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61253

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Chapter 2: EIA Approach and Methodology

Cummeennabuddoge Wind (DAC)

September 2024

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Glossary of Terms

Term	Definition
The Applicant	Cummeennabuddoge Wind Designated Activity Company (DAC)
The Agent	Atmos Consulting Limited
Environmental Advisors and Planning Consultants	Atmos Consulting Limited
Environmental Impact Assessment	A means of carrying out, in a systematic way, an assessment of the likely significant environmental effects from a development
Environmental Impact Assessment Regulations	Schedule 6 of the Planning and Development Regulations 2001(as amended)
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations
The Proposed Development	Cummeennabuddoge Wind Farm
The Proposed Development Site	The land enclosed by the red line shown on Figure 1-1a
The Planning Act	Directive 2011/92/EU (as amended by Directive 2014/52/EU, the EIA Directive).

List of Abbreviations

Abbreviation	Description
CEMP	Construction Environmental Management Plan
GSI	Geological Survey of Ireland
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
IFI	Inland Fisheries Ireland
LFL	Limited Felling Licence
NIS	Natura Impact Statement
NTS	Non-Technical Summary
OPW	Office of Public Works
SID	Significant Infrastructure Development
TII	Transport Infrastructure Ireland

2 EIA Approach and Methodology

2.1 Introduction

This Chapter of the EIAR presents the approach taken to the EIA for the Proposed Development.

This EIAR has been prepared in accordance with Schedule 6 of the Planning and Development Regulations 2001 (as amended, the 'Regulations'), which sets out the contents of an EIAR.

The approach to the EIA and the methodology adopted in conducting the assessments has been undertaken in accordance with Directive 2011/92/EU (as amended by Directive 2014/52/EU, the EIA Directive).

In addition, The EIA has been informed by relevant statutory and non-statutory guidance documents including:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Wind Energy Development Guidelines for Planning Authorities (DoEHLG, 2006);
- Review of the Wind Energy Development Guidelines – Preferred Draft Approach (DoHPCLG, 2017);
- Draft Wind Energy Development Guidelines for Planning Authorities (DHPLG, 2019);
- Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012);
- Guidance on the preparation of the environmental impact assessment report (EU, 2017);
- Guidance Document on Wind Energy Developments and EU Nature Legislation (EU, 2020); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018).

Additional guidance documents, specific to each environmental topic, are referenced in each chapter of this EIAR.

2.2 EIA Screening and Scoping

2.2.1 The Requirement for EIA (Screening)

The Proposed Development exceeds the thresholds for completion of an Environmental Impact Assessment (EIA), as detailed in the Planning and Development Regulations 2001 (as amended), Schedule 5, Part 2, Class 3(i).

2.2.2 The Scope of the EIA Report (Scoping)

The Applicant elected not to request a formal scoping opinion from the relevant authority under Section 37D(1) of the Planning and Development Acts 2000. instead pursuing an informal approach through the production and consultation on a Scope of Works Report.

This Scope of Works Report can be found in Appendix 2-1 and was used to provide consultees information of the scope of the project and possible environmental effects, and to invite comments on the information which should be included in the EIAR, so that a focused and robust EIAR is produced.

In addition, during the Significant Infrastructure Development (SID) pre-application consultation meeting on 03/12/2021, the Board gave advice to the Applicant, on the considerations related to the likely significant environmental effects which may have a bearing on its decision in relation to any subsequent SID planning application.

The Scope of Works Report was issued to consultees via email on the 25/08/2021 with a deadline for response of 20/10/2021. A reminder was sent via email to all consultees on the 24/09/2021 for a response.

Table 2-1 lists the responses received during the scoping process. Copies of all scoping responses received as of November 2021 are included in Appendix 2-2 of this EIAR. The recommendations of the consultees have informed the scope of the assessments undertaken and the contents of the EIAR.

Table 2-1: Scoping Responses received as of November 2021

Organisation	Response received
Kerry County Council	Y
Southern Regional Assembly	N
Cork County Council	Y
National Parks and Wildlife Service Development Applications Unit	N
Environmental Protection Agency	N
Principal Environmental Health Office, Health Service Executive	Y
An Taisce	N
Irish Raptor Study Group	N
Irish Wildlife Trust	N
Irish Water	N
Inland Fisheries Ireland	Y
Kerry Airport	N
Cork Airport	N
EirGrid	N
Irish Aviation Authority	N
Eir - (Previously Meteor)	N
TETRA Ireland Communications Ltd	N
Virgin Media	N
BT	Y
Premier Broadband	N
Vodafone	Y
ESB networks Telecoms	Y
Radio Telifís Éireann	Y
Broadcasting Authority of Ireland	Y
Department of Defence	Y
O2	N

Organisation	Response received
Irish Telecoms	N
TowerCom Ltd	N
Three	N
Netshare	N
Commission for Communications Regulation	N
National Monuments Service	N
Teagasc- Agriculture and Food Development Authority	N
Geological Survey of Ireland	Y
Irish Peatland Conservation Council	N
Sport Ireland Outdoors	N
The Heritage Council	N
Office of Public Works, Killarney	Y
Sustainable Energy Authority of Ireland	N
Environment Section, Department of Agriculture, Fisheries and Food	N
Department of the Environment, Climate and Communications	N
Energy and Emissions Services, Environment Division, Department of Agriculture, Food and the Marine	N
Department of Rural and Community Development	N
Department of Culture, Heritage and the Gaeltacht	N
Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media and	N
Fáilte Ireland .	N
Transport Infrastructure Ireland (TII)	Y
Waterways Ireland	Y
Commission for Regulation of Utilities	N
Bird Watch Ireland	N
Arts Council of Ireland	N
Bat Conservation Ireland	Y
3 Counties Energy Agency	N
Forest service	N
Met Eireann	N
CARO south	N
Department of Housing, Local Government and Heritage	N
Department of Agriculture, Food and the Marine	Y

Table 2-2: Summary of Scoping Responses received as of November 2021

Consultee	Response Summary	EIAR Section
Bat Conservation Ireland	All wind farm projects require a full bat survey according to best practise guidelines	Two years of surveys have been completed, See Chapter 8 - Biodiversity
Broadcasting Authority of Ireland	Not located near any existing or planned FM transmission sites	Noted.
BT	No impact on their infrastructure	Noted.
Cork County Council	Confirmed approach is acceptable Preference for grid connection to be underground Suggested refence is made to Judicial Review overturning permission for Derryadd Windfarm (SID - APB) [2020 No. 5571	The proposed grid connection route is entirely underground, See Chapter 4 – Description of Development. The Derryadd judicial review has been considered and a limited project envelope has been proposed.
Department of Agriculture, Food and the Marine	Identified need for felling licence Take note of Felling and Reforestation Policy2	The tree felling activities required as part of the Proposed Development will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) as per the Forest Service's policy on granting felling licenses for wind farm developments. The policy requires that a copy of the planning permission for the Proposed Development be submitted with the felling licence application; therefore, the felling license will not be applied for until such time as planning permission is obtained for the Proposed Development. Afforestation/replanting obligations will also be complied with.

[1] This relates to the design details requiring that turbine details be specific and not assessed on a 'worst case' basis

[2] Available at: https://assets.gov.ie/96814/4830fc08-0227-4504-83fa-2fd90a7942f2.pdf [accessed 22 November 2021]

Consultee	Response Summary	EIAR Section
Department of Defence	All turbines should be illuminated by high intensity obstacle lights that will allow the hazard be identified and avoided by aircraft in flight.	Considered during the design process. No implications for the EIA/Design. This is discussed in Chapter 16 – Material Assets (including Aviation and Telecommunication)
ESB Networks Telecoms	No impact on their network	Noted.
Geological Survey of Ireland (GSI)	Use publicly available GSI datasets Consider potential impact on specific groundwater abstractions and on groundwater resources Identify areas of high to extreme groundwater vulnerability The Landslide Susceptibility map indicates areas of 'Moderately High' to 'High' landslide susceptibility Post consent instructions and guidance	These issues are addressed in Chapter 10 - Soils, Geology and Hydrogeology.
Health Service Executive	Instructions on guidance and methodology to be followed in the conduct of the EIA Specifies a requirement for strong and early public consultation The Environmental Impact Assessment Report (EIAR) should clearly demonstrate the link between public consultations and how those consultations have influenced the decision-making process in the EIA Details on end of life decommissioning to be included in the EIAR Inclusion of height and model of the turbines, details of foundation design and ancillary facilities Identify opportunities for health gain (greenways, cycle paths etc.) The EIAR should consider an assessment of alternatives The potential impacts for noise and vibration from the proposed development on all noise sensitive locations must be clearly identified in the EIAR A baseline noise monitoring survey should be undertaken It is recommended that a shadow flicker assessment is undertaken A Construction Environmental Management Plan (CEMP) should be	Guidance and methodology followed is included within this chapter Details of the public consultation undertaken and an explanation of how that has influenced the design is included in Chapter 3: Design Evolution and Consideration of Alternatives An assessment of the decommissioning effects has been included in each assessment. Details on waste management is included in a Waste Management Plan as an Appendix to the Construction Environmental Management Plan (CEMP)_ See Figure 1-2 and Chapter 4: Description of Development See Chapter 5: Population and Human Health See Chapter 3 Design Evolution and Consideration of Alternatives See Chapter 13: Noise Baseline noise survey was undertaken as part of the assessment presented in Chapter 13: Noise Chapter 15: Shadow Flicker

Consultee	Response Summary	EIAR Section
	included in the EIAR All drinking water sources, both surface and ground water, must be identified. Public and Group Water Scheme sources and supplies should be identified A detailed assessment of the current ground stability of the site for the proposed wind farm extension and all proposed mitigation measures should be detailed in the EIAR. The EIAR should include details of the location of all site office, construction compound, fuel storage depot, sanitary accommodation and canteen, First Aid facilities, disposal of wastewater and the provision of a potable water supply to the site canteen. All existing or proposed wind farm developments in the vicinity should be clearly identified in the EIAR. The EIAR should include a detailed assessment of any likely significant cumulative impacts The EIAR should state clearly if there is any future proposal to further extend the proposed Cummennabuddoge Wind Farm.	A CEMP is included as Technical Appendix 4-1 See Chapter 11: Hydrology, Water Quality and Flood Risk Chapter 10: Soils, Geology and Hydrogeology (including Appendices; See Chapter 4: Description of Development All technical assessments See Technical Appendix 2-3 An assessment of the potential cumulative impacts is included in every assessment Chapter There are no plans to extend the Proposed Development beyond the extent described in this EIAR (Chapter 4: Description of Development
Inland Fisheries Ireland (IFI)	No physical interference with watercourses without consultation and no use of watercourses as mitigation measures Protection of water courses during construction Consultation on watercourse crossings	The design of the Proposed Development is such that there will be no physical interference with watercourses. Details of proposed watercourse crossings are included in. Chapter 4 - Description of Development Details of the proposed protection measures for water courses during construction are presented in TA 4-1 CEMP The Applicant welcomes IFI's view on the proposed watercourse crossings as shown on Figure 1-2 and Annex E to the Surface Water Management Plan included at Appendix 11-4.
Kerry County Council - County Archaeologist	Impact on protected archaeological landscape to be assessed.	See Chapter 14 - Cultural and Archaeological Heritage and the assessment on the impact on the Visually Sensitive Area undertaken as part of the Landscape assessment reported in Chapter 6: Landscape and Visual Impact

Consultee	Response Summary	EIAR Section
		Assessment
Kerry County Council - Environment Department	Overriding concern on the potential impact on surface water quality downstream of the proposed development particularly during the construction phase. I would suggest that attention is placed on any potential downstream impacts particularly as the Clydagh River is a tributary of the River Flesk, which in turn constitutes the main water body flowing into Lough Leane.	See Chapter 11 Hydrology, Water Quality and Flood Risk
Kerry County Council - Planning	Outside area zoned as 'Open to Consideration' in the Renewable Energy Strategy Within an area identified as a secondary Special Amenity Area	Considered as part of Chapter 5 - Planning Policy and Development Context Assessment of the potential impacts on the Visually Sensitive Areas (formerly secondary Special Amenity Areas) is included in Chapter 6: Landscape and Visual Impact Assessment
Office of Public Works, Killarney	No interaction with any Office of Public Works (OPW) arterial drainage scheme	Noted.
Radio Telefís Éireann	Concern over disruption to National Broadcast Radio and TV services. Request for design details for further assessment and discussion	Design details for further assessment were circulated on 24/09/2022 and final design on 19/10/2022 together with an initial desk-based assessment of telecommunication links. This is discussed in Chapter 16 – Material Assets (including Aviation and Telecommunication)
Transport Infrastructure Ireland	Access to the road network developed in accordance with official policy and road safety considerations Assess significant impacts on road networks and junctions including N22 Assess visual impacts from roads Have regard to EIAR, conditions and modifications to road schemes in the area, particularly for cumulative impacts Consideration of Environmental Noise Regulations Conduct of a Traffic and Transport Assessment if appropriate Consideration of a Road Safety Audit Details of road crossing methods Assessment of haul routes	See Chapter 4 - Description of Development; See Chapter 6 - Landscape and Visual Impact Assessment; See Chapter 7 - Traffic Impact and Access Route Assessment; See Chapter 14 – Noise See Chapter 7 - Traffic Impact and Access Route Assessment; Noted No crossing of National Roads are proposed See Chapter 7 - Traffic Impact and Access Route

Consultee	Response Summary	EIAR Section
	Consultation with road management companies regarding operational requirements Consideration of safeguarding for proposed road schemes in grid connection infrastructure	Assessment; Noted The cable route does not cross any area proposed for any road scheme
Vodafone	No impact on their network	See Chapter 16 – Material Assets (including Aviation and Telecommunication)
Waterways Ireland	No impact	Noted.

2.3 Location of Information in the EIA Report

This EIAR has been prepared in compliance with Article 3 of the EIA Directive which states:

> *"1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project 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;*
>
> *(c) land, soil, water, air and climate;*
>
> *(d) material assets, cultural heritage and the landscape;*
>
> *(e) the interaction between the factors referred to in points (a) to (d).*
>
> *2. The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."*

Article 5 of the EIA Directive specifies the information to be included in an EIAR. Table 2-3 identifies the location of that information within this EIAR.

Table 2-3: Location of Information Required by Article 5 of the EIA Directive

Required information (Article 5)	Relevant Section of this EIA Report
(a) A description of the project comprising information on the site, design, size and other relevant features of the project	A description of the location of the Proposed Development and its characteristic of the construction, operation and decommissioning phases is presented in Chapter 4. The predicted materials and natural resources used and the expected residues and emissions of the Proposed Development are reported in Chapters 6 to 19.
(b) A description of the likely significant effects of the development on the environment	The predicted significant effects of the Proposed Development are presented as residual effects after relevant stated mitigation measures in Chapters 6-18.
(c) A description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;	A tabulated summary of mitigation measures and residual effects is presented in Chapter 19.
(d) A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;	A description of reasonable alternatives relevant to the Proposed Development is presented in Chapter 3.
(e) A non-technical summary of the information	A Non-Technical Summary (NTS) accompanies

Required information (Article 5)	Relevant Section of this EIA Report
referred to in points (a) to (d)	this EIA Report as Volume 1.

Paragraph (f) of Article 5 also requires that the EIAR include any addition information as specified by Annex IV of the EIA Directive; "*…relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*"

Table 2-4 below identifies the location of the relevant Annex IV information within this EIAR.

Table 2-4: Location of Information Required by Annex IV of the EIA Directive

Required information (Annex IV)	Relevant Section of this EIA Report
1. Description of the project, including in particular: (a) a description of the location of the project; (b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements	Chapter 1: Introduction Chapter 4: Description of Development
during the construction and operational phases; (c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Chapter 4: Description of Development Residues and emissions (as relevant to the nature of the Proposed Development) are estimated in the appropriate technical chapter. In particular: Emissions to Water: Chapter 11: Hydrology, Water Quality and Flood Risk Emissions to Air: Chapter 12: Air and Climate Risk of soil/subsoil pollution: Chapter 10: Soils, Geology and Hydrogeology Noise emissions: Chapter 13: Noise Waste production: Chapter 16: Material Assets
2.A description of the reasonable alternatives (for example in terms of project 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.	Chapter 3: Design Evolution and Consideration of Alternatives
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Characteristics of the baseline environment as relevant to each assessment and an assessment of a 'Do-nothing' Scenario is included in every technical chapter (Chapters 5-17)
4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity	Every technical Chapter. In particular: Population, human health: Chapter 5:

Required information (Annex IV)	Relevant Section of this EIA Report
(for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Population and Human Health Biodiversity: Chapter 8: Biodiversity Water: Chapter 11: Hydrology, Water Quality and Flood Risk Air, climate: Chapter 12: Air and Climate Material assets: Chapter 16: Material Assets Cultural heritage: Chapter 14: Cultural and Archaeological Heritage
5.A description of the likely significant effects of the project on the environment resulting from, inter alia: (a)the construction and existence of the project, including, where relevant, demolition works; (b)the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c)the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d)the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e)the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f)the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g)the technologies and the substances used.	A description of likely significant effects is included every technical chapter (Chapters 5-17) The potential effects arising from the Proposed Development are described for each phase as described in Section 2 below The use of natural resources is considered as follows: Land use: Chapter 16: Material Assets Soil: Chapter 10: Soils, Geology and Hydrogeology, Appendix 10-3: Peat Management Plan Water: Chapter 11: Hydrology, Water Quality and Flood Risk Biodiversity: Chapter 8: Biodiversity Each relevant technical chapter as described above Chapter 17: Risks and Major Accidents Assessment of cumulative impacts is included every technical chapter (Chapters 5-17) Chapter 12: Air and Climate Every technical chapter (Chapters 5-17)
6.A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Every technical chapter (Chapters 5-17)
7.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 (for example the preparation of a post-project analysis). That description should explain the	Every technical chapter (Chapters 5-17)

Required information (Annex IV)	Relevant Section of this EIA Report
extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	
8.A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned.	Chapter 17: Risks and Major Accidents
9.A non-technical summary of the information provided under points 1 to 8.	Volume 1: Non-Technical Summary of this EIAR
10.A reference list detailing the sources used for the descriptions and assessments included in the report.	Every technical chapter (Chapters 5-17)

2.4 EIA Methodology

The reporting of the assessment of environmental impacts in Chapters 5 to 17 of this EIAR has been undertaken in a consistent, structured format, with reference to relevant technical standards, guidelines and legislation and consultation undertaken.

A two-stage assessment has been undertaken whereby the potential effects have been identified and their significance assessed.

The assessments have been split into the three development phases as each phase has the potential to give rise to different effects:

- **Construction;** generally temporary/short-term effects that occur during the construction of the Proposed Development;
- **Operation;** Effects resulting from operation of the Proposed Development; and
- **Decommissioning;** Effects arising from the removal of infrastructure and restoration of the site.

In most of the chapters within this EIA Report, the significance of an effect is described as a function of magnitude of effects and receptor sensitivity.

Where best practice guidance exists, for example from a professional institution, some chapters follow slightly different methodologies (for example Landscape and Visual Effects have been established/assessed in accordance with industry guidance specifically for that subject and details are provided within that chapter and appendix).

General guidelines on the assessment methodology used within chapters are presented in the following sections.

2.4.1 Impact Assessment

the impact classification and sensitivity terminology described in the Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) is used in this EIAR to ensure that all likely significant effects are adequately considered and clearly and transparently communicated.

Significance is a concept related to the weight that should be attached to effects when decisions are made. A significant effect is an effect that is sufficiently important to

require assessment and reporting so that the competent authority (An Bord Pleanála) is adequately informed of the environmental consequences of permitting a project.

Further specific guidance, legislation and technical standards for describing environmental effects, and pertinent to particular environmental topics, are also described in each individual chapter of this EIAR, as necessary.

2.4.2 Mitigation Measures

Mitigation measures have been considered for each significant adverse effect identified. These measures can include:

- Changes to the Proposed Development design;
- Physical measures applied on site; and
- Measures to control particular aspects of the construction or operation of the Proposed Development.

Wherever possible, mitigation has been developed to ensure that no significant residual (negative) environmental effects are predicted.

A summary of mitigation measures proposed is presented in Chapter 19 - Schedule of Mitigation.

2.4.3 Mitigation Agreement

Permission has been granted for one dwelling located at grid reference W 18658 83821 (Kerry County Council Planning Ref: 22861). A mitigation agreement has been implemented between the Applicant and the Landowner which ensures the permitted dwelling will not be constructed. Evidence of this agreement is included with this application within Technical Appendix 2-4 Mitigation Agreement.

As such this dwelling has been discounted from further assessment in this EIAR.

2.4.4 Cumulative Effects

In addition to the assessment of direct effects of the Proposed Development, an assessment (where appropriate) is also undertaken of the likely interrelationship and cumulative effects of the development proposal.

The assessment of interrelationship effects is required by the EIA Directive and refers to the interaction between the different environmental aspects, for example water and biodiversity.

The EIA Directive also requires that the cumulative effects of the Proposed Development in combination with other existing or approved projects is taken into account.

Developments considered in the cumulative impact assessment are listed in Appendix 2-3 together with the criteria for selection

2.4.5 Turbine Parameters used for EIAR Assessments

The Proposed Development has taken into consideration the judgment in Sweetman v the Board & Ors (2021) IEHC 390 (Derryadd No.1) and the second judgment in this case (2021) IEHC 662 in respect of the application for a certificate to appeal Derryadd No. 1 (Derryadd No. 2).

In summary, a limited degree of flexibility is permissible in the context of the Proposed Development parameters, so long as the range within which flexibility is sought does not give rise to planning issues.

In this regard the European Commission "Guidance document on wind energy developments and EU nature legislation, (November 2020) notes that:

> *"The key issue for a competent national authority to authorise a wind energy development project based on an envelope rather than a specific design relates to environmental impact. From an environmental impact perspective, the applicant must ensure that the EIA and the Appropriate Assessment undertaken has considered the worst-case design possible within the different options available in the design envelope."*

The Applicant is proposing infrastructure in the following range. Table 2-5 shows how this range has been assessed in the EIAR.

- A total tip height in the range of 199.5m minimum to 200m maximum inclusive;
- Hub height in the range of 118m minimum to 125m maximum inclusive;
- Rotor diameter in the range of 149m minimum to 163m maximum inclusive; and
- An installed capacity ranging from a minimum of 102MW up to a maximum 122.4MW inclusive.

The Natura Impact Statement (NIS) accompanying the application has assessed the same range of turbine parameters.

The consideration and identification of the worst-case within the different options available in the design envelope is discussed in each Chapter of the EIAR.

Table 2-5: EIAR Assessments and Ranges

Required information (Annex IV)	How the Proposed Turbine Range was considered in the assessment
Chapter 3: Design Evolution and Consideration of Alternatives	This Chapter explains how the Proposed Turbine Range has been considered through the design evolution.
Chapter 4: Description of Development	This Chapter presents the Proposed Turbine Range and the implications for the power output of the Proposed Development
Chapter 5: Population and Human Health	This Chapter has assessed the potential for effect on population and human health across the full Proposed Turbine Range with no variability in effects found.
Chapter 6: Landscape and Visual Impact Assessment	Wirelines for two scenarios representing the full Proposed Turbine Range were produced for a selection of representative viewpoints. Interrogation of these wirelines determined no substantial difference between the wirelines for any of the viewpoints. Accordingly, a single scenario was taken forward to the assessment which represents the full Proposed Turbine Range and corresponds to the following dimensions: • Hub height: 118m; • Rotor Diameter: 163m; and • Tip Height: 199.5m
Chapter 7: Traffic and Transport	This Chapter has assessed the potential for effect

Required information (Annex IV)	How the Proposed Turbine Range was considered in the assessment
	on traffic across the full Proposed Turbine Range with no variability in effects found. Access arrangements and transport requirements have been assessed across the full Proposed Turbine Range. The largest possible rotor diameter of 163m was identified to have the greatest potential for effect, which directly corresponds to the largest possible blade length of 81.5m. This has been assessed in the Abnormal Load Assessment.
Chapter 8: Biodiversity	This Chapter has assessed the potential for effect on biodiversity across the full Proposed Turbine Range with no variability in effects found.
Chapter 9: Ornithology	This Chapter has assessed the potential for effect on ornithology across the full Proposed Turbine Range. Turbine parameters which result in the largest possible swept path area were identified to have the greatest potential for effect. This assessment selected the parameters that provided the largest swept area for the given maximum tip height, hub height and blade lengths as this was identified to have the greatest potential for effect on collision risk. Maximum and minimum collision risk heights took into account the maximum possible extent of the blade sweep by selecting the lowest sweep of the largest blade coupled with the lowest hub height and the highest sweep of the longest blade with the highest hub height.
Chapter 10: Soils, Geology and Hydrogeology	This Chapter has assessed the potential for effects on soils, geology and hydrogeology across the full Proposed Turbine Range with no variability in effects found.
Chapter 11: Hydrology, Water Quality and Flood Risk	This Chapter has assessed the potential for effects on hydrology, water quality and flood risk across the full Proposed Turbine Range with no variability in effects found.
Chapter 12: Air and Climate	The effect on air quality is the same for all turbine dimensions within the specified range. Impacts on climate have been estimated using the Scottish Government's carbon calculator. This provides an indicative figure with considerable uncertainty not least because the tool was developed to estimate carbon losses/savings for windfarms developed on Scottish upland sites and so uses UK figures that may not be applicable to Ireland. Other uncertainties include: • Embedded carbon releases based on turbine and concrete lifecycles; • Carbon storage/ fixing potential of peatland; • Releases of carbon from backup power generation (based on a UK generation mix);

Required information (Annex IV)	How the Proposed Turbine Range was considered in the assessment
	and • Potential variability in electricity generation from the Proposed Development. Two scenarios were assessed in order to account for the full range of potential power output. Scenario 1 was modelled at 6MW output per turbine, and scenario 2 was modelled at 7.2MW output per turbine.
Chapter 13: Noise	The key determining factor in determining the impact of noise is the turbine selection. For this assessment the noisiest of the turbine models under consideration. As the turbine dimensions are fixed for each model the assessment is valid for all turbine models irrespective of turbine dimensions
Chapter 14: Cultural Heritage	This Chapter has assessed the potential for effect on cultural heritage across the full Proposed Turbine Range with no variability in effects found.
Chapter 15: Shadow Flicker	This Chapter has assessed the potential for effect from shadow flicker across the full Proposed Turbine Range. The effect of shadow flicker is dependant on the rotor diameter of the turbines. As such two shadow flicker models have been produced at the minimum and maximum rotor diameters within the full Proposed Turbine Range. These two shadow flicker models account for the entire possible extent of shadow flicker across the full Proposed Turbine Range.
Chapter 16: Material Assets	This Chapter has assessed the potential for effect on material assets across the full Proposed Turbine Range. No variability in effects has been found for aviation or utilities. The effect on telecommunications is dependent on the horizontal sweep of the blades. Accordingly, this assessment selected the parameters that provided the largest horizontal blade sweep possible as this was identified to have the greatest potential for effect on collision risk.
Chapter 17: Risks of Major Accidents	This Chapter has assessed the potential for effect on risks of major accidents across the full Proposed Turbine Range with no variability in effects found.

2.4.6 Assumptions and Limitations

Where specific assumptions have been made in relation to the technical environmental assessments, these are reported in the relevant chapters of this EIA Report.

A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example

technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved are included in every technical chapter.

2.5 References

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