Bute Energy
Aberedw Energy Park

Environmental Statement

Chapter 2: Approach to the EIA

Chapter 2
Approach to the EIA

Purpose of EIA

2.1 Environmental Impact Assessment (EIA) is the process of systematically evaluating and presenting all the likely significant environmental effects, both positive and negative, of a proposed development, to assist the determining authority in making an informed decision on an application for planning permission to undertake a development. It enables the significance of effects to be clearly understood, incorporating consideration of mitigation (for negative effects) and enhancement (for positive effects) measures. The results of the EIA process are presented within this Environmental Statement (ES) to accompany an application for planning permission.

2.2 This chapter sets out the general approach undertaken for the assessments as part of the EIA. It sets out the broad methodology that has been used in the EIA and provides an overview of the key stages that have been followed, in line with the statutory EIA requirements and good practice guidance.

2.3 This chapter is supported by the following figures in **Volume 2** and appendices provided in **Volume 3**:

- **Figure 2.1: Existing Communities, Infrastructure and Utilities**
- **Figure 2.2: Cumulative Developments: Wind Farms**
- **Appendix 2.1: Scoping Report**
- **Appendix 2.2: Scoping Direction**
- **Appendix 2.3: Scoping Response Table**[1]
- **Appendix 2.4: Telecommunications Impact Assessment**

[1] Note this appendix contains those responses which covered general EIA issues. Topic specific responses for both Scoping and non-statutory consultation stage are included in each topic chapter.

- **Appendix 2.5: Shadow Flicker Assessment**
- **Appendix 2.6: Aviation Assessment**
- **Appendix 2.7: Aviation Lighting and Mitigation Report**
- **Appendix 2.8: Carbon Balance Assessment**
- **Appendix 2.9: Cumulative Developments**

The EIA Process

2.4 As the Proposed Development will exceed the threshold for wind developments as set out in Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 ('the EIA Regulations'), and as it is a scheme that could potentially result in 'significant' environmental effects according to the EIA Regulations, the Proposed Development is classified as 'EIA development' and an ES is required.

2.5 The environmental effects of the Proposed Development will need to be balanced against a broad range of factors in the planning decision. This chapter sets out the broad methodology that has been used in the EIA for the Proposed Development. It provides an overview of the key stages that have been followed, in line with the statutory EIA requirements and good practice guidance.

2.6 As the Proposed Development will have a generating capacity greater than 10 megawatts (MW), it will be a 'Development of National Significance' (DNS), and an application for planning permission will be submitted to Planning Environment Decisions Wales (PEDW), for determination by the Welsh Ministers.

2.7 The ES has been prepared in accordance with the relevant statutory framework as well as advice and good practice, including:

- Institute of Environmental Management and Assessment (IEMA) (2004) Guidelines for Environmental Impact Assessment;

- The EIA Regulations (2017)[2];
- The Planning Series: 10 – Environmental Impact Assessment (2017)[3];
- Institute of Environmental Management and Assessment (IEMA) (2017) Delivering Proportionate EIA[4];
- Developments of National Significance Guidance: Environmental Impact Assessment (2019)[5]; Future Wales: The National Plan 2040 (2021), including Policy 17: Renewable and Low Carbon Energy and Associated Infrastructure, and Policy 18: Renewable and Low Carbon Energy Developments of National Significance; and
- Planning Policy Wales (PPW) (2024) Edition 12[6]; and Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment[7].

2.8 This ES presents the written output of the EIA process. The information contained in this ES fulfils the requirements of the EIA Regulations and once submitted will enable the decision-making authority, in this case the Welsh Ministers, to make a decision on the application for planning permission.

2.9 Regulation 17(3) of the EIA Regulations states that the following information is required in an ES:

- A description of the Proposed Development comprising information on the site, design, size and other relevant features of the development (**Chapter 4: Development Description**);

[2] Welsh Government (2017) Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, Available at: https://www.legislation.gov.uk/wsi/2017/567/contents/made

[3] National Assembly for Wales (2017) The Planning Series: 10 – Environmental Impact Assessment. Available at: https://senedd.wales/media/03rbzgra/17-016-web-english.pdf

[4] IEMA (2017) Delivering Proportionate EIA. Available at: https://www.iema.net/resources/readingroom/2017/07/18/delivering-proportionate-eia

[5] Welsh Government (2019) Developments of National Significance: Environmental Impact Assessment. Available at: https://www.gov.wales/sites/default/files/publications/2019-07/developments-of-national-significance-guidance-environmental-impact-assessment.pdf

[6] Welsh Government (2024) Planning Policy Wales – Edition 12, Available at: https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf

[7] Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment.

- A description of the likely significant effects of the Proposed Development on the environment (**Chapters 5-11**);
- A description of any features of the Proposed Development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment (**Chapters 5-11**);
- A description of the reasonable alternatives studied by the Applicant, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the significant effects of the Proposed Development on the environment (**Chapter 3: Site Selection and Design Strategy**);
- A non-technical summary of the information referred to in sub-paragraphs (a) to (d) (**Stand-alone document accompanying submission)**; and
- Any additional information specified in Schedule 4 relevant to the specific characteristics of the Proposed Development or type of development and to the environmental features likely to be significantly affected.

2.10 Regulation 17(4) of the EIA Regulations states that an ES must:

- Be prepared by persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement (**Appendix 1.1: Statement of Expertise**);
- Contain a statement by or on behalf of the Applicant describing the expertise of the person who prepared the ES (**Appendix 1.1**);
- Where a scoping opinion or direction has been issued in accordance with Regulation 14 or 15, be based on the most recent scoping opinion or direction issued (so far as the Proposed Development remains materially the same as the Proposed Development which was the subject of that opinion or direction) (**Appendix 2.1: Scoping Report**);
- Include the information reasonably required for reaching a reasoned conclusion on the significant effects of the Proposed Development on the environment, taking into account current knowledge and methods of assessment (**Chapters 5-11**); and

- Take into account other relevant environmental assessments required under assimilated law or any other provision of domestic legislation, with a view to avoiding duplication of assessment.

Good Practice Guidance

2.11 Welsh Government DNS Guidance outlines the stages of a DNS application in relation to EIA developments. The key steps to be followed in the EIA process are identified in IEMA guidance[8] as follows:

Scoping

- Undertake a Scoping exercise to establish the likely significant effects.

Baseline Studies

- Examine, through baseline studies, the environmental character of the area likely to be affected by the proposed development.
- Identify relevant natural and man-made processes which may already be changing the character of the site.

Predicting and Assessing Effects

- Consider the possible interactions between the proposed development and both existing and future site conditions.
- Predict and assess the possible effects, both negative and positive of the proposed development on the environment.

Mitigation

- Introduce design and operational modifications or other measures to avoid, reduce or offset adverse effects and enhance positive effects.

[8] IEMA (2004) Guidelines for Environmental Impact Assessment

Integration

- EIA should be an iterative process which aims to ensure early consideration of environmental issues at all stages of a proposed development, and is founded on appropriate engagement with planning authorities, and the consultation bodies. In addition to meeting the requirements of the EIA Regulations, the EIA process should add value to the design process, improving environmental outcomes and creating a framework for community engagement.

Proportionality

- An ES should be fit for purpose and must be accessible to the consenting authority, consultees and the public. As such, it should focus on significant environmental effects to avoid being overly long in nature.

Efficiency

- Early identification of assessment and information requirements can ensure a coordinated EIA process and can minimise delays.

2.12 This ES provides a clear and concise assessment of the Proposed Development and its likely significant environmental effects, including primary, secondary, direct and indirect cumulative effects, on the natural, built, and human environments. The ES provides the determining authority, in consultation with statutory consultees and the wider community, with sufficient information to make an objective judgement as to the acceptability of the Proposed Development, within the context of national, regional and local planning and environmental policy.

EIA Methodology

2.13 Good practice in EIA is defined in several sources as set out above. The methods followed in this ES have drawn on these sources to generate a robust assessment. The ES preparation process adopted for the Proposed Development can be summarised as follows, and is described further below:

- Scoping and consultation with statutory consultees, non-statutory consultees and the local community to identify the key issues on which the EIA should focus;
- Establishing baseline environmental conditions through desktop research and Site surveys;
- Determining how effects could be avoided or reduced through design evolution;
- Identifying the potential effects of the Proposed Development and any proposed mitigation;
- Assessing the significance of residual environmental effects on the identified receptors against recognised or defined criteria following mitigation;
- Describing how likely significant effects will be monitored (e.g. through conditions attached to a consent); and
- Reporting the process, results and conclusions.

Scoping and Consultation

2.14 Consultation has formed an integral part of the ES preparation process, and the EIA team and the Applicant have contacted several interested parties over the course of the Proposed Development's design to determine their views on the Proposed Development and to collect baseline information.

2.15 A 'Scoping Direction' can be requested from Welsh Ministers on the information to be provided within an ES under Regulation 15 of the EIA Regulations. The purpose of the Scoping process is to ensure that the EIA focuses on the identification of likely significant environmental effects; identify these effects which are unlikely to need detailed study; and provide a means to reach agreement with statutory and non-statutory consultees on the most appropriate methods of impact assessment.

2.16 The Applicant submitted a request to PEDW for a Scoping Direction on 8th December 2023. This request was accompanied by a Scoping Report (**Appendix 2.1**) prepared by LUC, which set out a summary of the Proposed Development; identified the issues proposed to be included in the ES and proposed an approach to the assessment of effects for which each proposed topic area. The Scoping Report was then issued by PEDW to a list of statutory and non-statutory consultees, which included, amongst others, the Welsh Government, Powys County Council (PCC), Natural Resources Wales (NRW), the Welsh Government's Land Quality

Advice Service (LQAS), Mid and West Wales Fire and Rescue Service, Ministry of Defence, Cadw, National Air Traffic Service (NATS), Dŵr Cymru and the Health and Safety Executive (HSE).

2.17 Appendix 2.2: Scoping Direction was received from Welsh Ministers on 5th April 2024. The Scoping Direction included comments received from several consultees. A summary of the issues raised in response to the Scoping Report is provided in either **Appendix 2.3: Scoping Response Table,** or in **Chapters 5-11** where relevant to specific topics. **Appendix 2.3** also includes a brief response to each of the issues raised and indicates where these have been taken into consideration in the ES.

2.18 In line with the above where effects have been identified (whether at Scoping or during detailed assessment) as being not significant to warrant further assessment, these have been 'scoped out' of the EIA. Effects that have been scoped out of the EIA within topics that remain scoped in to the EIA are detailed in **Chapters 5-11**. Whole topics scoped out or not subject to a detailed assessment are outlined below.

Socio-Economics

2.19 It has been relatively common practice in the past for potential socio-economic effects of wind farm developments to be considered within the EIA process and reported on in the ES. This includes direct and indirect economic effects, provision of employment and associated income, use of hospitality services by workers during construction, changes to recreational activity and the potential for community or shared ownership. However, the outcome of these assessments is routinely that any such effects identified fall below the threshold of significance set out in the EIA Regulations. As proposed in the Scoping Report, socio-economic effects are therefore scoped out of the EIA.

2.20 PEDW agreed with the scoping out of Socio-Economics as reported in the Scoping Direction (**Appendix 2.2**). The DNS application is supported by a standalone **Socio-Economic Benefits** document which does not form part of the ES.

Major Accidents and Disasters

2.21 In accordance with IEMA guidance (2020)[9], it has been important to adopt a proportionate approach for this assessment, given that many events which could be classified as 'major accidents and disasters', and which could cause significant effects on the environment, are not relevant to the Proposed Development or its location. The Proposed Development is not located in an area with a history of natural disasters such as extreme weather events, and its construction and operation will be managed within the requirements of several health and safety related control mechanisms, including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974. Relevant safety considerations incorporated into the final design of the Proposed Development are set out in **Chapter 4**.

2.22 Effects assessed in the EIA which could be deemed to potentially cause a major accident or disaster have been assessed elsewhere, and these have been assessed to be low likelihood but potentially high consequence events that can be suitably avoided or managed through mitigation. These relate to potential road traffic accidents occurring during the Proposed Development's construction and flood risk, which have been assessed in **Chapters 9 and 11** respectively. Whilst there is the possibility of a road traffic accident occurring during construction, all traffic will be carefully managed through the Construction Traffic Management Plan (CTMP) and Abnormal Load Transport Management Plan (TMP), such that there is unlikely to be a major road traffic accident which causes major injury or fatality. Flooding risks as considered in **Chapter 9: Hydrology, Hydrogeology and Geology**, have been assessed to be very low and therefore unlikely to lead to a major accident or disaster.

2.23 The IEMA guidance is clear that major accidents and disasters can also be scoped out where proposed design measures or compliance with legislation and best practice will minimise the likelihood of a major accident or disaster occurring. Specific to the Proposed Development, this relates to a failure of the structural integrity of a turbine(s) or a mechanical fault. Modern turbines are fitted with sensors which detect if wind speeds are too high to operate safely, resulting in their shut down. This prevents excessive wear and damage to the gearbox and reduces the risk of turbines catching fire, the occurrence of blade failure or even a failure of the

[9] IEMA (2020) Major Accidents and Disasters in EIA: A Primer

structural integrity of the turbine itself. Turbines and associated equipment will be procured and constructed to comply with both strict United Kingdom (UK) and internationally recognised health and safety standards and the high design standards specified by the manufacturer and will be maintained on a regular basis in accordance with the high bar for operational maintenance set by BS EN IEC 61400-1:2019 Wind energy generation systems. Design requirements (Incorporating corrigendum September 2019), Original Equipment Manufacturers' (OEM) specification and SafetyOn's UK Wind Turbine Safety Rules.

2.24 The occurrence of wind turbines catching fire from suspected lightning strikes is also very rare, and there is no evidence that human life has been at risk from such events occurring in the past; assisted by turbine designs that include an embedded lightning protection system.

2.25 As advised in the IEMA guidance, it is also appropriate to scope out highly likely but low consequence events as they will not result in a significant environmental effect. These include heavy rainfall, as good practice infrastructure design will ensure that onsite flooding will be minimised. It is also appropriate to scope out low likelihood and low consequence events such as minor spills as these events are not considered to result in significant environmental effects and do not fall into the category of major accidents and disasters.

2.26 The Proposed Development's layout and design have also been informed by health and safety considerations. For example, by avoiding areas of steeper topography.

Population and Human Health

2.27 In considering potential human health effects, it has been important to take into account the significance of primary effects identified throughout the ES to determine if there could be 'secondary effects' on human health. Where primary effects are not predicted to be significant i.e. operational and cumulative noise, then there is not considered to be a potential health effect. Where potential human health impacts have been identified, these are assessed in the relevant topic chapters

2.28 Health effects that could be a result of construction and operational noise and construction traffic accidents are considered in the respective chapters (**Chapter 10: Noise and Vibration** and **Chapter 11: Transport and Access)**.

2.29 Health effects as a result of deterioration of water quantity and quality of public and private water supplies are considered further in **Chapter 9**. The Site is not a source zone for public water supply, is not in a Drinking Water Protection Area and private water supplies will be mitigated as detailed in **Chapter 9**.

2.30 The Construction (Design and Management) Regulations 2015 have formed an integral part of the design of the Proposed Development. Health and safety risks have been taken account of and their consideration reflected in the design. Surveys and investigations have been undertaken throughout the pre-consent phase to, as far as reasonably practicable, identify, manage and if possible, avoid any potential risks during construction.

2.31 All construction activities will be managed within the requirements of the Regulations and will also comply with the requirements of the Health and Safety at Work etc. Act 1974. To further reduce possible health and safety risks, a Health and Safety Plan for the construction of the Proposed Development will also be drawn up. All staff and contractors working on the construction will be required to comply with the safety procedures and work instructions outlined in the Plan at all times.

2.32 To ensure that hazards are appropriately managed, risk assessments will be undertaken for all major construction activities, with measures put in place to manage any hazards identified.

2.33 Regarding turbine icing, current best practice is informed by industry standards which show that where icing occurs, the turbines' own sensors are likely to detect the imbalance and inhibit the operation of the machines. Nevertheless, the Applicant will implement measures to ensure the safety of workers and the general public in relation to ice throw and ice fall, including notices throughout the Site alerting members of the public of the possible risk of ice throw and ice fall under certain conditions.

Utilities

2.34 In the Scoping Direction (see **Appendix 2.2**), PEDW agreed with the proposed approach to scope out utilities from the ES, given that any effects during construction could be readily mitigated via good practice measures that will be appropriate to any development and that can be readily secured by planning conditions.

2.35 Existing utilities within and surrounding the Site are shown on **Figure 2.1: Existing Communities, Infrastructure and Utilities**. A 66 KV overhead line crosses the south-western corner of the Site. A 11 kV overhead line enters the southern part of the Site, near the residential property Blaenmilo.

2.36 Utilities during construction of the Proposed Development will be controlled by the Construction Environmental Management Plan (CEMP) and managed under the relevant health and safety regulations as described above. Effects relating to utilities have therefore been scoped out through design.

Telecommunications

2.37 A technical study was undertaken by Pager Power to identify whether the Proposed Development will have a potential impact on any existing telecommunications infrastructure. This is provided in full at **Appendix 2.4: Telecommunications Impact Assessment**.

2.38 Telecommunications covers a broad range of communications infrastructure types, with point-to-point links communications infrastructure assessed as part of the EIA. The basis of the assessment was to identify any required mitigation solutions that should be implemented to conclude that no significant effects are predicted on telecommunications infrastructure. On this basis, the topic is scoped out of the ES.

2.39 Telecommunications infrastructure was identified through consultation with the relevant telecommunications stakeholders. The study area search radius was therefore informed by the safeguarding criteria applied by each stakeholder. The details of the consultation with the prevalent operators are set out in Table 1 in **Appendix 2.4**.

2.40 The overall results of the Telecommunications Impact Assessment as detailed in **Appendix 2.4**, indicate that the Site is partially constrained by telecommunications link paths. The constraints are due to the wireless Re-Broadcast link (RBL) operated by Arqiva from Llandrindod Wells to Erwood, and one Mobile Broadband Network Limited (MBNL) link and mast. The closest turbines to a link path are T16 to T18, but these are clear of the link path exclusion zone for an MBNL link.

2.41 No mitigation is required for the Proposed Development, based on consultation responses and assessment findings.

Shadow Flicker

2.42 Shadow Flicker is caused by rotating wind turbine blades when they obstruct the sun's rays, causing the shadow of the wind turbine to flick on and off. This can result in an intermittent nuisance when the shadow is cast over the windows of residential properties. This may have a negative effect on the amenity of residents and occupants of affected properties if it occurs for a significant period of time during the year.

2.43 There is no formal limit on the amount of shadow flicker that is considered acceptable within the UK. A typical limit utilised in other European countries is 30 hours per year, with a maximum of 30 minutes per any one day. If shadow flicker effects are predicted beyond this limit, mitigation may be required to eradicate the occurrence of shadow flicker. This is typically controlled by remote automatic wind turbine shutdown so that, in effect, no neighbouring property will experience the occurrence of shadow flicker beyond the limits specified above.

2.44 A Shadow Flicker Assessment has been carried out by Pager Power (see **Appendix 2.5: Shadow Flicker Assessment**). The model used in the assessment considers terrain, the relative geometry of the turbine to the receptor, the dimensions of the wind turbine and the path of the Sun across the sky throughout a single year. The model also assumes that each dwelling receptor has a single window that is 1 metre (m) by 1 m and has a centre that is 1.5 m above ground and directed towards the turbine. A minimum Sun elevation of 2 degrees has been considered. All results are analysed with respect to reference limits of 30 minutes per day and/or 30 hours per year.

2.45 Shadow flicker effects can occur only on sunny days. Additionally, other factors could also diminish effects, including:

- Visibility from the receptor;
- Window position;
- Cloud cover;
- Varying wind direction;
- Low wind speed – which could result in the turbines not operating for a period of time.

2.46 The analysis used conservative assumptions, considering only clear daylight conditions and window locations with a direct line-of-sight of the turbines.

2.47 This assessment identified 66 dwelling receptors around the Proposed Development that may be affected by shadow flicker. The modelling results indicated that 33 of the 66 dwellings will receive shadow flicker effects for more than the reference threshold limit. 11 receptors will experience no shadow flicker effect, and 22 receptors will experience less than 30 minutes per day and less than 30 hours per year.

2.48 If considered appropriate, the Applicant is willing to accept a condition to commission and submit a report to the local planning authority which assesses any reported shadow flicker event(s) from the 33 dwellings. If confirmed by the local planning authority, the Applicant will submit a scheme of mitigation for approval.

Aviation

2.49 As set out in the Scoping Report, an Aviation Assessment of the Site has been undertaken by Wind Power Aviation Consultants (WPAC) and is included as a technical appendix (**Appendix 2.6: Aviation Assessment**).

2.50 In addition, **Appendix 2.7: Aviation Lighting and Mitigation Report** has been prepared to outline the aviation lighting required for the operational safety of the Proposed Development and to inform the Aviation Lighting Assessment carried out in **Chapter 5: Landscape and Visual Amenity**. This approach was considered sufficient by PEDW and PCC in their Scoping Responses, given that the Proposed Development is close to, but not within the outer Cardiff Airport Control Area (CTA).

2.51 The Site has been assessed against the Civil Aviation Authority's (CAA) visible lighting regulations and the Ministry of Defence (MOD) obstruction lighting specifications. The technical appendix therefore includes a CAA approved aviation lighting layout which minimises the number of lit wind turbines whilst fulfilling flight safety requirements and sets out the mitigation techniques available, taking into account the extant legislation and guidance. An Infra-Red lighting layout to fulfil MOD requirements has also been designed and will be approved by the MOD.

Climate Change, including Carbon Balance Assessment

2.52 A major cause of climate change is a rise in the concentration and volume of greenhouse gas (GHG) emissions into the atmosphere, including carbon dioxide (CO_2). Fossil fuels are a significant contributor of GHG emissions which are used to generate electricity.

2.53 The key means by which an Energy Park may have effects relating to climate change is in its generation of low-carbon energy. The generation of renewable electricity from an Energy Park such as the Proposed Development (with an approximate generation of 120 MW) results in reduced CO_2 emissions from other generation sources. Consequently, the electricity that will be produced by the Proposed Development will result in a saving in emissions of CO_2, with associated environmental benefit. However, emissions reductions of this nature also need to be understood in the context of the carbon emissions associated with the manufacture of components, as well as emissions from the transportation, construction, and decommissioning activities associated with the Proposed Development.

2.54 In the Scoping Direction (see **Appendix 2.2**), PEDW agreed with the proposed approach to address the impacts of climate change on the Proposed Development in relevant chapters of the ES.

2.55 As such, this ES includes a calculation of net carbon savings from the Proposed Development (see **Appendix 2.8: Carbon Balance Assessment**). This calculation is based on the 2023 carbon calculator spreadsheet provided by the Scottish Government. This is currently the most appropriate and available standardised tool for use in relation to net carbon saving calculations.

2.56 The results of the Carbon Balance Assessment show that the energy output of the Proposed Development will be 20,307,432 MWh. However, the Proposed Development is likely to produce 29,0271 tonnes of CO_2, mainly from the construction phase of the turbines, access tracks and other infrastructure. The calculations however indicated that these losses will be paid back within approximately 0.8 years of operation, through the displacement of a fossil fuel-mix of electricity generation in the National Grid. This is considered to be not significant.

Common Land

2.57 As stated in the Scoping Report (**Appendix 2.1**) and agreed by PEDW in the Scoping Direction (**Appendix 2.2**), the DNS application will be accompanied by the requisite secondary consent applications to authorise the proposed works on common land and for consent to deregister and exchange common land (i.e., Sections 16 and 38 of the Commons Act 2006[10]). Impacts of the Proposed Development on common land are addressed in the relevant environmental chapters.

Public Consultation

2.58 Public consultation is a key component of the EIA process.

2.59 Early engagement public consultation was held from Wednesday 8th November 2023 to Wednesday 20th December 2023. Prior to the launch of the early engagement public consultation, a series of key stakeholder meetings were held with local elected representatives to introduce the proposals.

2.60 Three public exhibitions were held in November 2023. The consultation events were promoted in the local press, posters, on social media and a bilingual consultation brochure was distributed to key stakeholders and residents and businesses near to the Site.

2.61 This approach was taken to ensure there was extensive publicity of the Proposed Development and a range of opportunities for anyone interested in the Proposed Development to view and comment at an early stage. The breadth and depth of the consultation was important to make it widely accessible.

2.62 The Proposed Development website[11] was updated to provide progress updates and any relevant news stories relating to the Proposed Development. This ES and other application documents are also subject to the statutory requirements for Pre-application Consultation (PAC) that apply to all DNS applications.

[10] Commons Act 2006. Available at: https://www.legislation.gov.uk/ukpga/2006/26/contents

[11] https://aberedwenergypark.wales/

Baseline Characteristics

2.63 The purpose of the EIA is to present how environmental conditions may change as a result of a development. This requires that the environmental conditions now and, in the future, assuming no development on the Site, are established. These conditions are referred to as the 'baseline' and are usually established through a combination of desk-based research, site survey, and empirical studies and projections. Together, these describe the current and future character of the Site and surroundings, and the value and vulnerability of key environmental resources and receptors.

2.64 Making predictions about how parameters such as land use, landscape, views and other environmental characteristics may change in the future relies on assumptions about future development and environmental trends. For this reason, where other development is not proposed in the vicinity of the Site, the baseline adopted for the EIA is normally taken as the current character and condition of the Site and surrounds, and the likely significant environmental effects of the Proposed Development are then assessed in the context of the current conditions alone.

2.65 It is accepted that the baseline conditions may gradually alter over time as a result of climate change, which has the potential to alter the landscape and species of flora and fauna within and around the Site, for example. However, these climate change effects are unlikely to materially alter the findings of the EIA. Further details of climate change are considered in the relevant chapters (**Chapters 5-11**).

2.66 Baseline conditions, and the means by which these have been established, are set out in **Chapters 5-11** of this ES.

2.67 As natural processes and/or human activities can also affect the baseline ('status quo'), it is important to establish the future baseline scenario in the absence of the Proposed Development, also called the 'Do Nothing' scenario. The 'Do Nothing' scenario can be considered as the existing conditions, taking account of only clearly foreseeable changes over the lifespan of the Proposed Development. Effects have been assessed relative to this baseline in each of the topic chapters. If the Proposed Development does not proceed, it is likely that the current land use within the Site (open moor common land and small areas of scrub woodland) will continue.

2.68 Establishing the future baseline scenario requires transparent decision making as to what natural process changes and/or changes as a result of human activity should be included or excluded from the future baseline scenario.

2.69 This scenario can be considered as the existing conditions, taking account of only clearly foreseeable changes over the lifespan of the Proposed Development. Effects have been assessed relative to this baseline. If the Proposed Development does not proceed it is reasonable to assume that the management of the Site will continue as at present.

2.70 Consideration of the future baseline scenario which acknowledges the absence of the Proposed Development is described in **Chapters 5-11** of this ES.

Consideration of Reasonable Alternatives

2.71 The ES is required to consider reasonable alternatives for the Proposed Development, as specified in Schedule 4, paragraph 2 of the EIA Regulations "*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects".*

2.72 The ES provides a description of the site selection and design evolution of the Proposed Development and the alternative designs that this process suggested, along with consideration of these alternatives in **Chapter 3**.

Avoidance of Effects through Design

2.73 EIA is an iterative process that aims to ensure early consideration of environmental issues at all stages of Proposed Development. In this way, the findings from the EIA can be fed into the design process, to avoid, reduce and if possible, remedy adverse environmental effects. This approach has been followed in the design of the Proposed Development. Where potentially adverse significant environmental effects were identified through environmental baseline surveys, or later in the detailed EIA, consideration was given as to how the design should be modified to 'design out' adverse significant environmental effects, or where this was not possible, to determine appropriate mitigation. This process is explained further in **Chapter 3**, the

Green Infrastructure Statement and the **Design and Access Statement**, with reference to the step-wise approach detailed within Chapter 6 of PPW[12], and in subsequent assessment in **Chapters 5-11**.

Identification of Likely Significant Effects

2.74 Paragraph 5(g) of Schedule 4 of the EIA Regulations states "*The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development*".

2.75 Each technical chapter contains a section that identifies the likely effects on the environment that may arise as a result of the construction, operation and/or decommissioning (where necessary) of the Proposed Development. As stated in **Chapter 1**, decommissioning is only considered in the context of soil management (**Appendix 4.5: Outline Decommissioning Plan**). The significance of environmental effects is typically assessed by considering both the character of the change (i.e. the size and duration of the effect) and the value/sensitivity of the environmental resource that experiences this effect (i.e. the receptor).

2.76 In accordance with the EIA Regulations, effects may be direct, indirect, secondary or cumulative. Within these categories, they may also be short, medium or long-term, permanent or temporary, beneficial or adverse. Direct (or primary) effects are changes to the baseline arising directly from activities that form part of the Proposed Development, for example, a localised increase in noise during construction. Indirect (or secondary) effects are those that arise as a result of a direct effect, for example deterioration of water quality in a watercourse due to a discharge could have secondary effects on aquatic biodiversity.

2.77 Effects and receptors have been described using quantitative criteria wherever possible using those listed below. Where different terminology has been used, this is stated clearly in the relevant chapter.

- The nature of the effect, described as adverse, neutral or beneficial;

[12] Welsh Government (2024) Planning Policy Wales – Edition 12

- The magnitude of the effect, based on a scale of major, moderate, minor or none;
- The likelihood of the effect occurring, based on a scale of certain, likely or unlikely;
- The duration of the effect, based on a scale of long, medium and short term;
- The reversibility of the effect, being either reversible or irreversible;
- The value of the receptor, based on a scale of international, national, regional, local and negligible;
- The sensitivity of the receptor to the effect, based on a scale of high, medium and low and in some instances negligible; and,
- The occurrence of the effect during the phased implementation of the Proposed Development.

2.78 Each of the technical chapters provides the specific criteria, including sources and justifications, for quantifying the significance of effects, and this is predominantly done by combining sensitivity of receptor and magnitude of effect. Where possible, this has been based upon quantitative and accepted criteria together with the use of value judgements and expert interpretations. This combination of sensitivity of receptor and magnitude of effect may take the form of a matrix table and, if so, these are detailed in the technical chapters. The threshold at which effects are likely to be 'significant' is also defined in each of the technical chapters where relevant.

2.79 Unless stated otherwise in methodologies set out in the individual assessment chapters, effects of '**major'** or '**moderate'** significance are considered to be '**significant'** in the context of the EIA Regulations.

Interrelationship between Effects

2.80 Regulation 4(2) of the EIA Regulations states that the EIA must *"identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors –*

a. *Population and human health;*

b. *Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC*[13]*;*

c. *Land, soil, water, air and climate;*

d. *Material assets, cultural heritage and the landscape;*

e. *The interaction between the factors referred to in sub-paragraphs (a) to (d).*"

2.81 Interrelationships may occur where two or more effects arise that have the potential to impact on the same receptor during construction or operation. An impact taken in isolation may have not have a significant impact on a receptor, but where several effects are considered in an interrelated manner, the resulting impact could then be considered significant.

2.82 There is no single agreed standard on how the assessment of impact interrelationships should be undertaken, and so the assessment has been undertaken on a qualitative basis using the results of the individual assessments, informed by professional judgement.

2.83 In general terms, impacts assessed individually as being of negligible magnitude are not considered to make a meaningful contribution to combined effects from impact interrelationships. For the avoidance of doubt, all impacts not explicitly assessed in the ES will be considered to be of negligible magnitude and will therefore not be assessed. Impacts will be considered where they have been identified and assessed in other chapters of the ES.

2.1 Receptors that are predicted to be the subject of more than one potential effect will be included in the combined effects assessments presented in each topic chapter. Receptors predicted to be the subject of only a single effect are excluded because there is considered to be no potential for an accumulation of effects to take place. The interrelationship between potential effects between topic areas is addressed in **Chapters 5-11** and summarised in **Chapter 12**.

Cumulative Effects

2.84 As required by Regulation 5 of the EIA Regulations, the ES considers the possible effects that a proposal may have in combination with existing or consented developments. In

[13] These Directives are incorporated into UK law through the Conservation of Habitats and Species Regulations 2017.

accordance with the Planning Inspectorate's guidance for Nationally Significant Infrastructure Projects[7], a staged process for assessing schemes has been adopted. This is the approach requested by PEDW in the Scoping Direction (**Appendix 2.2**). Likely cumulative effects have been defined as the likely effects that the Proposed Development may have in combination with other wind farms and relevant developments that are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the Proposed Development if all other wind and relevant developments are assumed to be constructed/operational).

2.85 The list of all developments identified for consideration in the cumulative effects assessment is presented in **Appendix 2.9: Cumulative Developments** (separated into two tables, one for wind development and one for all other non-wind developments). The locations of the wind developments are shown in **Figure 2.2 Cumulative Developments: wind farms**. **Appendix 2.9** includes justification for which developments are scoped out. Subsequently, each topic-specific chapter (**Chapters 5-11**) then set out, with justification, which developments are considered in the cumulative assessment for that topic.

2.86 Schemes at the scoping stage are not usually included due to the increased uncertainty that they will progress to an application, as well as the lack of sufficient environmental assessment information available for them which is otherwise required to enable a robust and meaningful cumulative assessment.

2.87 While existing non-wind developments within the study area have been considered where relevant, it should be noted that the Aberedw Meteorological Mast, a single mast within the Site by the Applicant has been scoped out of assessment of cumulative effects. This is because the mast will be decommissioned prior to the construction of the Proposed Development.

2.88 In addition to assessing the additional cumulative effects of the Proposed Development in combination with other schemes, **Chapter 5** and **Chapter 6: Archaeology and Cultural Heritage** assess the total cumulative effects of the Proposed Development assuming that all current and future developments are constructed/become operational.

2.89 Appendix 2.9 was considered in each technical assessment of cumulative effects, presented in the relevant topic-specific **Chapters 5-11**. Within each technical chapter, detail is provided as to which cumulative developments have been assessed, where relevant. The cut-

off date for cumulative data collection was 28th March 2025. Changes to the cumulative baseline have not been included after this cut-off date to allow time for the assessments, visualisations and figures to be prepared. Should additional schemes enter into planning after this date, then it will be for the EIA for those schemes to consider the Proposed Development cumulatively.

Additional Mitigation, Enhancement and Monitoring

2.90 Regulation 17(3)(c) of the EIA Regulations states that an ES should provide *"a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment"*.

2.91 While mitigation has been embedded through the design process for a range of assessment topics ('embedded mitigation'), specific additional mitigation measures ('additional mitigation') are also proposed to prevent, reduce and offset likely adverse effects which could not be avoided through design. These additional mitigation measures have been identified through the EIA process.

2.92 Each assessment chapter recognises:

- Embedded mitigation: Items that are embedded through the design of the Proposed Development to mitigate potential adverse effects, for example the application of a stand-off distance between a receptor and part of the Proposed Development.
- Applied mitigation: These are good practice and industry standard measures which are, by their nature, well understood, and for which there is a high degree of confidence as to their effectiveness. These are described in the chapters relating to particular topics and will be delivered during the construction process.
- Additional mitigation: Items that are further required to mitigate the likely adverse effects of the Proposed Development above and beyond the embedded and applied mitigation to be delivered during either the construction or operational phases.
- Monitoring: Any monitoring requirements to assess potential ongoing significant adverse effects on the environment as a result of the Proposed Development following the application of mitigation.

2.93 By making a distinction between embedded mitigation, applied mitigation and additional mitigation, and with embedded and applied mitigation forming an integral part of the Proposed Development (i.e. being in place for assessment purposes), the ES focuses on the likely significant effects of the Proposed Development. This approach prevents a series of unrealistic and unlikely effects from being reported in detail. It also provides clarity on the additional mitigation measures required to address likely significant as well as other adverse effects. In line with EIA good practice, including IEMA's guidance on 'Delivering Proportionate EIA' (2017), this approach will assist consultees and other stakeholders in focusing on the significant effects which might realistically arise and how they could be mitigated. This approach also recognises the need for a balanced approach to risk. This is considered fundamental to the preparation of a proportionate ES.

2.94 The embedded mitigation measures are set out in **Chapter 4**. Furthermore, the relevant embedded and applied mitigation measures are also described in detail in the specialist topic chapters. Applicable additional mitigation measures are also described in detail in the specialist topic chapters.

2.95 Paragraph 7 to Schedule 4 of the EIA regulations states that the ES should include "*a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements*". Where monitoring is proposed, this is identified and detailed in the individual topic **Chapters 5-11** and summarised in **Appendix 12.1: Schedule of Mitigation and Monitoring**. To provide a single reference source, all embedded and applied mitigation measures and those envisaged as additional mitigation and monitoring requirements are included on a topic-by-topic basis in the Schedule of Mitigation in **Appendix 12.1**. This schedule will be incorporated into the CEMP. The implementation of all measures noted in **Appendix 12.1** will be secured either through conditions attached to the consent, subsequent planning permissions, or through other regulatory mechanisms and licences.

2.96 By assuming that embedded and applied mitigation is an integral part of the Proposed Development and will be effective, and then making a professional judgement on the likely effectiveness of the additional mitigation measures proposed, the remaining likely effects are

then documented within this ES as 'residual effects'. This is considered to be a robust, proportionate and realistic approach to assessment.

Data Gaps, Assumptions and Uncertainty in Assessment

2.97 The EIA process is designed to enable good decision-making based on the best possible information about the environmental effects of a Proposed Development. There will, however, always be an element of uncertainty as to the exact scale and nature of the effects. These may arise through shortcomings in available information or due to the limitations of the professional judgement process. Part 6 of Schedule 4 of the EIA Regulations requires that the ES provides *"details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved"*.

2.98 Whilst any assessment limitations are discussed in **Chapters 5-11**, it is considered that this ES contains adequate information to enable the Welsh Ministers and consultees to review and form a reasoned conclusion on the significant effects of the Proposed Development on the environment.

2.99 Each topic chapter also lists the relevant assumptions that have been made when completing the assessment. Again, it is not considered that these assumptions present limitations to understanding potential significant effects.

Competent Experts

2.100 Regulation 17(4)(a) of the Regulations requires the ES to be prepared by *"persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement"*.

2.101 As mentioned in **Chapter 1: Introduction**, a statement of competency, setting out the qualifications and experience of chapter authors, is provided in **Appendix 1.1: Statement of Expertise**.