



Y Bryn

ONSHORE WINDFARM



Energy for
generations



Prepared by Natural Power on
behalf of Y Bryn Wind Farm Limited

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Glossary

Term	Definition
Baseline	The existing conditions that prevail against which the effects of the wind farm are compared.
Construction Environmental Management Plan (CEMP)	A plan prepared by a contractor before the start of construction work, detailing 'environmental aspects' that may be affected by the construction work and management methods to prevent any such effects. The CEMP would include methods and site management practices to be applied to prevent generation of nuisance dust, accidental pollution events and a range of other potential sources of accidental damage to the environment, and response and reporting procedures to minimise the damage in the event of a pollution incident.
Designated assets	Assets recognised as having a particular value and given a formal status under law or policy to sustain those values. With regards to cultural heritage, these include: Scheduled Monuments, Listed Buildings, Conservation Areas, World Heritage Sites and Protected Wrecks. Welsh Government maintains a register of historic landscapes and soon to come into force is a statutory register of historic parks and gardens.
Environmental Impact Assessment (EIA)	An EIA is prepared at the permitting stage of a proposal as a means of carrying out, in a systematic way, an assessment of the likely significant environmental effects of a development.
Environmental Statement (ES)	A document reporting the findings of the Environmental Impact Assessment (EIA) and produced in accordance with the EIA Regulations and allows the consenting authority a means of assessing the potential impacts of the development.
Habitat	The area or environment where a species naturally occurs.
Historic Asset	An identifiable component of the historic environment. It may consist or be a combination of an archaeological site, a historic building, or a parcel of historic landscape.
Ice-throw	Under certain conditions, ice may form on turbine blades. If the turbine is operational and the ice becomes detached while the blades are rotating, it may be projected away from the turbine.
Infrastructure	This is used to describe all parts of Y Bryn Wind Farm that require construction activities, both temporary and permanent, including turbines, hard standings, borrow pits and tracks (where new or widened).
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes the landscape different from another, rather than better or worse.
Landscape Character Areas (LCAs)	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Mitigation	Measures, including any process, activity or design to avoid, reduce, remedy or compensate for potential negative effects of a development.
North section	Section of development located north of Bryn settlement, within Penhydd forestry block.
Peat	A largely organic substrate formed of partially decomposed plant material.

Term	Definition
Planning Statement (PS)	A document outlining the policy and legislation relevant to the proposed development and demonstrating the accordance or otherwise of the development with this policy and legislation.
Private Water Supply (PWS)	Any water supply which is not provided by a water company and is not connected to mains supply. Most private water supplies are situated in more remote, rural parts of the country and may just serve one property or several properties through a network of pipes.
Proposed development	Y Bryn Wind Farm development.
Proposed development area	The area within which the proposed development will be located.
Protected species	Animals or plants protected by legislation.
Recreational route	Routes created by local authorities, government agencies or volunteer organisations. They mainly follow existing rights of way.
Residential Visual Amenity (RVA)	The point at which a proposed development is likely to change the visual amenity of a residential property to such an extent that it becomes a matter of 'Residential Amenity'. The effect(s) of the development on the 'private interest' is so great that it becomes a matter of public interest.
Scoping	The process of identifying the issues to be addressed by an Environmental Impact Assessment.
Seascape	Landscapes with views of the coast or sea, and coasts and adjacent marine environments with cultural, historical, and archaeological links with each other.
Seascape Character	A distinct, recognisable, and consistent pattern of elements in the seascape that makes the seascape different from another, rather than better or worse.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that response.
Setting	The setting of an asset includes the surroundings in which it is understood, experienced, and appreciated, embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive, negative, or neutral contribution to the significance of an asset.
Significance	A measure of the importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic.
Silviculture	The growing and cultivation of trees for timber.
South section	Section of development located south of Bryn settlement, within Bryn forestry block.
Statutory consultees	Organisations that the Client is required to consult under The Developments of National Significance (Procedure) (Wales) Order 2016 (as amended).
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides a visual setting or backdrop for the enjoyment of activities of people living, working, recreating, visiting, or travelling through an area.
Visual effects	Effects on specific views and on the general visual amenity enjoyed by people.
Visual receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.

Term	Definition
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.
Zone of Theoretical Visibility	A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

List of Abbreviations

Abbreviation	Description
AIL	Abnormal Indivisible Load
AMP	Access Management Plan
AONB	Area of Outstanding Natural Beauty
ASIDOHL	Assessment of the Significance of the Impact of Development on the Historic Landscape
AQA	Air Quality Assessment
AQMA	Air Quality Management Area
BCBC	Bridgend County Borough Council
CAA	Civil Aviation Authority
CCC	Committee on Climate Change
CCR	Cardiff Capital Region
CEMP	Construction Environmental Management Plan
CMRA	Coal Mining Risk Assessment
CO ₂	Carbon dioxide
CRM	Collision Risk Modelling
DAS	Design and Access Statement
dB	Decibel
DNS	Development of National Significance
ECoW	Environmental Clerk of Works
EIA	Environmental Impact Assessment
EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017
EPS	Energy Policy Statement
ES	Environmental Statement
FCW	Forestry Commission Wales
GSP	Grid Supply Point
GW	Gigawatt
ha	Hectares
HGV	Heavy Goods Vehicle
HMP	Habitat Management Plan
HSE	Health and Safety Executive
IEMA	Institute of Environmental Management & Assessment
ISA	Inner Study Area
kV	Kilovolt
LB	Listed Building
LCA	Landscape Character Area
LDP	Local Development Plan
LISS	Low Impact Silviculture Systems

Abbreviation	Description
LOSHIW	Landscape of Special Historic Interest in Wales
LPA	Local Planning Authority
m	Metre
MOD	Ministry of Defence
MW	Megawatt
Natural Power	Natural Power Consultants Ltd
NPTCBC	Neath Port Talbot County Borough Council
NPS	National Policy Statement
NRW	Natural Resources Wales
NTS	Non-Technical Summary
NVC	National Vegetation Classification
OSA	Outer Study Area
PAA	Pre-Assessed Area
PAC	Pre-Application Consultation
PEDW	Planning and Environment Decisions Wales
PPW	Planning Policy Wales
PRoW	Public Rights of Way
PS	Planning Statement
PWS	Private Water Supply
PyC	Pen y Cymoedd
RES	Renewable Energy Strategy
RLDP	Replacement Local Development Plan
RVA	Residential Visual Amenity
RVAA	Residential Visual Amenity Assessment
SAB	SuDS Approving Body
SCA	Seascape Character Area
SEPA	Scottish Environmental Protection Agency
SINCs	Sites of Importance for Nature Conservation
SIP	Single Integrated Plan
SLA	Special Landscape Area
SLVIA	Seascape, Landscape and Visual Assessment
SM	Scheduled Monument
SPP	Species Protection Plan
SSA	Strategic Search Area
SuDS	Sustainable Drainage Systems
SWW	South West Wales
TAN	Technical Advice Note
TCA	Trade and Cooperation Agreement
TMP	Traffic Management Plan

Abbreviation	Description
UNFCCC	United Nations Framework Convention on Climate Change
VILL	Visually Important Local Landscape
VP	Vantage Point
WG	Welsh Government
WGWE	Welsh Government Woodland Estate
ZTV	Zone of Theoretical Visibility

1. Introduction

This Non-Technical Summary (NTS) summarises the key findings of the Environmental Impact Assessment (EIA) presented in the Environmental Statement (ES) in relation to the proposal to construct and operate Y Bryn Wind Farm (the proposed development).

The proposed development's generating capacity of renewable electricity will be in excess of 10 megawatts (MW) and therefore the application is considered a Development of National Significance (DNS) and submitted to Planning and Environment Decisions Wales (PEDW) and determined by Welsh Ministers.

This NTS has been produced in accordance with The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (hereafter referred to as the EIA Regulations).

1.1. The Applicant

The Applicant, Y Bryn Wind Farm Ltd, is a project company wholly owned by development partners ESB and Coriolis Energy.

ESB¹ is Ireland's premier energy company and is a leading independent power generator in the UK market. ESB has a track record of 30 years as a successful investor in the UK since commissioning one of the first independent power generating plants at Corby in Northamptonshire in 1994.

ESB owns and operates wind farms across the UK and Ireland with a total installed capacity of 1.2 GW, including the operational Mynydd y Betws Wind Farm (34.5 MW) in Carmarthenshire.

Coriolis Energy identifies and works on the development of wind farm proposals, and ESB constructs and operates those wind farms.

Coriolis Energy² is a specialist independent wind farm development company operating throughout the UK. Its principals have been responsible for successfully developing 15 onshore wind farms in the UK with a capacity of 700 MW over three decades.

1.2. Consultants

Natural Power Consultants Limited (Natural Power), the lead consultancy on the project, has been providing expertise to the renewable energy industry since the company was formed in 1995 and is one of the UK's leading renewable energy and infrastructure consultants.

Natural Power currently employs over 420 people working full time providing renewable energy services nationally and internationally, including a dedicated Welsh team with over 460 MW worth of applications consented, including those that have gone to appeal.

Testimony to Natural Power's experience and ongoing commitment to competency and continual improvement, its Planning & Environment Department is accredited by the Institute of Environmental Management and Assessment (IEMA) and is registered to IEMA's EIA Quality Mark scheme. In addition, Natural Power also operates in formally accredited occupational health and safety (ISO 45001), environmental (ISO 14001) and quality (ISO 9001) management systems. As well as development and EIA services, Natural Power also provides expert advice and due diligence consultancy, site construction management and site operation and maintenance. Thus, Natural Power is a competent, experienced consultant to co-ordinate and undertake EIA and to prepare the ES.

¹ Available from - <https://www.esbenergy.co.uk/our-story-in-britain/about/our-story-in-britain> [Accessed 31/05/2023]

² Available from - <http://www.coriolis-energy.com/> [Accessed 31/05/2023]

Other consultants involved in the EIA have provided independent professional input for Seascape, Landscape and Visual, Aviation, Noise, Cultural Heritage, Abnormal Indivisible Load (AIL) Assessment, Forestry, Mining and Air Quality:

- Soltys Brewster Consulting Ltd. (Seascape, Landscape and Visual Assessment (SLVIA));
- Optimised Environments Ltd (peer review of SLVIA);
- Arcus Consultancy Services Ltd. (visualisations for SLVIA);
- Aviatica (Aviation);
- Professor Philip Best (Report on Aviation Lighting Propagation);
- Hayes McKenzie Partnership Ltd. (Noise);
- Headland Archaeology Ltd. (Cultural Heritage);
- Pell Frishmann (AIL Assessment);
- ARC Woodlands Ltd. (Forestry);
- South West Geotech (Mining); and
- Air Quality Consultants Ltd (Air Quality).

2. Approach to EIA

The ES has been prepared in line with the EIA Regulations. The ES reports the findings made in the EIA of the proposed development. The scope of the EIA was the subject of a formal scoping opinion from the Planning Inspectorate (now PEDW) on behalf of Welsh Ministers. This included formal consultation with the Local Planning Authorities (LPAs), which are Neath Port Talbot County Borough Council (NPTCBC) and Bridgend County Borough Council (BCBC), and with other consultees including Natural Resources Wales (NRW), Cadw, Dwr Cymru, Welsh Government (WG): Planning Directorate and Health and Safety Executive (HSE). Additionally, Swansea Council and Vale of Glamorgan Council wished to submit comment regarding landscape and visual impacts which the Planning Inspectorate (now PEDW) accepted. A scoping direction was issued by the Planning Inspectorate (now PEDW) in March 2021.

During the EIA process, site visits, surveys and desktop assessments, in line with relevant guidance, were carried out to ascertain the potential impacts of the proposed development on the environment and mitigation measures to be applied. A review of planning and other relevant policies was also undertaken to inform the assessment process and ensure the proposed development adequately considered local and national policy. The ES has been prepared in accordance with the EIA Regulations and follows the structure presented in Table 2.1. Where relevant each ES chapter considers the baseline environment, the likely significant effects for each phase of the development, any required mitigation and cumulative impacts.

Table 2.1: ES Structure

Volume	Heading	Description
1	ES Chapter 1: Introduction	Presents the proposed development and provides a brief overview of the applicant and the ES.
1	ES Chapter 2: Legal and Policy Context	Identifies energy and land use policies and outlines the need for the proposed development and its benefits within the context of international climate change agreements and European, UK and Welsh renewable energy policy.
1	ES Chapter 3: Approach to EIA	Describes the approach taken to assess effects relating to the topics investigated as part of the EIA.
1	ES Chapter 4: Site Selection and Design Evolution	Explains the site selection and the design evolution process that has resulted in the proposed development.
1	ES Chapter 5: Project Description	Provides a detailed description of the infrastructure associated with the proposed development.
1	ES Chapter 6: Ecology Assessment	Provides an assessment of the habitats and (non-avian) fauna present within the proposed development area and immediate surrounding environment.
1	ES Chapter 7: Ornithology Assessment	Provides an assessment of the potential effects upon avian species.
1	ES Chapter 8: Seascape, Landscape and Visual Impact Assessment	Provides an assessment of the seascape, landscape and visual impacts of the proposed development including residential visual amenity and night-time lighting effects.
1	ES Chapter 9: Cultural Heritage Assessment	Provides an assessment of the potential effects of the proposed development upon cultural heritage assets.
1	ES Chapter 10: Hydrology, Geology and Hydrogeological Assessment	Assesses the effects on the hydrological, geological and hydrogeological environment by the proposed development, including private water supplies and peat.
1	ES Chapter 11: Traffic and Transport Assessment	Identifies the transport route and assesses the potential effects upon the transport network resulting from the proposed development.
1	ES Chapter 12: Noise Assessment	Provides an assessment of the potential noise effects of the proposed development.
1	ES Chapter 13: Forestry Assessment	Assesses how the proposed development will affect the existing plans for felling, restocking, and proposes suitable amendments to forestry design plan(s) to accommodate the proposed development.
1	ES Chapter 14: Health and Public Safety	Assesses effects of shadow flicker, ice-throw, and health and safety of construction workers and public relating to the proposed development.
1	ES Chapter 15: Aviation and Existing Infrastructure	Provides an assessment of the potential effects upon aviation interests, communication operations and existing site infrastructure such as public right of way.
1	ES Chapter 16: Socioeconomics	Provides an assessment of the potential socioeconomic effects of the proposed development.

Volume	Heading	Description
1	ES Chapter 17: Residual Effects, Mitigation and Enhancement	Summarises the proposed mitigation and residual effects of the proposed development, as well as proposed enhancement measures.
2	Figures and Visualisations	ES Figures and Visualisations to accompany all chapters.
3	Technical Appendices	Provides additional supporting documents and data which inform the ES.
4	Bilingual Non-Technical Summary	Provides a high-level summary of the ES in terms that can be understood by a layperson, in both Welsh and English.

Source: Natural Power

The application is also supplemented by an accompanying Planning Statement (PS) , Design and Access Statement (DAS) and a Pre-Application Consultation (PAC) Report.

3. Overview of the Proposed Development

3.1. Site Location

Y Bryn site boundary is comprised of a large upland area primarily under productive forestry. The proposed development lies approximately 1.1 km west of Maesteg, 2.7 km north-east of Port Talbot, 1.8 km east of Goytre, and 1.6 km south of Cynonville. The north section of the proposed development is located north of the B4282, within Penhydd forest, while the south section is located south of the B4282 road, within Bryn Forest. Access for turbine deliveries will be via a new slipway off the eastbound M4 past junction 41 and entering the southern section, before utilising existing track and crossing the B4282 to deliver to the north section. The majority of proposed infrastructure is located in NPTCBC area, with some in BCBC area. Figure 1.1 of the ES illustrates the proposed development's location.

3.2. Project Description

The proposed development is expected to generate up to 129.6 megawatts (MW) and comprises the following main elements:

- Up to 18 wind turbines (ranging between up to 206 metres (m), up to 230 m and up to 250 m to tip), each with:
 - turbine foundations;
 - external transformer housings; and
 - crane hardstandings and erection areas;
- On-site substation, control building and compound;
- Energy storage facility;
- Two wind monitoring locations, with anemometry masts (up to 131 m height) or other ground-based equipment (e.g. LiDAR);
- Upgraded and new access tracks;
- Underground electricity cables connecting infrastructure within the Y Bryn site boundary;
- Site signage;
- Borrow pits;
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure;

- Drainage and drainage attenuation measures, to be designed by the contractor post-consent and approved by the relevant Sustainable Drainage (SuDS) Approving Body (SAB) prior to construction. Attenuation measures will be incorporated into the post construction drainage design to mimic existing greenfield runoff rates and ensure that no untreated water enters natural watercourses;
- Habitat management and enhancement measures, including broadleaf woodland restoration, wet woodland creation, creation of ponds and ditches to aid flood prevention, control of dense bracken and control of invasive species; and
- Access management and enhancement measures, including reinstatement and restoration of PRowS, upgrades and ongoing maintenance to mountain biking trails, measures to promote and support greater use of e-bikes, and promotion of a strategic link between Afan Forest Park and Margam Park mountain biking trails.

The land where turbines will be erected is currently productive forestry, on Welsh Government Woodland Estate (WGWE) managed by NRW. Forestry felling and replanting will be undertaken to facilitate erection of turbines, and creation of new access tracks and/or upgrades to existing access tracks. Site restoration and landscaping will aim to integrate new infrastructure elements as sympathetically as possible. Habitat management and enhancement as described above will be undertaken within the Y Bryn site boundary.

The proposed development is expected to have an operational life of up to 50 years. For the purpose of assessment, the applicant has considered turbines with a maximum height base to tip height not exceeding 250 m.

Figure 1.2 of the ES illustrates the proposed development's site layout.

Locations (subject to micro siting) and indicative dimensions of the proposed turbines are shown in Table 3.1.

Table 3.1: Indicative Turbine details and co-ordinates

Turbine Number	Easting	Northing	Maximum Tip Height (m)
1	282978	193397	206
2	283552	193600	206
3	282921	192990	206
4	283805	193313	206
5	283594	192814	206
6	282453	190558	230
7	281978	190586	230
8	282300	189991	250
9	282490	189646	250
10	282783	189343	250
11	283107	188997	206
12	280945	189877	206
13	281299	189545	250
14	281770	189376	206
15	282166	189165	206
16	282459	188852	206
17	280888	189123	206
18	281227	188966	206

Source: Natural Power

4. Site Selection and Design Evolution

4.1. Site Design

The development potential of the Y Bryn site boundary has been appreciated by the UK wind industry and WG since at least the early 2000s, with consultants Arup employed to identify ‘Strategic Search Areas’ (SSAs) in 2002, providing a draft report in 2004 which included the whole of the proposed turbine development area as lying within draft SSA ‘F’. A final report in June 2005 (Technical Advice Note 8 (TAN 8)) refined SSA F’s boundaries slightly, retaining the whole of the proposed turbine development area.³

In 2006 the Forestry Commission Wales (FCW) tendered all of their holdings within each of the SSAs to a single individual wind development partner. At the time, developer Nuon Renewables was successful in winning the rights to develop all of FCW’s land within SSA F, including the land where the proposed development sits. Earliest design evolution figures of the operational Pen y Cymoedd Wind Farm show the successful developers plans included up to 65 turbines located on and around the areas of the proposed development (21 for the northern section, 44 for the southern section).

As Nuon Renewables opted to progress first the largest, most economically available site within their SSA (in the case of SSA F, the Pen y Cymoedd (PyC) site), no progress was made on the Y Bryn site whilst the permitting and development of PyC’t was ongoing. Nuon Renewables’ (now part of Vattenfall) exclusive option of the Y Bryn site has now expired.

In 2018, NRW brought the site back to market for tender proposals, receiving ten bids including that the successful bid placed by the applicant. This high level of interest provides evidence for the potential for the site to be developed for renewable energy generation purposes. As part of the tender process, bidders were required to undertake and present sufficient technical analysis across a number of topics (including technical layout, grid proposals, access to site, impact on forestry, and impact on ecology and soils).

As part of preparing their tender proposals, the applicant undertook reviews of energy and planning policy; various environmental and technical aspects (including landscape and visual; cultural heritage; noise; geology, hydrogeology, hydrology and flood risk; shadow flicker; wind resource; aviation and radar; telecommunications; coal mining; and construction) in developing a proposed layout. This involved working with a number of expert consultants, carrying out site visits and surveys, the accumulation of design constraints, and the production of visualisations, which following an iterative design work-shop process resulted in an initial scheme of 26 turbines, each of up to 200 m tall. (the largest then available on the market). Battery energy storage was incorporated into the successful plans.

Following the tender award in 2019 the evolution of the site design and layout continued to be informed by the EIA.

A key aim of the design process was to limit the overall footprint of the proposed development, whilst maximising the positive renewable energy generation and other benefits and minimising the environmental impacts wherever possible.

Environmental surveys of the proposed development, for example for birds, other species, peat depth, archaeology and other matters of interest, ran over a period from 2019-2022 and also made use of data gathered by the applicant which was collected for the purposes of preparing the tender layout. The data gathered enabled the project team to investigate four different layout iterations before settling on the final design which maximises the efficiency of the proposed development whilst limiting the potential environmental impacts. The proposed development and surrounding area have also been assessed against a number of strategic constraints. Figure 1.1 of the ES, illustrates the site location and Figure 1.2 the site layout of the proposed development and surrounding area, presented at the end of this document.

³ Available from - <https://apps.caerphilly.gov.uk/LDP/Examination/PDF/W66-TAN-8-Renewable-Energy.pdf> [Accessed 31/05/2023]

The layout for the proposed has evolved iteratively, including a number of design workshops, responding to issues raised during and after scoping, having considered different number and size of turbines; see Chapter 4 of the ES and the DAS for full details. Such changes have been influenced by several factors including economics, stakeholder and public feedback, planning policy and potential environmental effects.

ES Figure 4.2 illustrates the design evolution of the proposed development found at the end of this document.

Through the design and consultation process, the number of turbines and their proposed height decreased from 26 at up to 250 m tall to 18 with a range of tip heights at up to 206 m to 250 m tall, balancing the various site constraints with the scale of development required to be economically viable. The turbines and associated infrastructure, including tracks, borrow pits, wind monitoring equipment, crane pads were refined to account for the various site constraints. The ES outlines in extensive detail how environmental matters and stakeholder and public feedback have influenced the process, however particularly prominent issues which affected the design include:

- Reducing potential seascape, landscape and visual effects by removing turbines and decreasing their height;
- Minimising impacts on watercourses and the aquatic environment;
- Avoiding the areas of deepest peat;
- Minimising impacts on forestry;
- Reducing impacts on plants and animal species;
- Protecting archaeological and cultural heritage features; and
- Adapting the design to bring the wind farm within cumulative noise limits.

4.2. Planning Policy

4.2.1. Design consideration

A review of planning policies at a national and local level is included in Chapter 2 of the ES, and an evaluation of the proposed development with regards to policies is included in the PS which is a standalone document produced alongside the ES. The policies are supportive of renewable energy developments in appropriate locations. Future Wales 'Policy 17 – Renewable and Low Carbon Energy and Associated Infrastructure', highlights the WG have identified 10 PAAs across Wales as benefitting from a presumption in favour of large-scale onshore wind energy and the associated landscape change, subject to specific criteria being met as set out in policy 18 of 'Future Wales: the national development plan' (Future Wales)⁴. Arup's Stage 2 report (June 2019) for refining the PAAs considered turbines of up to 250 m blade tip height '*to present a maximum height scenario in terms of turbine sizes likely to come forward in applications*'.

All five turbines in the north section are located within PAA 9. In areas outside of the PAAs, and outside of National Parks and Areas of Outstanding Natural Beauty (AONB), there is generally strong (in principle) support also subject to criteria under policy 18. Therefore, the proposed development has strategic support in this regard from Future Wales.

4.2.2. Policy context

International Climate Policy

There is broad international consensus that climate change is a real and pressing issue, and that fossil fuels should be replaced by renewable energy sources where possible.

International policy considered in the ES includes:

⁴ Available from - <https://www.gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf> (p.94). [Accessed 31/05/2023]

- United Nations Framework Convention on Climate Change (UNFCCC) – Kyoto Protocol (1997);
- UNFCCC – Paris Agreement (2016);
- UNFCCC – COP26 (2021);
- UNFCCC – COP27 (2022);
- EU Directive 2009/28/EC;
- EU Directive 2018/2001;
- EU Renewable energy directive;
- EU Regulation 2021/1119; and
- EU/UK Trade and Cooperation Agreement (TCA).

National Climate Policy

UK legislation and policy in recent decades has also recognised the pressing nature of climate change and has sought to address it in part through increasing the role of renewable energy including onshore wind.

National policy considered in the ES includes:

- The Climate Change Act 2008 (updated in 2019 through The Climate Change Act 2008 (2050 Target Amendment) Order 2019);
- The UK Renewable Energy Strategy;
- The Renewable Energy Roadmap;
- Carbon Plan;
- The Energy Act 2013;
- Electricity Market Reform: policy overview;
- Energy White Paper: **Powering our net zero future (2020)**;
- The Ten Point Plan for a Green Industrial Revolution;
- Net Zero: The UK’s contribution to stopping global warming;
- Progress in Adapting to Climate Change (2023); and
- The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021.

Welsh Policy

The Renewable Energy Route Map for Wales, February 2008, sets out proposals for moving Wales towards self-sufficiency in renewable electricity in a generation, whilst at the same time driving towards increased energy efficiency and a greater level of heating requirements being supplied from renewable sources.

Other Welsh policy considered in the ES includes:

- A Low Carbon Revolution – the Welsh Assembly Government Energy Policy Statement;
- The Climate Change Strategy for Wales (2010);
- Energy Wales: A Low Carbon Transition (2012);
- The Well-being of Future Generations (Wales) Act 2015;
- The Environment (Wales) Act 2016;
- The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021;
- The Climate Change (Wales) Regulations 2018;
- Prosperity for All: A Low Carbon Wales;

- Prosperity for All: A Climate Conscious Wales;
- Net Zero Wales: Carbon Budget 2;
- Advice Report: The path to a Net Zero Wales (2020);
- Energy Generation in Wales (2021); and
- Renewable Energy Deep Dive Recommendations (2021)

Local Climate Policy

Local policy considered in the ES includes:

- NPTCBC Single Integrated Plan (SIP): Working in Partnership (2013-2023);
- NPTCBC's Environment Strategy (2008 – 2026);
- NPTCBCs Decarbonisation and Renewable Energy Strategy;
- Bridgend County Climate Emergency Response Programme;
- Bridgend County Climate Emergency Response Strategy;
- Cardiff Capital Region (CCR) Energy Strategy; and
- South West Wales (SWW) Energy Strategy.

Planning Policy

The UK Government has introduced a series of national policy statements, the most relevant are the National Policy Statement (NPS) for Energy (EN-1) and the NPS for Renewable Energy Infrastructure (EN-3). Updated versions of the NPSs were published in March 2023. As this application falls within the definition of a DNS, it falls under the Town and Country Planning Act, as amended by The Planning Wales Act, and as such the NPSs are a material consideration within the decision-making process.

Since the NPSs were brought in, subsequent legislation has delegated powers to Welsh Ministers to determine applications for energy developments between 10 MW – 350 MW, and all onshore wind applications above 10 MW. The basis for the DNS process is provided by the Planning (Wales) Act 2015, which amends the Town and Country Planning Act 1990 ('the Act'), and the DNS (Wales) Regulations 2016 (as amended) and subsequent Regulations.

Planning policy considered in the ES not already mentioned above includes:

- Planning Policy Wales (PPW) (Edition 11) (2021);
- NPTCBC Local Development Plan (LDP) (2011-2026); and
- BCBC LDP 2006-2021.

The Annual Monitoring Review of the NPTCBC LDP was undertaken in 2020, which concluded that a Replacement LDP (RLDP) will need to be prepared covering a 15-year plan period (2025 – 2035), with a base date of 1 April 2020. NPTCBC sought views on the RLDP draft Delivery Agreement for a 6-week period ending in September 2021. NPTCBC were due to submit a final Delivery Agreement to the WG in December 2021.

The LDPs for NPTCBC and BCBC have not been updated since adoption of Future Wales, and so does not reflect the national policy situation, including reference to PAAs and how onshore wind should be assessed in relation to them.

4.2.3. Wind Resource

Wind turbines require sufficient wind resource, and of suitable quality, in order to be economically and technically viable. The minimum required average wind speeds for projects are ever increasing, which means either – or both – concentrating on well-exposed locations and also getting the most out of such locations through layout and choice of turbines (including dimensions and capacity).

Initial long-term wind resource estimates were obtained from multiple sources, considering measurements for the period January 2015 to January 2021 collected from a 75 m wind measuring mast located 70 m north of the northern boundary, and for the period January 2021 to July 2021 from a 90 m onsite mast to the south of Y Bryn site boundary. The masts were considered to be reasonably representative of the site as a whole in terms of exposure.

Detailed assessments have been undertaken using modelling software in order to better understand the local wind patterns, that results from the terrain and forestry surrounding the proposed development.

Onsite wind monitoring is ongoing, using industry best practise monitoring techniques in order to capture detailed wind patterns and further understand the wind resource onsite.

Tree felling is required prior to the erection of turbines, for the creation of access tracks and other infrastructure elements, including clear-felling an appropriate buffer around the turbines for operational maintenance and to minimise impact on wind resource and energy production. During the operational phase of the proposed development normal productive forestry works will continue by NRW.

4.2.4. Grid Connection

Closeness to, cost and security of grid connection are vital parts to renewable energy developments. Often wind farms in more rural or wild locations may benefit from lower populations to be impacted by the new appearance of turbines, however for this luxury they may need many miles of new high-voltage overhead and/or underground cabling, and even new major hub transmission substations.

One key benefit of the proposed development's location is closeness to potential grid connection options, either into existing 275 kV overhead towers running immediately to the west of the proposed turbine development area, or else a relatively short distance back to Margam 275 kV grid supply point (GSP) substation.

A grid connection offer has been received from National Grid. Indicative details are outlined in Appendix 5.1 of the ES, however final plans will be subject to a separate application.

4.2.5. Summary

The proposed development has been located in a suitable area for wind farm development following a site selection process. The rigorous design evolution has taken place over several years through many changes which have reacted to environmental data gathered on Y Bryn site boundary, new policies, market dynamics and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the applicant believes that the proposed development provides optimum use of Y Bryn site boundary and surrounding area with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

5. Potential Effects and Mitigation

This section of the NTS presents the potential significant effects of the proposed development and the measures taken or put forward to reduce the potential significant effects identified (mitigation).

5.1. Ecology

An assessment of the relevant potential effects upon ecology (excluding ornithology) is presented in Chapter 6 of the ES.

A programme of baseline ecology surveys was undertaken between August 2020 and May 2022. The following surveys were undertaken:

- Desk based study;
- Phase 1 and National Vegetation Classification (NVC) habitat surveys;
- Bat activity surveys (static detectors and walked transects);
- Preliminary bat roost assessment;
- Protected mammal surveys for: dormouse, otter, water vole, badger, pine marten and polecat; and
- Great crested newt surveys (eDNA and physical surveys).

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

The proposed development is not located within any statutory sites designated for ecological features. There are three Sites of Importance for Nature Conservation (SINCs) that overlap with, or lie adjacent to, Y Bryn site boundary. However, no significant effects have been predicted for any statutory or non-statutory designated sites with an ecological interest.

Y Bryn site boundary comprises mostly productive forestry, although there are areas of broadleaved and mixed woodland also present. Linear strips of marsh/marshy grassland and wet and dry dwarf shrub heath are present primarily along the edge of forest rides or tracks. Open habitat is mostly present outside the forest and includes neutral and acid grasslands and areas of scrub, particularly on steeper slopes. Apart from permanent losses in the area of conifer plantation (which have been minimised as part of project design), the proposed development will lead to the loss of only small areas of various habitat types, with no significant effects on habitats predicted. Indeed, it is considered that the measures described in the proposed development's Habitat Management Plan (HMP) will lead to an overall biodiversity net benefit, through the restoration of broadleaved woodland, the expansion of grassland areas, the removal of invasive alien species, etc.

The surveys produced records, or evidence of presence, for badger, otter and polecat within the surveyed areas. However, no badger setts, or other protected sites, were found within 500 m of the proposed development's infrastructure. No evidence of water vole, dormouse or great crested newt presence was found during the baseline surveys.

The bat activity surveys identified a total of seven bat species/species groups present within Y Bryn site boundary. The most frequently recorded species was common pipistrelle, followed by soprano pipistrelle, with low numbers of passes recorded for all other bat species. A preliminary bat roost assessment identified potential roost locations within trees along access tracks. Bat activity transects, and the deployment of additional static detectors, suggests that few bats from Margam Park use the turbine development area. The assessment determined a negligible, low or moderately negative impact on the bat species recorded (moderate impacts being predicted for common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and noctule during the operational phase), but no significant effects on bat populations have been predicted, following embedded mitigation measures.

Controls shall be put in place during construction through creation of a site-specific Construction Environment Management Plan (CEMP), Species Protection Plan (SPP) and appointing an Environmental Clerk of Works (ECoW) to monitor adherence to such plans.

5.2. Ornithology

An assessment of the relevant potential effects upon ornithology are presented in Chapter 7 of the ES.

A programme of baseline ornithology surveys was undertaken between October 2019 and August 2021. 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 eight VP locations;
- Walkover breeding bird surveys in 2020 and 2021;
- Breeding raptor surveys in 2020 and 2021;
- Additional breeding honey buzzard surveys in 2020 and 2021; and
- Breeding nightjar surveys in 2020 and 2021.

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

VP surveys recorded flights from a total of 15 target species (raptors, waterfowl, waders and gulls). Many of these species were recorded in only very small numbers, but collision risk modelling (CRM) was undertaken for the most frequently recorded species: four raptor species (goshawk, red kite, kestrel and peregrine) and three gull species (great black-backed gull, herring gull and lesser black-backed gull). Following the CRM, collision risk is predicted to have no significant effect on the population of any bird species.

The breeding bird surveys recorded a typical community of mostly woodland and scrub dwelling species, of which the large majority were passerines. Breeding raptor surveys identified a goshawk nest in both survey years (in different locations). Both nests lay outside the area of the proposed development. Breeding nightjars were confirmed in both years, with an estimate of up to 20 territories in the two forested areas, though few records came from within the actual area of the proposed development. Embedded mitigation measures that shall be incorporated into the construction of the proposed development shall minimise the impacts on breeding birds. The potential disturbance and displacement effects caused by the proposed development are predicted to have no significant effect on the population of any bird species.

The proposed development is not located within any statutory sites designated for ornithological interests and it is predicted that there shall be no significant effect on any designated sites with an ornithological component.

A species protection plan shall be included as part of the CEMP that will be produced ahead of construction of the proposed development. In addition, the measures described in the proposed development's HMP shall benefit ornithological diversity on Y Bryn site boundary, both directly, as a result of habitat improvements (such a restoration of broadleaved woodland), and indirectly, through an increase in food sources (increased habitat on site suitable for ground flora and pollinating insects).

5.3. Seascape, Landscape and Visual Impact (SLVIA)

An assessment of the relevant potential effects upon seascape, landscape and visual amenity are presented in Chapter 8 of the ES.

The SLVIA is based on a 45 km study area, extending from the outermost turbine of the proposed development. A detailed 15 km Study Area is also adopted by the SLVIA. The SLVIA included a desk study, site visits, Zone of Theoretical Visibility (ZTV) analysis, viewpoint photographs, wirelines and photomontages to illustrate the proposed development from the viewpoints included. Relevant guidance has been followed.

Effects on Seascape and Landscape Character

A total of 24 Seascape Character Areas (SCAs) and 158 Landscape Character Areas (LCAs) were identified within the 45km study area. Of these, 18 SCAs and 55 LCAs were carried forward for further detailed assessment.

The assessment concluded that there will be no significant individual effects on any of the SCAs during any phase of the proposed development.

The assessment also identified that there would be no significant effects on landscape character or visual amenity during the construction phase of the proposed development.

Significant individual effects on landscape character during the operational phase were identified from the following LCAs:

- LCA 03 Margam Country Park;
- LCA 04 Coedhirwaun;
- LCA 06 Mynydd Brombil, Mynydd Emroch and Mynydd Dinas;
- LCA 07 Mynydd Margam;
- LCA 08 Goytre Valley;
- LVA 09 Cefn Cethin;
- LCA 10 Mynydd Bychan;
- LCA 12 Mynydd Penhydd;
- LCA 13 Foel Trawsant;
- LCA 17 Foel Fynyddau;
- LCA 18 Mynydd Resolven, Craig-y-Llyn and Mynydd Ynyscorrwg;
- LCA 39 Cwmafan;
- LCA 42 Llangynwyd Rolling Uplands and Forestry;
- LCA 43 Llynfi Valley Floor and Lower Slopes;
- LCA 44 Llynfi and Garw Uplands and Forestry;
- LCA 45 Betws Settled Farmland;
- LCA 46 Garw Valley Floor and Lower Slopes; and
- LCA 57 Maesteg.

Effects on Visual Amenity

Within the 45 km study area, 37 viewpoints were identified to assess visual amenity. These were selected to reflect areas of higher sensitivity and locations where potential visibility was likely to be greatest. Photomontages and supporting wirelines were provided for all land-based viewpoint locations within the 15 km detailed study area and with the exception of three photomontages, wirelines only from viewpoints beyond the 15 km study area.

The assessment identified that there would be no significant effects on visual amenity during the construction phase of the work.

Significant individual effects, as a result of the proposed development, will be predicted at the following viewpoints:

- VP1 Evans Terrace, Caerau;
- VP2 Maesteg Golf Course;
- VP3 Bryn (Play Area off North Road);
- VP4 Brynna Road, Cwmafan;
- VP8 Margam Park, Deer Park;
- VP10 St. Illtyd's Walk National Trail, near Cynonville;
- VP13 Junction of Heol Gelli Lenor and Brynllwarch, Maesteg;
- VP16 The Princess Margaret Way, Aberavon;
- VP17 Margam Park;
- VP19 Wales Coast Path, Rest Bay/Royal Porthcawl Golf club, Porthcawl;
- VP20 Pen Parcau, Bedwas;
- VP23 Margam Park (Access Road);
- VP24 Wales Coast Path, Kenfig Burrows;
- VP25 Bryn East, Picnic Area Opposite Royal Oak PH;
- VP26 Ogwr Ridgeway Walk Near Y Bwlwarcau Hill Fort;
- VP27 Cemetery Eastern Edge of Maesteg; and
- VP28 Llangynwyd.

Of these 17 viewpoints, 10 are located within approximately 3 km of the proposed development. At such close distance, effects of this significance are to be anticipated for a development of this type. Significant effects from viewpoints beyond approximately 3 km are all located predominantly within coastal areas. Although effects are considered to be significant, views from these coastal areas are typically expansive and open and primarily focussed on the open water of the Bristol Channel.

Cumulative Effects

Significant cumulative effects on landscape character were identified from:

- LCA 07 Mynydd Margam;
- LCA 12 Mynydd Penhydd;
- LCA 13 Foel Trawsant;
- LCA 18 Mynydd Resolven, Craig-y-Llyn and Mynydd Ynyscorrwg;
- LCA 42 Llangynwyd Rolling Uplands and Forestry; and
- LCA 57 Maesteg.

Significant cumulative effects on landscape character from non-wind farm developments were also identified from:

- LCA 13 Foel Trawsant; and
- LCA 42 Llangynwyd Rolling Uplands and Forestry.

Significant cumulative effects from wind farm developments on visual amenity were identified at the following viewpoints:

- VP1 Evans Terrace, Caerau;
- VP2 Maesteg Golf Course;
- VP4 Brynna Road, Cwmafan;
- VP8 Margam Park Deer Park;

- VP10 St Illtyd's Way National Trail, near Cynonville;
- VP11 Wales Coast Path, Ogmores-by-Sea;
- VP16 The Princess Margaret Way, Aberavon;
- VP20 Pen Parcau, Bettws;
- VP24 Wales Coast Path, Kenfig Burrows;
- VP26 Ogwr Ridgeway Walk Near Y Bwlwarcaw Hill Fort; and
- VP36 Mouth of the River Neath.

The proposed development will add to the existing cumulative developments, which are broadly located on the open and forested upland plateau, located to the north and east of the 45 km study area. Wind farm developments are now an established feature of these open, expansive upland areas and the proposed development will add to this dynamic wind farm landscape.

Significant cumulative effects from non-wind farm developments on visual amenity were identified at the following viewpoints:

- VP8 Margam Park Deer Park;
- VP19 Wales Coast Path, Rest Bay/Royal Porthcawl Golf club, Porthcawl; and
- VP24 Wales Coast Path, Kenfig Burrows.

No residential properties are identified where the Residential Visual Amenity (RVA) threshold would be breached.

Effects on Designations

Significant effects on statutory designations are predicted within Margam Park, a Registered Historic Park and Garden. The proposed development may conflict indirectly with some key characteristics, which are key to the designation.

Significant effects on non-statutory designations are predicted within:

- Margam Special Landscape Area (SLA), where there will be direct and indirect impacts on the designation. The proposed development may conflict with some key characteristics, which are key to the SLA designation;
- Western Uplands SLA. There will be an apparent increase in the direct and indirect influence of wind farm development on the character of this SLA;
- Foel Trawsnant SLA. The consented wind farm of Foel Trawsnant is located within this SLA. The addition of the proposed development and most notably the turbines to the northern section will result in further cumulative intensification of the influence of wind farm development within the SLA;
- Foel y Dyffryn SLA. The addition of the proposed development may lead to some intensification of wind farm development indirectly within this SLA and extend the arc of wind turbines to areas to the east within this designation;
- Margam Country Park. The proposed development may conflict indirectly with some key characteristics, which are key to the designation; and
- Margam Mountain Landscape of Special Historic Interest in Wales (LOSHIW). Impacts across this designation will be variable from low where the proposed development will have limited influence through to very high where the LOSHIW extends into the proposed development site and impacts will be direct.

Effects on Circulation, Movement and Access

Significant effects on footpaths, national cycle routes and key transport routes within the 45 km and 15 km study areas will be restricted to the footpaths of St. Illtyd's Walk and Ogwr Ridgeway Walk. Significant effects on visual amenity from St Illtyd's Walk will occur as it passes near to and through the proposed development and from Ogwr Ridgeway Walk as it approaches Y Bryn site boundary. However, effects are limited to some very small sections of the overall trails and any views will be short in duration.

There will be no significant effects during the decommissioning phase.

5.4. Cultural Heritage

An assessment of the potential effects on cultural heritage are presented in Chapter 9 of the ES.

An Inner Study Area (ISA) corresponding to Y Bryn site boundary plus a 2 km buffer was used to gather baseline information on the known archaeological resource that may experience construction phase effects and to inform an assessment of the potential for currently undiscovered archaeological remains within Y Bryn site boundary. A larger Outer Study Area (OSA) extending 20 km from Y Bryn site boundary was used to gather information on designated historic assets that may experience adverse effects as a result of changes within their setting. The results of these studies formed an Archaeological Desk-Based Assessment and Stage 1 Setting Assessment which is presented at Appendix 9.1. This baseline information was used to inform the design of the proposed development to minimise impacts on historic assets.

An assessment of the impacts on the Margam Mountain Registered Historic Landscape was also carried out following the standard Assessment of the Significance of the Impact of Development on Historic Landscape 2 (ASIDOHL2) methodology, the results of this are presented in Appendix 9.2.

Construction phase impacts to non-designated historic assets are limited to potential impact on sections of three historic routeways (if they survive beneath the existing forest roads) and an area of historic tip scree. There would also be very slight (not significant) effects on the Mynydd Margam registered landscape as a result of the physical changes during the construction phase. These effects are not significant and will be mitigated through a programme of archaeological monitoring and recording as part of the CEMP that will be produced ahead of construction of the proposed development.

Operational phase impacts will occur to 46 designated historic assets. These effects are Moderate adverse (and significant) for Margam Mountain registered landscape, Minor Adverse (and not significant) for: Hen Eglwys scheduled monument (SM), Mynydd y Castell SM, Margam Castle Grade I listed building (LB), Margam Park registered park and garden, Eryd Isaf round barrows SM, Holy Cross Church Grade II LB, Church of St Mary Grade II LB, and Church of St Cynwyd Grade II* LB, Y Bwlwarcau SM, Zoar Chapel Grade II LB, Church of St David Grade II LB, Port Talbot Memorial Park registered park and garden and Llangynwyd Conservation Area. Effects on the remaining 34 assets are Negligible Adverse and not significant. These effects will be fully reversed on decommissioning. Cumulative effects are also found to be not significant.

5.5. Hydrology, Geology and Hydrogeological

An assessment of the potential effects on the hydrological, geological and hydrogeological environment is presented in Chapter 10 of the ES.

The study area related to Chapter 10 includes the Y Bryn site boundary, and both upper and lower reaches of watercourse catchments present within that boundary. The study area can be seen in Figure 10.1: Hydrology Overview.

The scope and methodology of the assessment was agreed with statutory consultees. Surveys were undertaken to help establish the baseline. These included walkover surveys where hydrologists inspected watercourse crossings and other hydrological features, and two rounds of peat surveys to confirm presence and depth of peat on Y Bryn site boundary. Site surveys were also undertaken as part of the Coal Mining Risk Assessment (CMRA), which can be found in Appendix 10.2.

Statutory consultees were also consulted during the EIA and their guidance reflected in the design and layout to protect watercourses from disturbance and potential effects on water quality during construction and operation.

The CMRA concluded that, without mitigation, there is potential for historic coal mining to have significant effects on the proposed development. However, through mitigation such as micrositing, treatment of workings, and/or deepening of foundations beneath zones of workings/collapse, the significance of effects will be reduced to be non-significant. Further investigative works will be carried out prior to construction, and it is expected that a related planning condition will form part of the consent of the proposed development.

The majority of the proposed development is located within the catchment of the Ffrwd Wylt and the River Avan/Afan, which are susceptible to flooding downstream. There are no public water resources within the vicinity of Y Bryn site boundary. NPTCBC and BCBC identified 60 properties with the potential to use Private Water Supplies (PWS) within 3 km of Y Bryn site boundary, and 2 km of the proposed access routes from the M4 and between the north and south sections. 42 of these were screened out in a desk-based exercise, and the remaining 18 were contact via a questionnaire for further details. Four of these have been identified as potentially requiring post-consent mitigation measures.

Based on the peat surveys carried out, it is concluded that the site is underlain by soils with peat content and contains very little peat. Where peat of a depth of ≥ 0.5 m is present, the location of the peat has informed the site layout to ensure elements of the proposed infrastructure are situated away from the identified peat resource. There is no peat requiring excavation and handling, and so a peat management plan was scoped out.

There is limited peat on site but where the deepest peat is present it is situated away from areas of infrastructure. A carbon balance assessment report has been produced and Scottish Environment Protection Agency's (SEPA) Carbon Calculator completed to determine the carbon payback time for the proposed development; the full report can be found in Appendix 10.4. The results from the carbon calculator reveal that the net impact of the proposed development will be positive overall, as over a 50-year lifespan of the proposed development, it is expected to generate over 48 years' worth of clean energy if it replaced fossil fuel electricity generation. In addition, over the expected 48 years that the wind farm is likely to be generating carbon-free electricity, this could result in nearly 6.6 million tonnes of net CO₂ emission savings when replacing fossil fuel electricity generation.

Since the negative payback period represents approximately 4% (2 years) of the operational period (50 years) and the positive contribution is 96% (48 years), it is possible to conclude that the positive contribution is statistically significant. The proposed development therefore illustrates a significantly positive net impact in terms of its contribution towards the reduction of greenhouse gas emissions from energy production.

There is potential during the construction phase for significant effects on hydrological receptors. Moderate/minor effects are predicted on four receptors. However, through successful implementation of good practice and embedded mitigation measures, the effects on these receptors are predicted to be not significant.

Potential for significant effects during the operational phase is substantially lower. There is a predicted moderate/minor effect on PWS. However, through additional mitigation outlined in Chapter 10, residual effect is predicted to be not significant.

Potential effects during the decommissioning phase are predicted to be less than those created in the construction phase and are therefore predicted to be not significant.

Cumulative effects are predicted to be negligible during construction, operational and decommissioning phases following successful implementation of mitigation measures.

Good practice during construction, adherence to a site-specific CEMP as well as appointment of an ECoW have been considered as embedded mitigation and as such no significant effects are assessed to result.

In addition, a HMP is proposed as a benefit of the project which will improve natural flood management.

5.6. Traffic and Transport

An assessment of the potential effects on Traffic and Transport is presented in Chapter 11 of the ES.

The scope and methodology of the assessment was agreed with statutory consultees. Baseline conditions were established through consultation and use of available traffic survey data, and potential effects have been identified and assessed, and where relevant, mitigation measures identified.

Two Scenarios were assessed:

- Scenario 1 – Expected Construction. This scenario was based on the most likely construction methods, programme and sequencing. This scenario considered all stone to be sourced on site and all foundation concrete would be produced at on-site batching plants, stone required for foundation concrete has been assumed to be imported; and
- Scenario 2 – Worst Case Construction. This scenario is a worst-case scenario which assumes the top layer of stone for track and hardstanding construction would need to be imported onto site and all foundation concrete would be imported to site in ready-mix lorries.

The traffic impacts associated with the abnormal load deliveries were also assessed. An Abnormal Indivisible Loads (AIL) Route Survey has been prepared demonstrating the viability of the proposed abnormal load route.

Two preliminary Traffic Management Plans (TMPs) were prepared, one for Heavy Goods Vehicles (HGVs) and one for AILs.

In relation to potential cumulative impacts, these would be dependent on whether other developments are constructed concurrently. If the construction of the proposed development coincided with another, using the same transport routes, then communication with the other developers will take place with the aim to mitigate effects to a non-significant level. This will be delivered through the construction TMP which will be approved by the LPAs in consultation with relevant highway authorities and police prior to construction starting on the proposed development. This will detail any temporary changes to road furniture, timings of deliveries, the construction routes etc. to minimise impact.

Impacts on public road network users and local settlements could potentially be moderate but temporary as a result of the proposed development.

The assessment concludes that residual effects from AIL deliveries on driver delay is considered to be not significant.

Overall, with the incorporation of suitable mitigation measures secured through a construction TMP, it is expected that there will be no significant traffic effects associated with the proposed development.

5.7. Noise

The potential effects upon noise are assessed in Chapter 12 of the ES. An operational noise assessment has been undertaken by comparing predicted noise levels for a candidate turbine based on the indicative dimensions of turbines proposed, for the proposed development with the noise limits derived from baseline noise measurements carried out 10 properties in the vicinity of the proposed development.

The assessment concludes that the appropriate cumulative limits for assessing the noise impact associated with the operation of the proposed development are as follows:

- Amenity Hours: the greater of 40 dB L_{A90} or Background + 5 dB; and
- Night-time Hours: the greater of 43 dB L_{A90} or Background + 5 dB.

The proposed development can meet the noise limits set out above for Amenity and Night-time Hours.

Noise associated with the construction of the proposal has been predicted and found to conform to the guideline values set out within BS 5228-1:2014. The locations adopted for the assessment are representative of neighbouring

noise sensitive receptors to the proposed development. A majority of properties will experience sound levels associated with construction that are no greater than existing ambient sound levels.

Guidance with respect to blasting associated with the borrow pits is provided. It is not expected that vibration associated with the winning of aggregate will result in unacceptable vibration levels.

It is anticipated that with appropriate mitigation measures in place there will be no significant impacts from noise as a result of the proposed development.

5.8. Forestry

The potential effects upon forested land managed by NRW are assessed in Chapter 13 of the ES. Chapter 13 includes a description of the forest, and then explains the ways in which it may be affected by the development and what the likely effects will be.

The scope and methodology of the assessment was agreed with statutory consultees. The applicant worked with NRW to reduce the area of forest directly impacted by agreeing a keyhole felling approach rather than coupe felling. The total felling required for the proposed development is 119.7 hectares (ha) (which represents 4.7 % of the study area). 14.6 ha will be available post construction for replanting, therefore resulting in a total net forestry loss of 105.1 ha. However, as a result of WG implementing planting under the compensatory fund, there will be no net loss of trees owing to the proposed development.

Impacts on Low Impact Silviculture Systems (LISS) managed forest areas have been kept to a minimum with only two turbines being located within LISS area and an additional turbine having a felling area that's partly contained within LISS. A further area which is required for a borrow pit is within LISS designated forest however this area was largely clear felled in 2016.

There will be no designated Ancient Woodland lost as a result of the proposed development.

The proposed felling for the proposed development is shown to be of a smaller scale than existing approved felling across the approved period in the NRW felling plan. The felling areas are relatively small compared with existing felling coupe design although they are concentrated within the elevated parts of the study area. It is considered therefore that the impact on the forest from the felling will be of minor significance.

5.9. Health and Public Safety

The potential effects upon Health and Public Safety are assessed in Chapter 14 of the ES. Health and public safety in this instance encompasses aspects such as; historic coal mining, shadow flicker, ice-throw, lightning, air quality, battery energy storage fire risk, and health and safety.

With regards to historic coal mining, a CMRA was undertaken the full report can be found in Appendix A10.2. This found that, although all features of the proposed development had the potential to be underlain by historic workings, effects could be mitigated through micro-siting, treatment of workings, and deepening of foundations. A planning condition relating to historic coal mining and other risks is expected to form part of the consent for the proposed development.

A preliminary shadow flicker assessment was undertaken. This predicted that in a worst-case scenario, two of the ten receptor locations modelled would exceed the commonly accepted shadow flicker limit of 30 hours per year. Cumulative effects with neighbouring Foel Trawsnant wind farm were also assessed, and while shadow flicker at the cumulative receptor location exceeds 30 hours per year, this is almost entirely attributable to Foel Trawsnant wind farm. The full report can be found in Appendix 14.1. It is expected that a planning condition limiting shadow flicker will form part of the consent for the proposed development. This condition will result in effects of shadow flicker being not significant.

Discussions have been held with Public Rights of Way (PRoW) officers from NPTCBC and BCBC to agree an appropriate condition for potential ice-throw. Details of this correspondence can be found in Appendix 3.3. The proposed development will also apply ice monitoring and/or de-icing systems and/or protocols to all turbines located within 1 x tip-heights distance of any registered public footpaths on the definitive map and provide details of this system to the relevant LPAs.

Turbines considered for the proposed development will be equipped with lighting protection conforming to IEC 61400-24:2019. This will mitigate the effects of lightning strikes on users of PRoW near the proposed development, resulting in effects being not significant.

An Air Quality Assessment (AQA) has been undertaken to examine the effects of construction traffic relating to the proposed development on human health, focussing on the NPTCBC Air Quality Management Area (AQMA) the full report can be found in Appendix 14.2. The assessment concluded that the effects on human health of traffic associated with construction of the proposed development were not significant. The cumulative assessment identifies potential effects with the consented Wildfox Resort; however effects could not be assessed as this proposed development has no publicly available construction phase traffic volumes. A TMP developed in collaboration with relevant highways authorities is proposed to mitigate significant effects on air quality.

During the construction and decommissioning phase, the construction site would be managed according to all relevant health and safety regulations. Full details of these can be found in Chapter 14.

During the operational phase, public safety would be ensured through the use of wind turbines and components conforming to either BS EN IEC 61400-1:2019 or IEC 16400. These turbines contain sensors that detect instabilities and unsafe operation and shut down under these circumstances. Therefore, no safety risks are expected as a result of public access to the proposed development.

5.10. Aviation

The potential effects upon aviation are assessed in Chapter 15 of the ES. Chapter 15 includes a desktop study where relevant aviation policy and legislation documents were reviewed and considered; identification of aviation bodies and consultation with such bodies; assessment of the potential impacts of the proposed development on all aspects of aviation and identification of any potential mitigation measures that may need to be employed.

The Civil Aviation Authority (CAA) requires any structure equal to and taller than 150 m in height to be fitted with visible aviation warning lighting. A reduced lighting scheme, in which 13 of the 18 turbines will be fitted with lights, has been agreed with aviation operators using the night low level airspace and the CAA.

Under the usual planning conditions expected in the consent, if granted, the Ministry of Defence (MOD) would be informed of the dates of commencement, completion, final turbine locations and heights.

The aviation assessment concludes that there will be no significant effects on aviation generated by the proposed development as a stand-alone development. When cumulative effects with other wind farms are considered, the assessment concludes that the effect on the provision of air traffic radar services by Cardiff Airport will be minor to moderate and therefore potentially significant. However the applicant is in discussions with Cardiff Airport and other developers to devise and agree a mitigation strategy.

5.11. Existing Infrastructure

The potential effects upon existing infrastructure are assessed in Chapter 15 of the ES. This chapter provides an assessment of the potential impacts of the proposed development on; telecommunications, utilities, Prow, permissive and locally recognised routes; and other recreation routes.

Baseline conditions were identified in consultation with link operators, PRow officers and relevant consultees. The Y Bryn site boundary hosts a number of PRow, permissive and locally recognised routes and other recreation routes. Notably, the Penhydd and Blue Scar trails.

With regard to impacts on the amenity use of the forest, the construction phase will result in a short-term closure of some sections of PRow, permissive and locally recognised routes and other recreation routes including a limited section of mountain bike trails and as such will have short term effects on them and on other forms of recreational access to areas of the forest. The applicant will work with the relevant LPAs and NRW to mitigate any impacts by providing temporary alternative routes where possible.

Further, the applicant is committed to providing a range of enhancement measures under an Access Management and Enhancement Plan (AMEP), including upgrades to existing mountain biking trails on-site and to PRow both on- and off-site, by agreement with relevant LPAs and NRW.

No significant effects are predicted during the operational phase on existing infrastructure.

5.12. Socioeconomic

With reference to Chapter 16, the proposed development has the potential to offer positive socioeconomic benefits at a local, Welsh and UK level. There would be economic benefits through the entire lifecycle of the project, including at the development, construction and operational phases. The proposed development has the potential to create significant job opportunities throughout the construction and operational phases and contribute to meeting the goals of the Swansea Bay City Region Economic Regeneration Strategy (2013 – 2030).

Welsh based companies, such as Natural Power, Dulas Ltd and Thirty47 Ltd have already been employed in the planning and development stages, including EIA. There would be direct economic benefits to the local community through the provision of construction jobs, inputs to the local economy through the purchase of construction materials and equipment and the potential for locally sourced maintenance resources, and opportunities for contractors, suppliers and service providers. In terms of construction impact of the proposed development, of the £129.6 million construction expenditure estimated (based on a 129.6 MW project), there is potential for approximately £15.55 million to benefit the local economy and over £46.65 million to benefit the Welsh economy. Applying industry assumptions, during the construction phase, up to 338 jobs could be created within Wales, with up to 113 of these jobs within the local area. Local area spend is also likely to increase during the construction phase of the proposed development which will include higher number of rooms occupied in local hotels and B&Bs, spend in local restaurants, cafes and shops.

During the operation and maintenance phase of the proposed development, of an estimated annual operational expenditure of £9.07 million for the proposed development, there is the potential for approximately £3.81 million per annum to benefit the local area and £5.26 million per annum to benefit the Welsh economy. Applying industry assumptions, during the operational phase, up to 43 jobs could be created within Wales, with up to 31 of these jobs within the local area.

Chapter 16 of the ES also assesses the economic baseline of the area, including the importance of the tourism sector. A review of recent research published by BIGGAR Economics in 2021 indicates that there is no correlation between wind farm development and trends in tourism employment. The research instead showed that the tourism economy in local authorities with the highest level of onshore wind farms performed the same, if not better, than other areas within Scotland. At a Welsh level, review of secondary data also indicates that wind farms have little to no impact on tourism across Wales. Indeed, a more recent national tracker survey highlights that support for

renewable energy in the UK has been consistently high, with 87% expressing support for the use of renewables, and more specifically 80% supporting onshore wind.

Lastly, the proposed development will also help support community initiatives in the surrounding areas through the offering of a community benefit fund, AMEP fund and other infrastructure improvements to the area.

5.13. Synergistic Effects

An assessment of synergistic effects considers the combination of different effects upon the same receptor. This is provided in Chapter 17 of the ES. It ensures that the assessments provided in the ES for each topic are not considered in isolation.

During the construction and decommissioning phases, potential adverse synergistic effects are limited to areas that are within or close to the proposed development where there will be heavy plant operations, earth works, forestry operations and vehicle movements. These could result in potential synergistic effects upon physical and biological receptors including where there are overlaps between ecology, ornithology, hydrology and hydrogeology, and forestry. These effects would be temporary in nature, and will be managed through a CEMP, TMPs and Decommissioning Plan, an HMP, and an SPP. In isolation, these effects have been assessed in the ES as not significant after mitigation is applied. These potential effects will also be monitored by an ECoW. Given the limited number and extent of receptors, the limited effects predicted, and their temporary nature, the synergistic effects during construction and decommissioning phases are considered not significant.

Potential synergistic effects during the operational phase relate primarily to overlaps between physical and human receptors and are limited to areas which are within or close to the proposed development and surrounding area where there may be a combination of potential visual, noise and shadow flicker effects.

The ES predicts that there are no residual significant effects in isolation for noise, shadow flicker, and aviation lighting. Significant effects are predicted for residential visual amenity, but the properties where these are experienced are not predicted to reach the RVA Threshold, as described in Appendix 8.12. 17 receptors/locations are common to the noise, shadow flicker and RVA assessments (RVAA), and these are also assessed for synergistic effects. Of these, seven are predicted to have significant synergistic effects, based on the fact that they will experience significant RVAA effects.

Individual effects (on noise, shadow flicker and RVAA) could combine to result in a synergistic effect on some shared receptors. Shadow flicker and noise effects at these receptors will be not significant individually due to specific mitigation proposed for these factors, as well as their temporary nature. In the professional judgement of Natural Power, those receptors that were assessed individually as not significant, still remain as not significant when considering synergistic effects. However, where residential visual amenity effects were identified as significant individually, these will remain as significant as no further mitigation can be applied.

Sections of both St Illtyd's Walk and the Ogwr Ridgeway Walk are predicted to have significant visual effects where they pass near to the turbines. Short sections of both routes come within areas of greater noise propagation from the proposed turbines, particularly St Illtyd's Walk as it passes through the proposed development in close proximity to the turbines. Although neither the direct views nor noise would prevent use of these amenities. Ice-throw and lighting strikes could also potentially feed into synergistic effects on this receptor. However, the presence of lighting protection equipment on turbines, and the adoption of an ice-throw mitigation protocol, would reduce these effects to not significant.

The HMP proposed by the applicant, which will include restoration of broadleaved woodland, creation of open ground, bracken control, pond creation, wet woodland restoration and removal of invasive plant species will likely create a positive synergistic effect with the surrounding area, as it could provide natural flood management benefits. Although it is not possible to directly identify the resulting expected benefits in the same way as can be done for onsite habitat management. The same can be said in respect of any Access Management Plan (AMP) measures.

These effects then need to be considered and balanced against the ongoing socio-economic and wider environmental benefits which will arise from the project over this extended period. In terms of impacts on human health and population it is considered that the overall balance of effects remains positive and acceptable.

6. Conclusions

This NTS has provided a non-technical summary of the proposed development, which is assessed in greater detail throughout the ES. This NTS has presented the information required of the EIA Regulations in a manner that can be readily understood.

The proposed development has been located in a suitable area for wind farm development following a site selection and design process. The design stages have taken place over a several years utilising a number of iterations in response to environmental data, new policies, market dynamics and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the applicant considers that the proposed development provides the best use of the site with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

The ES presents the potential effects of the proposed development as well as potential synergistic effects which consider such effects in combination. Following the use of mitigation, potential significant adverse effects are restricted to isolated landscape and visual effects upon limited receptors within close proximity to the proposed development.

The applicant has proposed biodiversity enhancements including habitat management which will restore broadleaved woodland, create open ground, control bracken, create ponds, restore wet woodland and remove invasive plant species, and which will in turn improve natural flood drainage and improve habitat for some breeding bird species amongst other ecological benefits, resulting in a biodiversity net benefit. The proposed development will provide socioeconomic benefits through continuing employment opportunities it has already provided at the planning stage throughout the lifetime of the project following consent. The applicant is also committed to providing enhancement to recreational resources through an Access Management and Enhancement Plan. The proposed development will contribute towards meeting national renewable energy targets and have a significant positive effect on reducing carbon dioxide emissions to help reach the national carbon net zero target.



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