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Key Considerations for Manmoel Wind Farm

CENIN

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Document history

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Glossary

Term	Definition
Ecological Impact Assessment (EclA)	Ecological Impact Assessment is a process of identifying, quantifying and evaluating potential effects of development-related or other proposed actions on habitats, species and ecosystems.
Ramsar Site	A Ramsar Site is a wetland site of international importance designated under the Ramsar Convention, where waterfowl or waterfowl habitat are described as ecological features.
Sites of Special Scientific Interest (SSSI)	Sites of Special Scientific Interest are protected areas that represent the UK's most important wildlife and/or geological sites.
Special Protection Area (SPA)	Special Protection Area, an internationally important area for nature conservation, specifically birds, classified under the Birds Directive.
The proposed development	Manmoel Wind Farm.

List of Abbreviations

Abbreviation	Description
BBS	Breeding Bird Surveys
BGCBC	Blaenau Gwent County Borough Council
CCBC	Caerphilly County Borough Council
CEMP	Construction Environment Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CZTV	Cumulative Zone of Theoretical Visibility
ECOW	Environmental Clerk of Works
EclA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
ES	Environmental Statement
GPG	Good Practice Guide
HMA	Habitat Management Area
IBAs	Important Bird Areas
IEFs	Important Ecological Features
IoA	Institute of Acoustics
LPAs	Local Planning Authorities
LVIA	Landscape and Visual Impact Assessment
Natural Power	Natural Power Consultants

Abbreviation	Description
NRW	Natural Resources Wales
NVC	National Vegetation Classification
PAC	Pre-Application Consultation
SAC	Special Areas of Conservation
SBC	Soltys Brewster Consulting
SPAs	Special Protection Areas
SPP	Species Protection Plan
SSSI	Sites of Special Scientific Interest
VP	Vantage Point
ZTV	Zone of Theoretical Visibility

1. Introduction

The purpose of this document is to provide information to the community of some of the key considerations that have been assessed for the development of Manmoel Wind Farm (the 'proposed development'). This is part of the Pre-Application Consultation (PAC) process. In terms of community consultation, Cenin Renewables (the 'Applicant') have created a virtual exhibition room where the public can find information and project details of the proposed development. One of the information boards in the room contains 'Key Considerations'. This document summarises how Ecology, Ornithology, Landscape and Visual, and Public Health and Safety have been considered for the proposed development.

2. Ecology and Ornithology

Ecology and Ornithology were both key considerations in the planning of the proposed Manmoel Wind Farm development. The ecological and ornithological chapter of the Environmental Statement (ES) has been prepared by Natural Power (Natural Power Consultants) on behalf of the Applicant, in respect of the proposed development. Natural Power has experience of the site having completed ornithology and ecology survey work for the proposed wind farm since 2019 and undertook several assessments and surveys.

Survey and desk study methodologies were used during baseline ecology and ornithology surveys. Assessments followed Chartered Institute of Ecology and Environmental Management (CIEEM)¹ and other relevant guidelines, and effects were assessed as being either significant or not significant in accordance with CIEEM. Consultation has been undertaken with Natural Resources Wales (NRW) and the Local Planning Authorities (LPAs) to gauge initial views and for opinion. Protected species (mammals, bats and birds), habitats on site and nearby designated sites have been considered. Collision Risk Modelling, Habitat Loss Calculation modelling, and Bat Data Analysis has been undertaken. Designated areas within the following distances of the proposed site boundary were also searched for:

- Special Areas of Conservation (SACs) – within 10 km of the anticipated site boundary (Ecology);
- Sites of Special Scientific Interest (SSSIs) – within 5 km of the anticipated site boundary (Ecology);
- Special Protection Areas (SPAs) – within 20 km of the anticipated site boundary for those designated for geese and 10 km for other SPAs (Ornithology);
- Ramsar sites – within the same distances as for SPs in previous bullet point (Ornithology);
- Important Bird Areas (IBAs) – within 5 km of the anticipated site boundary (Ornithology); and
- Local and National Nature Reserves (including Royal Society for the Protection of Birds and Wildlife Trust Reserves) – within 5 km of the proposed site boundary (Ecology and Ornithology).

2.1. Ecology

In order to inform the Ecological Impact Assessment (EclA), baseline ecology surveys were undertaken in 2020. These included Phase 1 and National Vegetation Classification (NVC) habitat surveys, great crested newt and bat surveys (roost assessment and activity surveys) following standard NatureScot guidance. In 2021 additional Phase 1 and NVC habitat surveys were undertaken in the potential Habitat Management Area (HMA; adjacent to the site boundary) and a badger survey was undertaken within the site boundary.

¹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

An assessment has been made of the predicted significance of effects of the proposed development on ecological interests. This assessment predicted no significant effects on all of the Important Ecological Features (IEFs) recorded and no significant cumulative effects on any IEFs.

Habitat enhancement measures targeted at dry heath are proposed. Embedded mitigation measures to minimise impacts of the construction and operation of the proposed development on IEFs, and to prevent a breach of legislation under the Wildlife and Countryside Act (1981). A Species Protection Plan (SPP) is proposed and good practice guidance regarding protected species and pollution prevention will be followed, with an Environmental Clerk of Works (ECoW) employed during construction. Further mitigation in the form of an Ecological Management Plan (EMP) to restore dry heath habitats and minimise impacts on bats is proposed. It is considered that implementation of these mitigation and habitat enhancement measures will reduce the likelihood of impacts on IEFs at the appropriate biogeographical scale.

Baseline ecological conditions have been established for habitats and non-avian fauna through a programme of rigorous ecological field surveys, in addition to a desk-based review to obtain additional relevant ecological data. The identified habitats and species comprising the ecological baseline are described and assessed using recognised criteria, in accordance with industry guidelines (e.g. that produced by the Chartered Institute of Ecology and Environmental Management: CIEEM, 2018²).

In line with the principles of proportionate Environmental Impact Assessment (EIA), embedded mitigation is considered at the outset of the assessment. Furthermore, to ensure proportionality based on the likelihood of potential effects, only ecological features for which it is considered there may be significant effects in the absence of mitigation are identified as IEFs and are taken forward for a full EclA.

The potential for ecological impacts (i.e. predicted change to the baseline) as a result of the proposed development during the construction, operational and decommissioning phases have been identified and assessed, with particular attention paid to habitats and species of high vulnerability, conservation concern and those afforded a high level of legal protection. These impacts are then assessed in terms of their significance of effects to each IEF (where effects are the consequence of impacts on environmental resource or receptor). Where potentially adverse ecological effects have been identified and/or predicted for an IEF, appropriate mitigation to avoid or reduce the effects of such impacts are proposed. For IEFs for which greater than negligible residual effects are predicted after the application of this mitigation, cumulative effects with other nearby developments have also been considered within this EclA.

2.2. Ornithology

In order to inform the EclA, 24 months of ornithological survey work was undertaken at the proposed development between September 2019 and August 2021 (two breeding seasons and two non-breeding seasons). The following surveys were undertaken:

- Desk based study;
- Vantage Point (VP) surveys in two breeding seasons (2020 and 2021) and two non-breeding seasons (2019/20 and 2020/21), utilising two VP locations;
- Breeding bird surveys (BBS) in 2020 and 2021;
- Breeding raptor surveys in 2020 and 2021; and
- Breeding nightjar surveys in 2020 and 2021.

The VP locations can be identified in Figure 7.1: Vantage Point Locations and Viewsheds, Volume 2 of the ES.

All surveys were undertaken following the most relevant industry guidelines and incorporated relevant scoping responses.

² CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management, Winchester.

The proposed development is not located within any statutory sites designated for ornithological interests; however part of a SSSI is located just within 10 km of the proposed development (River Usk (Upper Usk)/Afon Wysg (Wysg Uchaf)).

VP surveys recorded flight lines from a total of nine target species, most of which were raptors or gulls. No breeding target raptor species were found breeding within the survey area. Breeding nightjars were confirmed in both years, with an estimate of two probable territories in 2020 and two in 2021 within the survey area. No nightjar records came from within the area of the proposed development.

The main ways in which a wind farm may affect ornithological features are via habitat loss due to land-take; disturbance and/or displacement; and collision with the wind turbines. Following survey and assessment, species considered to be important ornithological features in the context of the proposed development, and subject to further impact assessment, following guidance, were herring gull (collision risk only), lesser black-backed gull (collision risk only) and red kite (collision risk only). Following such further assessment (including collision risk modelling for appropriate species), no significant effects are anticipated upon ornithological features. However, additional controls will be put in place during construction through creation of a site-specific Construction Environment Management Plan (CEMP), SPP and appointing an ECoW to monitor adherence to such plans.

2.3. Conclusion

An assessment has been undertaken for the potential effects and embedded mitigation in order to minimise the ecological and ornithological impact of the proposed development.

Full details of the methodology, and the results of the assessments, can be found in Appendix A6: Ecology and Appendix A7: Ornithology, Volume 3 of the ES.

3. Landscape and Visual Impact

A Landscape and Visual Impact Assessment (LVIA) was undertaken for the proposed development as a key consideration. Soltys Brewster Consulting (CBC) undertook the assessments and have developed, extensive experience of LVIA and visualisation production for wind farm developments across the UK and Ireland. Desk Based Assessment was undertaken in order to review current statutory and non-statutory national, regional and local landscape policies, designations and planning guidance covering the site and surrounding landscape. A blade tip height for each proposed turbine up to a maximum height of 180 m was assumed, therefore a 45 km maximum study area for individual effects and cumulative effects was utilised.

This assessment of the likely effects on landscape character and visual amenity of the proposed development was undertaken using a methodology developed by SBC drawn from the following guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute with the Institute of Environmental Management and Assessment (2013);
- Assessing the Cumulative Impact of Onshore Wind Energy Developments, NatureScot, (March 2021);
- Siting and Designing Wind Farms in the Landscape, Version 3, NatureScot (2017);
- Natural Resources Wales (NRW) Guidance Note 046, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA),' NRW (January 2021);
- Visual Representation of Wind Farms, Version 2.2, NatureScot (February 2017);
- Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19;
- An Approach to Landscape Sensitivity Assessment – To Inform Spatial Planning and Land Management, Natural England (June 2019);

- Assessing Landscape Value Outside National Designations -Technical Guidance Note 02/21, Landscape Institute (2021); and
- Planning Guidance for Smaller Scale Wind Turbine Development Landscape and Visual Impact Assessment Requirements, Prepared by Gillespies LLP for The Heads of the Valleys Landscape Officers and Planners with support from The South Wales Landscape Liaison Group (April 2015).

Details of the criteria and methods used in assessing the effects of the proposed development on landscape character and visual amenity, both individually and cumulatively are set out in Appendix A8.1: Landscape and Visual Impact Assessment Methodology.

Liaison with Blaenau Gwent County Borough Council (BGCBC) and Caerphilly County Borough Council (CCBC) was undertaken in order to agree the LVIA scope and agree the final choice of sensitive receptors, viewpoint locations and cumulative projects to be considered within the agreed study area. Detailed field assessment was undertaken, including visits to the site. Assessment of effects on landscape character and visual amenity from the 19 agreed viewpoint locations.

Assessment of cumulative effects on landscape character and visual amenity of existing and consented wind farms, plus those submitted for planning within the 45 km study area was undertaken. Viewpoint photography and photomontages/wirelines were produced, and 360° baseline panorama photographs and wirelines were produced for all viewpoint locations in accordance with the guidance.

A Zone of Theoretical Visibility (ZTV) assessment was undertaken to assess the degree of potential change to the landscape and the potential impact on the setting of assets within the 45 km study area. Cumulative Zone of Theoretical Visibility (CZTV) was also undertaken as part of the LVIA to assess the impacts of the proposed development.

Assessment of effects including, physical effects on the landscape, landscape and visual effects on landscape character and visual amenity during the construction, operational and decommissioning phases of the development have been considered.

A night time visual impact assessment has also been carried out due to the lighting of the turbines. Full details of the methodology, and the results of the assessment, can be found in Appendix A8.8: Aviation Lighting Assessment, Volume 3 of the ES.

4. Noise

Noise was also a key consideration and assessments were undertaken by Rappor. Rappor is an independent, multi-disciplinary infrastructure and environmental consultancy who provide pre and post planning noise services, UK-wide throughout the energy sector.³ The work was carried out in line with ETSU-R-97 The Assessment and Rating of Noise from Wind Farms (1996) and the associated Institute of Acoustics Good Practice Guide (2013). The assessment is undertaken in accordance with the Institute of Acoustics (IoA) Good Practice Guide (GPG) which details the use of ETSU-R-97 including appropriate survey and prediction methodology.

The following impacts have been scoped in to the assessment of noise:

- Construction
 - Impact of noise during construction activities.
- Operation
 - Impact of noise during the operation of the proposed development; and
 - Impact of cumulative noise from the operation of all wind turbine developments in the area.

³ Rappor. Available from <https://ceglos.org.uk/members/rappor/> [Accessed 21/02/2023]

- Decommissioning
 - Impact of noise during the decommissioning phase of the development.

Baseline monitoring was undertaken, using noise-sensitive receptors at 10 noise monitoring locations. The data was processed and analysed. Both ETSU-R-97 daytime and night-time amenity noise limits were considered for the operational phase of the proposed development. The production of time histories of noise vs wind, derivations of ETSU-R-97 noise limits, assessment of prediction noise levels against noise limits, cumulative assessment of eight neighbouring wind farms and a simplified construction noise assessment was undertaken, and results have been considered for the proposed development.

The assessment includes the cumulative impact from other wind energy developments both operating and within the planning system.

A summary of the assessment can be found in Chapter 12: Noise, Volume 1 of the ES, with the full details in the Rappor technical report included in Appendix A12.1.

5. Shadow Flicker

Shadow flicker is the effect caused when turbine blades cast shadows over neighbouring properties as they turn, through constrained openings such as windows. The magnitude of the shadow flicker depends on several environmental conditions coinciding at a given time, including the position and height of the sun, wind speed, wind direction, cloud cover, position of the turbine relative to a sensitive receptor, and the position of any windows together with intervening line-of-sight screening (e.g. trees or buildings).

A shadow flicker assessment has been undertaken for the proposed development analysing 50 receptor locations situated in the vicinity of the proposed development. First, the worst-case scenario for shadow flicker was calculated at these locations, using a 'bare-earth' model that does not take into account screening effects from vegetation and buildings. Next, meteorological data was applied to the worst-case results to give a more realistic assessment of shadow flicker at the chosen receptors. A real-case scenario was also undertaken. This takes the worst-case scenario, and then adjusts the duration of the total potential shadow flicker events by the likelihood that direct sunshine occurs in the region. Typically, this utilises sunshine data from a nearby ground-based meteorological station to apply monthly scaling factors to the worst-case scenario results. This results in a more accurate representation of the number of hours per year, that a receptor location may experience shadow flicker.

The 'real-case' assessment results showed that 12 receptors (R1, R2, R3, R18, R19, R20, R36, R37, R38, R41, R42 and R43) could theoretically exceed beyond the guidance of a maximum of 30 minutes/day or 30 hours/year of shadow flicker. It should be noted here that these results do not account for factors such as any screening from vegetation, orientation of windows at the receptor, or the function of rooms theoretically affected by shadow flicker. Taking these into account will further reduce the hours of shadow flicker experienced at these receptors.

Prior to commissioning of the proposed development, a shadow flicker protocol to reduce effects to below 30 minutes a day and/or 30 hours per annum for any relevant properties existing or with planning permission at the time of consent will be agreed by means of a planning condition with the LPAs.

Full details of the methodology, and the results of the assessment, can be found in Appendix A13.1 of the ES.



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