 The Proposed Scheme relates to the generation of electricity from renewable energy sources and will be a response to the national energy policy and planning objectives. The Environment (Wales) Act 2016 sets a target to reduce greenhouse gas emissions in Wales by 80 % by 2050. Furthermore, the Welsh Government has declared a climate emergency and in March 2021 the Senedd Cymru approved a net zero target for 2050. Renewable energy is a key component to achieving greenhouse gas emission reduction. In 2017, the Welsh Government announced a target of meeting 70 % of Wales's electricity consumption from renewable electricity sources by 2030.
- 2.4.2 Planning Policy Wales details the land use planning policies of the Welsh Government, with the objective to ensure the delivery of sustainable development. Planning Policy Wales identifies that low carbon electricity must become the main source of energy in Wales. Planning Policy Wales also recognises that wind energy forms a key part of meeting renewable energy production due to Wales's considerable wind resource.
- 2.4.3 Future Wales: The National Plan 2040 provides a framework for planning change and development and has development plan status. Policy 17 on renewable and low carbon energy and associated infrastructure and Policy 18 on renewable and low carbon energy developments of national significance, provide the strategic spatial and detailed criteria-based policies for renewable and low carbon energy developments.

2.5 Consideration of Alternatives

- 2.5.1 In accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, there is a requirement to consider alternatives. The consideration of alternatives and design evolution has been undertaken with the aim of avoiding, preventing, reducing, or, if possible, offsetting likely significant adverse environmental effects, while ensuring operational efficiency of the wind farm, cost effectiveness, and other relevant matters such as existing land use and planning policy. The design of the Proposed Scheme has evolved through engineering design work, in response to consultation feedback, and environmental survey work.
- 2.5.2 The Applicant has a well-established process for selecting sites and identifying land for wind farm development. The overall approach to wind farm site selection is to identify areas of land where the siting of a wind farm would result in minimal environmental effects, be free from overriding technical constraints, and be economically viable. This initial site identification exercise involves review of planning policy, constraint data, wind speed data, and access points.
- 2.5.3 The Site for the Proposed Scheme demonstrated the necessary attributes for the construction and operation of a wind farm development without significant technical or environmental constraints.
- 2.5.4 The final design has evolved over a number of months with a process of refinement taking account of information arising from consultation and the findings of the Environmental Impact Assessment. The Proposed Scheme has gone through four principal design iterations to the turbine number and locations, taking into account the following factors during this process:
- Safe and practical access;
 - Maintaining safe working sites during construction, operation, and decommissioning;
 - Proximity to other live infrastructure (gas, water, and electricity);
 - Safe delivery of the Proposed Scheme when interacting with existing land uses;
 - Ongoing engagement with landowners and stakeholders regarding use of the Site;
 - Ease of maintenance access across the Site;
 - Turbine separation – maintaining sufficient separation between turbines
 - Peat deposits: Avoiding, where possible, areas classed as peat in line with Natural Resources Wales guidance;
 - Shake hole risk zones: Avoiding high risk shake hole zones;
 - Proximity to watercourses: Maintaining a 50 metre setback;
 - Avoiding where possible priority habitats identified on Site, including those habitats associated with peat deposits;
 - Avoiding direct/indirect impacts on species protected under Welsh or international law;
 - Curlew territories: Maintaining appropriate distance from potential curlew nesting territories;

- Avoidance of known cultural heritage assets (e.g. Scheduled Monuments);
- Increase separation from known above ground heritage assets to reduce impacts on setting;
- Landscape considerations concerning the Bannau Brycheiniog National Park (including views to and from the National Park);
- Proximity to residences: Maintaining sufficient distance from nearby properties of at least 1 kilometre;
- Consideration of existing use of the Gelligaer and Merthyr Common, north of the A465 Heads of the Valleys Road; and
- Consideration of public rights of way, public access to the Gelligaer and Merthyr Common, and non-vehicular users of the Common Road.

2.6 Construction phase

2.6.1 The Proposed Scheme would be constructed over a period of approximately 12 months, anticipated to commence in 2025. Building and commissioning the Proposed Scheme will comprise the following general stages:

- Advance works
- Civil engineering and ancillary works
- Site finalisation works including restoration.

2.6.2 The construction working hours for the Proposed Scheme would be 7am to 7pm Monday to Saturday, though noisy activities on Saturdays would be restricted to before 1pm to reduce disturbance to nearby properties.

2.6.3 Artificial lighting will be required during the construction phase to ensure safe working conditions, during periods of limited natural light. It is intended that the type of lighting would be non-intrusive (for example directed down and towards works activity and away from the Site), to minimise impact on local properties and any other environmental considerations.

2.6.4 Fencing will be kept to a minimum during the construction phase and used for health and safety purposes, security, and animal welfare, as and when required.

2.6.5 The environmental management of the construction works for the Proposed Scheme will be delivered through the development of a Construction Environmental Management Plan. The Construction Environmental Management Plan will be the means of controlling the construction works and set out monitoring requirements, with the objective of ensuring that the effect of the construction works on people and the natural environment are reduced insofar as reasonably practicable.

2.6.6 A Site Waste Management Plan and Materials Management Plan will be developed for use during construction. These will outline details of the materials requirements and anticipated waste generation during construction and how the Contractor intends to consider the management of these aspects.

2.6.7 During the construction period, the following traffic will require access to the Site:

- Staff transport, in either cars or minibuses.

- Construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock.
- Abnormal loads comprising wind turbine sections and also heavy lift crane(s).

2.6.8 A Construction Traffic Management Plan will be prepared and agreed with Caerphilly County Borough Council and Merthyr Tydfil County Borough Council in advance of the construction phase.

3 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

3.1 Environmental impact assessment process

3.1.1 The Environmental Impact Assessment process has run alongside and influenced the design process. This has involved several key steps as described below:

- Identify baseline conditions – a number of environmental surveys and desk-based studies have been undertaken. These have informed the design process and later impact assessment.
- Environmental Impact Assessment Screening – Due to the scale and nature of the Proposed Scheme, the Proposed Scheme is considered to require an Environmental Impact Assessment.
- Environmental Impact Assessment Scoping – an Environmental Impact Assessment Scoping Report was prepared to define and agree the scope of the Environmental Impact Assessment so that it focused only on impacts likely to give rise to significant environmental effects.
- Assess effects – an assessment of the environmental effects of the Proposed Scheme has been undertaken following confirmation of design.
- Develop mitigation – where required, mitigation has been developed to minimise negative environmental effects.
- Assess residual effects – an assessment of the likely environmental effects after the proposed mitigation is implemented has been undertaken.
- Environmental Statement submitted with a planning application – the Environmental Statement reports the outcomes of the Environmental Impact Assessment process. This is submitted with the planning application to inform Planning and Environment Decisions Wales in deciding whether to approve the Proposed Scheme.

4 ASSESSMENT FINDINGS

4.1 Landscape and Visual

- 4.1.1 The Landscape and Visual Impact Assessment considers the effects of the Proposed Scheme on landscape character and visual amenity within a study area up to 45 kilometres from the Site with a focussed 26 kilometre study area for landscape character in line with LANDMAP guidance. The assessment has been undertaken in accordance with all relevant published guidance and has involved desk-based and field-based assessments. The approach and scope of the assessment was agreed through scoping and through consultation with statutory consultees Natural Resources Wales, Bannau Brycheiniog National Park Authority, Merthyr Tydfil County Borough Council and Caerphilly County Borough Council.
- 4.1.2 The baseline for the assessment includes landscape, visual receptors, and other developments in the area. Visual receptors include people in settlements, using the local area for recreation, and travelling through the area on roads.
- 4.1.3 The Proposed Scheme turbine layout has been designed to be a compact layout that makes the best use of the Site topography and surrounding hill forms to help provide a cohesive and consistently spaced grouping of turbines when viewed from multiple locations within the study area. The Proposed Scheme will be located on an upland landscape which has an overall large scale and upland characteristics considered to be suitable for wind farm development.
- 4.1.4 Physical landscape effects on the moorland of the Site that would occur during construction are found to be localised and not significant. Significant landscape character effects are assessed to occur within a maximum of 3 kilometres from the nearest turbine of the Proposed Scheme. The assessment found no significant effects on the special qualities of the Bannau Brycheiniog National Park, with the exception of an area of approximately 3 kilometres at the southern edges of the Bannau Brycheiniog National Park. The majority of significant visual effects are contained within around 3 kilometres of the Proposed Scheme, however, significant visual effects would also extend to approximately 8 kilometres within the Bannau Brycheiniog National Park. Given the very localised nature of these significant effects, in landscape and visual terms, it is considered that there is scope for wind farm development within the broad upland landscape.
- 4.1.5 Whilst the residential and visual amenity assessment has assessed 19 of the 542 properties within the study area to have significant visual effects during the operational phase, the Proposed Scheme will not lead to the 'Residential Visual Amenity Threshold' being reached. Therefore, none of the effects assessed have the potential to be overbearing in respect of the visual amenity of residents at the property. Significant effects are also predicted for representative night-time viewpoints within this localised area as a result of turbine lighting. However, the overall effect of the visible aviation lighting on the Dark Sky Reserve is considered to be not significant.
- 4.1.6 None of the key landscape and visual receptors are assessed as having significant cumulative effects when considered within the consented and application scenarios. There are no consented or application wind energy developments in close proximity

to the Proposed Scheme and where visible from key landscape and visual receptors, they would appear within a context and backdrop of existing wind energy development, substantially limiting their cumulative influence when considering the additional effect of the Proposed Scheme. When considering scoping stage wind energy developments, however, the cumulative influence of further wind farm development within the study area results in additional significant landscape and visual effects in the scoping cumulative scenario.

- 4.1.7 The compact nature of the layout reduces the effect experienced when viewing the Proposed Scheme from within the wider landscape context. It is consistently viewed as occupying a small part of a larger upland either as a backdrop to the South Wales Valleys landscape in views to the north or as part of an intervening broad upland plateau with the valleys landscape beyond in views from the north within the Bannau Brycheiniog National Park. On this basis, it is considered that the landscape is capable of accommodating the Proposed Scheme and that wider landscape and visual effects are relatively limited in extent and severity.

4.2 Hydrology, Geology, Hydrogeology and Peat

- 4.2.1 A detailed programme of peat depth and condition surveying has been completed and the results used to inform the design of the Proposed Scheme. A Peat Slide Risk Assessment and Peat Management Plan have been produced, which show that areas of deep peat can be avoided, and peat resources can be safeguarded. The Proposed Scheme lies outside any floodplain areas and no private water supplies have been identified within the Site. Designated sites and Source Protection Zones that are near, or have a hydraulic connection to, the Proposed Scheme have been assessed individually and appropriate mitigation measures set out where linkages have been identified. Sustainable Drainage Systems have been proposed to ensure that the rate of runoff from the Proposed Scheme post-development is no greater than that prior to development and would not therefore increase flood risk downstream. The proposed Sustainable Drainage Systems allow the quality of water to be managed at source, prior to any discharge, thereby helping to prevent any reduction in water quality in aquifers or watercourses downstream of the Site.
- 4.2.2 Mitigation measures have been identified for all potential impacts, either through the Site design process or in accordance with good practice guidance. It has been shown, as a consequence of the Site design and primary mitigation, that the Proposed Scheme will not result in any significant effects on hydrology, hydrogeology, and geology.
- 4.2.3 With effective mitigation in place, the magnitude of effect on soil and peat will reduce. Consultation with Dŵr Cymru Welsh Water (DCWW), which owns the adjacent land to the east of the Site, has led to the potential for peat and peatland habitat restoration to be undertaken within their land holding.
- 4.2.4 This has two strong advantages: the DCWW land is immediately adjacent to the Site, which would allow peat units to be considered as a whole where they cross the boundary between the two land holdings, and there is much greater flexibility, as it is not registered as common land, for grazing and land management which means that restoration works are more likely to be effective.

- 4.2.5 The expansion of areas of active peat and peatland would contribute to establishment of larger and more self-sustaining peat bodies, providing a net benefit to the area.

4.3 Ecology

- 4.3.1 The potential effects of the Proposed Scheme on important ecological features (excluding birds – see **Section 4.4** below) during the construction, operational and decommissioning phases have been assessed.
- 4.3.2 Existing data relating to sites statutorily designated for their ecological interest within 10 kilometres of the Site were obtained from the South-east Wales Biodiversity Records Centre, the Natural Resources Wales website, and the Lle Geo-Portal for Wales¹. The data search also provided records of non-statutory designated sites and protected and notable species within a 2 kilometre radius of the Site, extended to 10 kilometres in respect of bats.
- 4.3.3 There are 16 statutory designated sites with a 10 kilometre radius of the Site, excluding sites designated for geological reasons, and none occur within, or adjacent to the Site itself. Given the intervening distances and the lack of pathways by which designated site features may be affected, no significant effects upon any statutory ecologically designated site are predicted.
- 4.3.4 Almost all of the area within the Site is encompassed by non-statutory ecological designations. These are the Pen March and Traed y Milwyr, Llechryd Site of Importance for Nature Conservation, which extends to 491 ha and continues east beyond the Site, and the Merthyr Common North Site of Importance for Nature Conservation, which also continues beyond the Site to the west.
- 4.3.5 The Proposed Scheme would result in 9.57 ha of permanent habitat loss which represents approximately 2.1 % of the wider habitat resource associated with the Site and approximately 1.05 % of combined area of Pen March and Traed y Milwyr, Llechryd SINC and Merthyr Common North SINC. The predicted temporary loss of habitats (or habitats subject to damage during construction) is 16.38 ha which represents approximately 3.6 % of the wider habitat resource associated with the Site Boundary and approximately 1.8 % of combined area of Pen March and Traed y Milwyr, Llechryd SINC and Merthyr Common North SINC. Given the degraded nature of the habitats, it is considered likely that habitats subject to temporary loss or damage during construction would revert to their previous state (or similar) within a few years of reinstatement and no significant long-term effects are likely.
- 4.3.6 The mitigation hierarchy has been followed to avoid and minimise effects upon the most important habitats as far as possible, specifically by avoiding areas of deeper peat wherever possible. However, the unavoidable loss of Site of Importance for Nature Conservation designated habitats is assessed as being significant at the ‘county’ level.
- 4.3.7 Compensation for the permanent loss of habitats within the Site, and additional biodiversity enhancement, would be provided via the restoration of 22.6 ha of heathland habitat in the north-eastern part of the Site via a Habitat Management Plan.

¹ At the time the data was obtained the Lle Geoportal was used, however this has since been replaced by DataMap Wales.

The Habitat Management Plan also seeks to undertake restoration and management activities over an area of up to 149.3 ha, which is located outside the Gelligaer and Merthyr Common and therefore provides an opportunity to control grazing and other management.

- 4.3.8 Baseline surveys for protected and notable species, including bat activity surveys, great crested newt surveys and surveys for badger, otter and water vole, were undertaken between May 2019 and October 2020.
- 4.3.9 No evidence of great crested newt, otter, water vole or badger has been found and these species are all currently considered absent from the Site. As such, no significant effects are predicted upon these species although, pre-construction surveys are proposed as a precautionary measure, in case any of these species colonise the Site prior to construction commencing.
- 4.3.10 A bat assemblage comprising at least six species for foraging and commuting (common pipistrelle, soprano pipistrelle, Myotis bat species, serotine, noctule and long-eared bat species) has been recorded, although the overall level of activity was relatively low and largely attributed to low numbers or individual common pipistrelle and soprano pipistrelle. No features with bat roosting potential were identified within the Site.
- 4.3.11 As only relatively low levels of bat activity have been recorded, the loss of foraging habitats is assessed as unlikely to significantly affect the foraging or commuting ability of any bat species present such that conservation status could be adversely affected.
- 4.3.12 Similarly, due to the relatively low levels of recorded bat activity, no significant effects upon bats are predicted during the operational stage. However, a precautionary approach has been taken with post-construction bat monitoring proposed to provide the opportunity to introduce mitigation, if deemed to be required based on monitoring results.
- 4.3.13 The presence of two reptile species, common lizard and adder, has been identified. The Proposed Scheme would result in the permanent loss of 9.57 ha of suitable reptile habitat. However, habitats are likely to support low densities of reptiles only and the predicted loss of potentially suitable habitat, is considered unlikely to be significant.
- 4.3.14 In the absence of mitigation, construction works have the potential to kill or injure reptiles present when any habitat removal takes place, and potentially result in a decline in the local status of these two species. To minimise the potential to kill or injure reptiles, a range of good practice measures will be implemented. These include: advance checks of habitat clearance areas, staged vegetation removal and relocation of any reptiles discovered. Following the implementation of these measures, no significant effects are predicted.
- 4.3.15 Cumulative assessment has been undertaken for other projects located within the likely zone of influence. A significant cumulative effect, at the 'county' level, is likely for the Pen March and Traed y Milwyr, Llechryd Site of Importance for Nature Conservation, as a result of the combined loss of habitat resulting from the Proposed Scheme and the A465 Sections 5 and 6 improvements. The loss of habitat will, however, be offset by the Habitat Management Plan for the Proposed Scheme and

by proposed enhancements to the (highways) soft estate as part of the A465 Sections 5 and 6 project. No other significant cumulative effects have been identified, although it is noted that available ecological data for other projects within the study area were limited.

4.4 Ornithology

- 4.4.1 The potential effects of the Proposed Scheme on bird populations during the construction, operation and decommissioning phases have been assessed.
- 4.4.2 Existing data relating to sites designated for their ornithological interest and notable bird species in the vicinity of the Site were obtained via a range of sources. These included a data search undertaken by South-east Wales Biodiversity Records Centre, the Natural Resources Wales website, and the Lle Geo-Portal for Wales. Baseline surveys, including vantage points, breeding raptor and breeding wader surveys, were also carried out over a two-year period, between April 2019 and March 2021.
- 4.4.3 There are no statutory designated sites notified or classified for their ornithological interest within 10 kilometres of the Site. The nearest European site classified for birds is the Severn Estuary Special Protection Area and Ramsar Site, which is located more than 34 kilometres to the south-east. There is evidence that gulls from breeding colonies at the Flat Holm and Steep Holm Sites of Special Scientific Interest, which lie within the Severn Estuary Ramsar Site, forage as far inland as the Site. However, gulls were only recorded occasionally during the surveys, in low numbers, and most records concerned birds breeding on nearby factory roofs. No significant effects on statutory sites designated for their ornithological interest are therefore likely.
- 4.4.4 Two non-statutory Sites of Importance for Nature Conservation that include birds within their citation are located within 2 kilometres of the Site. Blaenmorlais Site of Importance for Nature Conservation lies outside the Site to the south-west and supports a range of ground-nesting passerine species. Given the intervening distance between proposed infrastructure and this Site of Importance for Nature Conservation, these species are unlikely to be affected by the Proposed Scheme. Cefn Gelligaer, West of Deri Site of Importance for Nature Conservation lies approximately 500 metres south of the Site, on the opposite side of the A465. It is noted to support breeding lapwing but given the intervening distance, these are not likely to be affected by the Proposed Scheme. No significant effects on non-statutory sites designated for their ornithological interest are therefore likely.
- 4.4.5 Baseline breeding bird surveys identified breeding territories of four wader species within circa 1 kilometre of Proposed Scheme, including: curlew (up to four territories), snipe (up to two territories), lapwing (one possible territory) and common sandpiper (one territory). Curlew has undergone a rapid decline in Wales in recent years and is now considered to be the most pressing bird conservation priority in Wales. One red kite territory was identified within 2 kilometres and a peregrine territory was identified approximately 4 kilometres from the Site. Vantage point surveys recorded a number of target species but apart from red kite, all were only recorded occasionally, in low numbers.
- 4.4.6 To avoid or minimise negative effects, wind turbines have been located away from breeding curlew territories as far as possible.

- 4.4.7 Both curlew and snipe will experience a small loss of habitat due to the construction of the Proposed Scheme, but this would represent a very small proportion of their overall territories and is not likely to be significant. To minimise disturbance to breeding birds, including curlew and snipe, during construction and decommissioning, and to prevent damage to active nests, a range of good practice measures will be implemented, as required. These may include: timing of works; pre commencement surveys; implementation of disturbance-free buffers; and use of screens. Following the implementation of these measures, no significant effects are likely for any bird species during construction and decommissioning.
- 4.4.8 During the operation of the Proposed Scheme, potentially significant displacement effects have been identified for curlew and snipe (displacement of one pair of each species). These effects are considered to be significant at a regional level for curlew and at a county level for snipe. No other bird species are likely to be significantly affected by disturbance or displacement during operation.
- 4.4.9 The potential to provide beneficial measures for curlew and snipe within the Site is limited due to the majority of the Site being actively grazed common land, The Applicant has therefore located an off-site habitat management area, on land owned by DCWW adjacent to the Site to the east. Proposed management for curlew within the off-site management area is summarised below (for full details refer to the Outline Habitat Management Plan (**Technical Appendix 7.6, Volume 4**):
- Habitat management and restoration of heathland, via controlling grazing density and management of tall vegetation outside the breeding season- specifically dense stands of rushes and dominant grasses;
 - Restoring wet ground and peatland via ditch blocking drains;
 - Predator control, specifically between February and July during and immediately prior to the breeding season; and
 - Temporary electric fencing of curlew nests to prevent predation.
- 4.4.10 Any compensation measures designed for curlew are likely to also benefit snipe, as these species utilise similar breeding habitat, therefore any compensation and enhancement should benefit both species.
- 4.4.11 Collision risk has been modelled for four species based on the results of flight activity surveys but is not likely to be significant for any of the species assessed. Proposed aviation lighting is also not likely to result in significant adverse effects.
- 4.4.12 A cumulative assessment has been undertaken for other projects located within the core foraging range of the relevant species. No potential for significant cumulative effects has been identified.

4.5 Noise and Vibration

- 4.5.1 An assessment of the potential noise effects from the construction, operation and decommissioning of the Proposed Scheme has been undertaken. For each phase of the Proposed Scheme, the assessment considers compliance with applicable noise limits and guideline criteria.

- 4.5.2 Operational noise has been assessed in accordance with ETSU-R-97 guidance 'The Assessment and Rating of Noise from Windfarms' (1996) and methodologies advocated within the Institute of Acoustics "A Good Practice Guide to the Application of ETSU-R-97 for Wind Turbine Assessment" (May 2013).
- 4.5.3 The adoption of the ETSU-R-97 guidance 'The Assessment and Rating of Noise from Windfarms' (1996) to inform the assessment is advocated in national policy and has been used to inform a consideration of significant adverse effects. The guidance sets noise limits which offer a reasonable degree of protection to receptors without placing an unreasonable restriction on a proposed wind development.
- 4.5.4 This assessment is based on background noise measurements at three locations, informing an assessment at residential receptors, representative of those potentially impacted by noise from the Proposed Scheme.
- 4.5.5 The assessment is based upon a candidate turbine, commercially available at the time of the assessment. The design of the Proposed Scheme is such that predicted operational noise levels meet the derived noise limits, and the Proposed Scheme is acceptable in terms of the ETSU-R-97 guidance 'The Assessment and Rating of Noise from Windfarms' (1996), and therefore considered not significant.

4.6 Access, Traffic and Transport

- 4.6.1 The Proposed Scheme would lead to increased traffic volumes on trunk and local highway network during the construction phase. Traffic volumes would fall off considerably outside the peak period of construction.
- 4.6.2 The maximum traffic impact associated with construction is predicted to occur in month 7 of the indicative construction programme. During month 7, it is estimated that an average of 147 heavy goods vehicle movements (or 13 per hour) is predicted per day with a further 24 car and light goods vehicle movements to transport construction workers to and from the Site.
- 4.6.3 No significant capacity issues are expected on any roads within the study area due to the additional construction traffic movements associated with the Proposed Scheme, as background traffic movements are low and the links are of a reasonable standard.
- 4.6.4 A review of the local road network has been undertaken to assess the feasibility of transporting turbines to the Site and this has been concluded that access for the candidate turbine is feasible, subject to the provision of mitigation works.
- 4.6.5 Traffic levels during the operational phase of Proposed Scheme would be one or two vehicles per week for maintenance purposes. It is expected that traffic levels associated with the decommissioning phase of the Proposed Scheme will be less than those estimated during the construction phase, as it is likely that access tracks will be left in-situ.
- 4.6.6 A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of both the construction and operational phase traffic flows.

- 4.6.7 No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Proposed Scheme. The effects of construction traffic are temporary in nature. With the proposed mitigation, no significant traffic effects are predicted.

4.7 Heritage

- 4.7.1 A study area of 10 kilometre radius around the Site has been used to identify scheduled monuments, listed buildings, conservation areas and historic parks and gardens. Consideration of the Proposed Scheme in relation to the Registered Historic Landscape of Merthyr Tydfil has been assessed in a separate Assessment of the Significance of the Impact of the Development on Historic Landscapes report. There are no Registered Battlefields or World Heritage Sites within the Site or within a 10 kilometre radius around it.
- 4.7.2 There are 102 scheduled monuments within 10 kilometres, although following a staged assessment process, only seven were taken to further assessment. In all cases, a less than substantial level of harm to the significance of the monuments has been identified and is not significant in EIA terms. A similar process has been adopted for listed buildings, for which there were 322 in the study area. In the end, seven of these were taken for further assessment and again a less than substantial harm to their significance has been identified and is not significant in EIA terms. There are 12 conservation areas in the study area, of which only one was assessed further. Of the six registered historic parks and gardens, none were taken forward to detailed assessment.
- 4.7.3 A 2 kilometre radius study area around the Site has been used for archaeological sites recorded on the Glamorgan Gwent and Clwyd Powys Archaeological Trusts Historic Environment Records and for sites held on the National Monuments Record. Assessment of the searches, in conjunction with analysis of historic cartographic sources, aerial photographs and Lidar data has led to the conclusions that the Site has a moderate potential for prehistoric remains to be present within the proposed development areas, possibly associated with hitherto unrecorded cairns, buildings or field boundaries. There is a low potential for Roman and early medieval remains to be present. For the medieval period, the potential for remains to be present is low, although if so, they would likely be associated with land divisions, agricultural buildings, and sheep shelters. Remains are known to be present within the Site of post medieval date, and there is quite a high likelihood for agricultural remains to be present, such as field boundaries or shelters, quarries, and a high potential for remains associated with the Dowlais Free Drainage System. For the modern period, the potential is moderate as further mineral extraction remains and additions or repairs to the Dowlais Free Drainage System may be present.
- 4.7.4 Although the Proposed Scheme does not extend into the Bannau Brycheiniog National Park, the effect upon its setting has been considered.
- 4.7.5 Mitigation to the potential changes in significance of the designated features in the wider area is unlikely to be feasible, where there will be changes in their setting. It should be noted that any such changes are considered to be at a low level. For buried archaeological remains, mitigation could be implemented for direct impacts from the Proposed Scheme in the form of evaluation investigations across the Site, followed by excavation or other forms of recording as appropriate to any remains revealed.

Based on the assessment undertaken to date, it is not anticipated that any below ground archaeological remains will be of such high significance that they could be a constraint to the Proposed Scheme, and that any such remains can be dealt with through appropriate mitigation.

- 4.7.6 The scope of any further archaeological works that would be needed in advance or during construction of the Proposed Scheme would need to be discussed and agreed with Planning Services at Glamorgan Gwent Archaeological Trust in their capacity as archaeological advisors to Merthyr Tydfil and Caerphilly County Borough Councils. Cadw and the Conservation Officers would respond on issues regarding the designated historic assets in the study area.

4.8 Other Issues

Telecommunications

- 4.8.1 Radio waves and microwaves are used in a variety of communications, the introduction of any large structure has the potential to interfere with their transmission. Telecommunications operators have been consulted, and information requested for telecommunications links in proximity to the Site. As identified through consultation with relevant telecommunication link operators, only one telecommunication link has been identified within the study area. However, consultation with the Joint Radio Company has identified that a mitigation solution is available to the Applicant in resolving the potential negative effects on telecommunication link.

Utilities

- 4.8.2 Knowledge of the utilities during the design process allows any effects to be avoided either in the design of the Proposed Scheme or by the use of suitable structures to protect the utilities (in accordance and agreement with the relevant utility operator). Given the nature of the Proposed Scheme, there is the potential to affect existing utility infrastructure above and below ground. Therefore, a desk-based study (including consultation with relevant operators) has been undertaken. The desk-based study has focussed on existing utilities within the Site.
- 4.8.3 The desk-based study has identified that the following utilities and infrastructure have the potential to be affected by the Proposed Scheme:
- National Grid high pressure gas pipeline which crosses the Site in a south-west to north-east direction.
 - Wales and West Utilities high pressure gas pipeline which crosses the Site in an east to west direction.
 - Wales and West Utilities high pressure gas pipeline which crosses the Site in a north-west to south-east direction.
 - DCWW water main which crosses the Site in an east-west direction.
 - Two Western Power Distribution high voltage 33 kilovolt overhead power lines which cross the Site in an east to west direction.
- 4.8.4 The Applicant has consulted with both National Grid and Wales and West Utilities to agree appropriate methods of crossing each pipeline during the construction of the Proposed Scheme and appropriate separation distances from the wind turbines

themselves. Consultation with DCWW to agree an appropriate method of crossing is ongoing.

Shadow Flicker

- 4.8.5 Shadow flicker may occur under certain combinations of geographical position and time of day when the sun passes behind the rotors of a wind turbine and casts a shadow over neighbouring properties. Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. As the blades rotate, the shadow flicks on and off, an effect known as shadow flicker. The effect is most likely to be an issue inside buildings, where the flicker appears through a window opening. This can result in a nuisance when the shadow is cast over the windows of residential properties. Shadow flicker can be a cause of annoyance at residences near wind turbines if it occurs for a significant period during the year.
- 4.8.6 Based on the 'realistic' scenario assessment, no significant adverse shadow flicker effects are expected on any of the receptors assessed.

Land Use

- 4.8.7 The potential effects of the Proposed Scheme during construction, operation and decommissioning on land use interests has been assessed. Specifically, this section considers the potential impact of the Proposed Scheme on Common Land Unit (CL38), Gelligaer and Merthyr Common, and adjacent Countryside and Rights of Way Access Land.
- 4.8.8 As part of the pre-application consultation, discussions have been held with some of the active commoners who hold grazing rights over Gelligaer and Merthyr Common and representatives the Gelligaer and Merthyr Commoners Association.
- 4.8.9 In order to construct (and operate) the Proposed Scheme, 34.72 ha of the Northern Common will need to be deregistered as Common Land ('the Release Land'). As part of the Proposed Scheme, and in accordance with Section 16 of the Commons Act 2006, the Applicant will provide 34.72 ha of Replacement Land.
- 4.8.10 The nature of wind farm construction and the common land consenting regime means that a larger area of common land will need to be released to facilitate the construction phase than is required during the operational phase.
- 4.8.11 Once the wind farm has been constructed, the Applicant will grant grazing and access rights over that part of the Release Land not required during the operational phase, equating to approximately 31.18 ha.
- 4.8.12 The overall stock of common land and or land over which the graziers and public have rights of grazing and access will be more than they currently have during the operational phase of the wind farm. Any potential effects on land use following decommissioning of the Proposed Scheme are therefore not deemed to be significant.

Aviation

- 4.8.13 In general terms, the potential effects of wind turbines on aviation are widely understood, however, the primary concern in assessing the effect of a wind farm is to ensure that the safety of aircraft is not compromised from either physical obstruction or interference with aviation radar systems.
- 4.8.14 A desk-based review of literature and available data sources has been undertaken to support this assessment. The potential aviation issues that have been considered for the assessment are as follows:
- Civil airport IFPs (including navigation aids)
 - Military aerodrome IFPs (including navigation aids)
 - Civil ATC radar
 - Military ATC radar
 - Military AD radar
 - Low flying (military and civilian Emergency Helicopter Support Units)
 - Local minor aerodromes
 - Local airspace restrictions (Prohibited/Restricted/Danger Areas and Military Exercise and Training Areas)
 - Meteorological (Met) Office radars
- 4.8.15 The proposed turbines would create radar clutter that potentially conflicts with the routing of Cardiff Airport aircraft joining or departing controlled airspace in the vicinity of the Brecon VOR/DME navigation beacon. It is important that Cardiff Airport maintain comprehensive surveillance coverage in the vicinity of the Proposed Scheme to ensure aircraft safety. Consultation with Cardiff Airport following submission of the Scoping Report resulted in a preliminary agreement that the Air Traffic Control radar objection could be withdrawn subject to implementation of a suspensive planning condition.
- 4.8.16 The Proposed Scheme is located within Low Flying Area 7; an area which covers the geographical area of Wales. Low Flying Area 7 is considered by Ministry of Defence to be an area of key importance for military low flying training due to the area having challenging terrain and a generally sparse population. It is anticipated that, on submission of the Application, any potential impact on military low flying operations will be operationally acceptable subject to installation of appropriate aviation lighting.
- 4.8.17 Cardiff Airport, as the nearest civilian airport to the Proposed Scheme has indicated that while the turbines appear to be outside the areas where an impact would be observed, a full IFP assessment should be carried out by a CAA APDO to ensure there will be no adverse impact on the airport's IFPs. At the time of submitting this application, Cardiff Airport are finalising the contracting arrangements to commission an IFP assessment.
- 4.8.18 The effects of the Proposed Scheme have been minimised, as industry standard risk control measures would be put in place during the construction and operational

phases of the wind farm. These mitigation measures will further serve to reduce the impact of the Proposed Scheme and ensure the project conforms to regular requirements and industry good practice. As such, no residual significant effects are expected post mitigation.

Climate Change

- 4.8.19 This assessment provides an approximation of the carbon dioxide emissions associated with the manufacture, construction and decommissioning of the Proposed Scheme. It further provides an estimate of the contribution which the Proposed Scheme would make towards the reduction of emissions which would otherwise be produced by fossil fuel power generation. This provides an indication of the whole life carbon balance of the Proposed Scheme, together with an understanding of the emissions 'pay-back' period.
- 4.8.20 Greenhouse Gas emissions are predicted to arise from the manufacture, construction, and decommissioning activities. In particular, the principal sources of emissions include turbine manufacture and the loss of peat from the construction of turbines and associated infrastructure. However, these Greenhouse Gas emissions are predicted to be offset 1.4 years after the Proposed Scheme becomes operational (against a fossil fuel mix of electricity).

4.9 Environmental Commitments

- 4.9.1 A series of mitigation measures have been proposed with details provided on how the mitigation will be put in place or secured, and the expected timing.

4.10 Cumulative effects

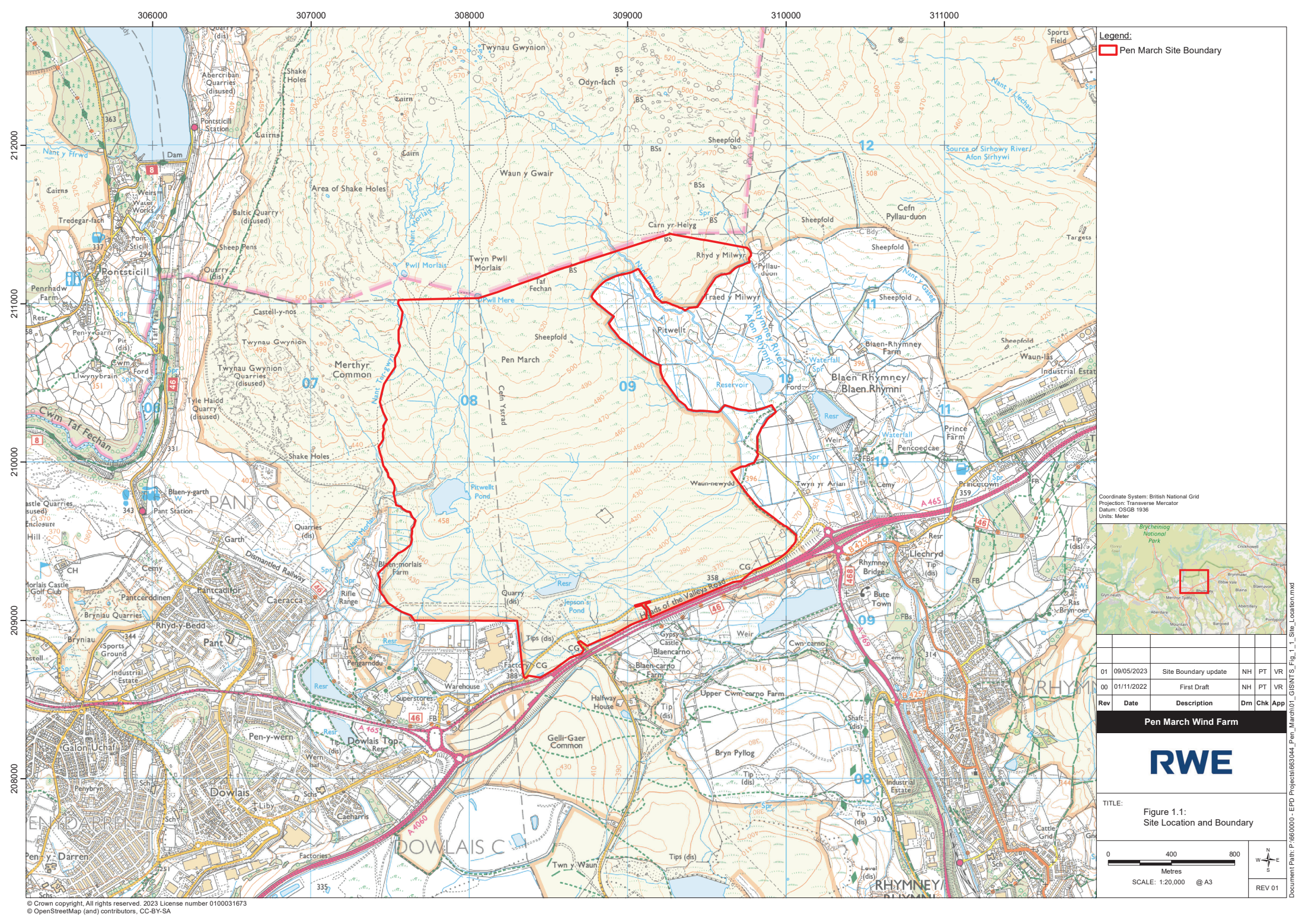
- 4.10.1 A cumulative assessment was undertaken to assess whether the combination of multiple effects upon a common receptor would result in an effect of greater significance than the individual effects alone. There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. However, the assessment methodology largely reflects that set out in the Planning Inspectorate's Advice Note 17: Cumulative Effects Assessment, as this is considered to represent best practice in respect of cumulative effects assessment.
- 4.10.2 As set out in **Chapter 4: EIA Process**, there are two aspects to the cumulative assessment which have been considered in the ES; inter-project cumulative effects and intra-project combined effects.
- 4.10.3 The assessment considered committed developments developed in consultation with Merthyr Tydfil County Borough Council, Caerphilly County Borough Council, Powys County Council, and Bannau Brycheiniog National Park Authority.
- 4.10.4 The assessment concluded that the potential for any cumulative effects is not considered to be significant.

5 WHAT HAPPENS NEXT?

- 5.1.1 The Environmental Statement alongside other application documents will be examined by Planning and Environment Decisions Wales.

Members of the general public will have the opportunity to make comments on the application during the determination period. The feedback from these discussions will be taken into consideration by Planning and Environment Decisions Wales in reaching its decision.

FIGURES



Legend:
Pen March Site Boundary

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drm	Chk	App
01	09/05/2023	Site Boundary update	NH	PT	VR
00	01/11/2022	First Draft	NH	PT	VR

Pen March Wind Farm

TITLE:
Figure 1.1:
Site Location and Boundary

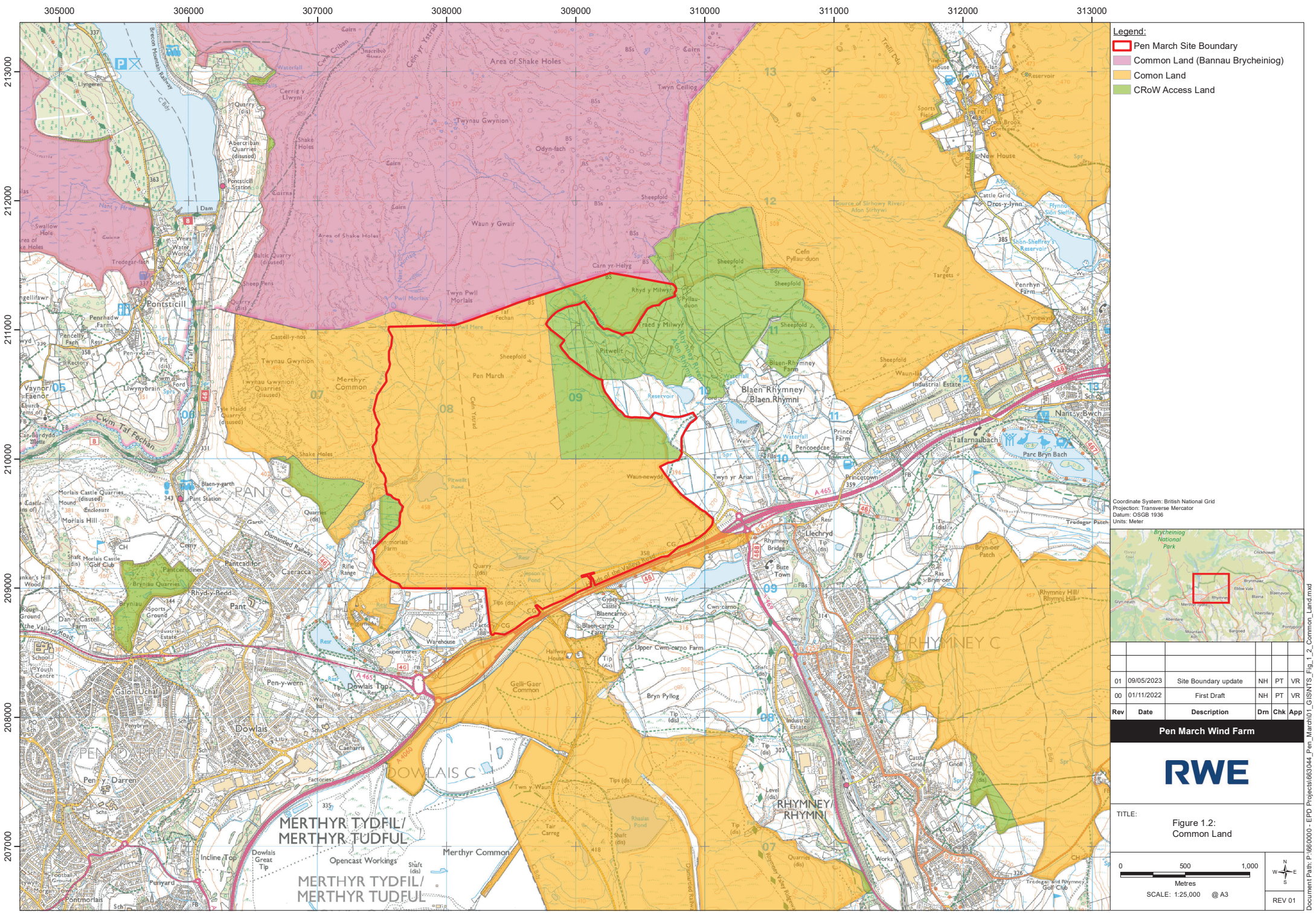
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Metres

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North arrow pointing up

REV 01



- Legend:
- Pen March Site Boundary
 - Common Land (Bannau Brycheiniog)
 - Comon Land
 - CRow Access Land

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drm	Chk	App
01	09/05/2023	Site Boundary update	NH	PT	VR
00	01/11/2022	First Draft	NH	PT	VR

Pen March Wind Farm



TITLE: Figure 1.2: Common Land

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