FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED BARNADIVANE WIND FARM & SUBSTATION, CO. CORK

VOLUME 2 – MAIN EIAR

CHAPTER 1 - INTRODUCTION

Prepared for: Barna Wind Energy (B.W.E) Ltd. & Arran Windfarm Ltd.

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Core House, Pouladuff Road, Cork, T 12 D773, Ireland

T: +353 21 4964 133 | E: tenders@ftco.ie

CORK | DUBLIN | CARLOW

www.fehilytimoney.ie

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1. INTRODUCTION

Barna Wind Energy (B.W.E) Limited. & Arran Windfarm Ltd. wish to construct the proposed Barnadivane Wind Farm and accompanying proposed 110 kV substation (the Proposed Development), near Macroom, Co. Cork. The proposed wind farm and proposed substation are located in the townlands of Lackareagh, Garranereagh and Barnadivane (Kneeves), near Teerelton, Co. Cork.

Planning permission previously existed at this site for 14 turbines and associated infrastructure, including a 110kV substation. It is intended that the proposed wind farm and substation, if consented, would replace the Previously Consented Development.

The site of the Proposed Development is approximately 3 km northeast of Coppeen and 10 km south of Macroom. The nearest village is Teerelton, approximately 3 km to the north. The location of the site is shown in Figure 1.1.

Fehily Timoney and Company (FT) has prepared this environmental impact assessment report (EIAR) on behalf of Barna Wind Energy (B.W.E.) Limited. and Arran Windfarm Ltd. in response to correspondence from An Bord Pleanála dated 13th May 2021 (see Appendix 1.3) requesting updated documentation to facilitate the determination of both the proposed substation and the proposed windfarm after they were both individually remitted to the Board for re-determination following a Judicial Review of the original decisions granting permission for both the proposed windfarm and the proposed substation by the Board.

As requested by An Bord Pleanála, the original Environmental Impact Statement (EIS), which was compiled by FT and submitted to Cork County Council in 2014, has now been updated to an Environmental Impact Assessment Report. Therefore, this EIAR has been carried out in accordance with the most up to date guidance and considers both the Proposed Wind Farm and the Proposed Substation, each of which were originally the subject of individual applications to Cork County Council and are both now with the Board for decision following their remittal by the High Court. Both of the remitted appeal cases are being processed by the Board at the same time and therefore this EIAR will be submitted to both case files

1.1 The Applicant

The applicant for the Proposed Development, Barna Wind Energy (B.W.E.) Limited & Arran Windfarm Ltd., are associated companies of Enerco Energy Ltd. (Enerco), an Irish-owned, Cork-based company with extensive experience in the design, construction and operation of wind energy developments throughout Ireland, with projects currently operating or in construction in Counties Cork, Kerry, Limerick, Clare, Galway, Mayo and Donegal.

By the end of 2022, Enerco associated companies had over 625 Megawatts (MW) of wind generating capacity in commercial operation, 200MW in construction, with a further 400MW of projects at various stages in its portfolio to assist in meeting Ireland's renewable energy targets.

1.2 Project Overview

The Applicant intends to construct the Proposed Development at a site near Macroom, Co. Cork. Planning permission previously existed for a 14 turbine wind farm including a 110kV substation and switch station to facilitate connection of the wind farm to the national grid. The Previously Consented Development did not commence for various reasons of a commercial, economic and technical nature.

The Previously Consented Development comprised of a wind farm and substation granted by both the Planning Authority and An Bord Pleanála under planning reference numbers 05/5907 and PL 04.219620 respectively, with a subsequent extension of duration granted by Cork County Council under 11/6605. As these permissions had withered, a new application was submitted for a 6 turbine windfarm to Cork County Council (Ref. 14/6760) and a separate application was submitted for a 110 kV substation to Cork County Council (Ref.14/557). Cork County Council granted permission for both the proposed windfarm and the proposed substation and these permissions were appealed to the Board. The Board subsequently granted permission also for both the proposed windfarm and the proposed substation and these decisions were ultimately the subject of Judicial Review Proceedings which culminated in the High Court remitting both cases back to the Board for determination and are the subject of this updated EIAR (ABP Ref. PL04.308210 & ABP Ref. PL04.308208).

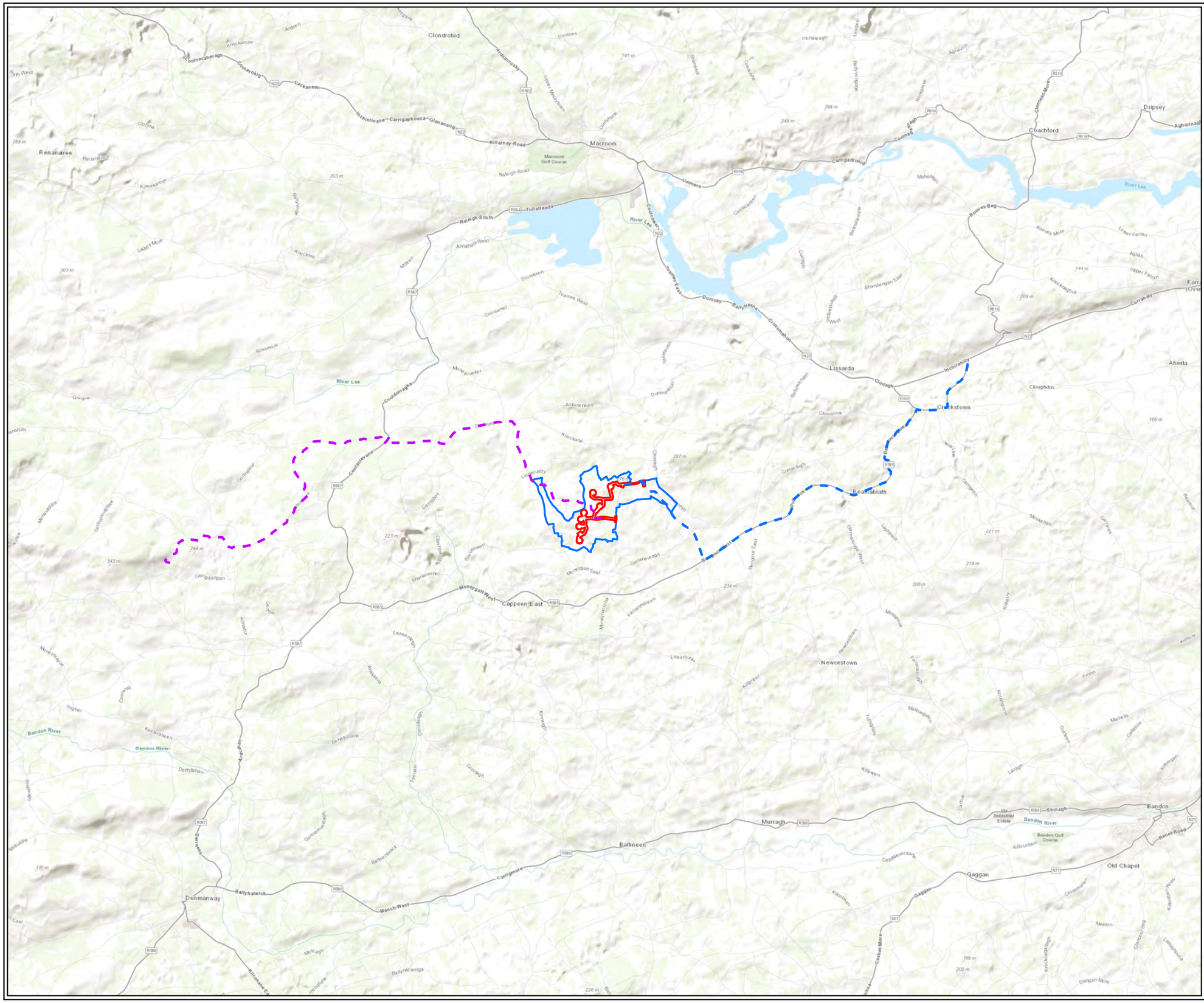
Under the updated EirGrid standards, 110kV substations require a larger area of land. A new site has been identified for the proposed substation within the study area of the Proposed Development meeting the necessary criteria such as, capacity for accommodating EirGrid requirements, proximity to the transmission system, good access and screening.

The Proposed Development comprises of:

1) **Proposed Wind Farm:** A 6 turbine layout. The proposed 6 turbine wind farm will have a defined planning boundary which will include not only the turbines themselves but also ancillary infrastructure such as internal access roads, on-site underground cabling, a meteorological mast and borrow pit.
2) **Proposed Substation:** A new 110kV grid connection substation that meets current EirGrid standards. The proposed substation has a defined planning boundary which will include a 110kV grid connection substation compound with associated control buildings and electrical equipment as well as ancillary infrastructure such as internal access roads and security fencing. The substation location is within the EIAR boundary for the wind farm. Although the grid connection for the wind farm, via the proposed 110kV substation is subject to a separate planning application, the relevant environmental impacts have been appropriately assessed. The EIA processes followed are in accordance with the European Environmental Impact Assessment Directive and the transposing legislation in Ireland.

Both developments interact during their operation, as a result, both developments will be considered in the environmental assessment to evaluate any cumulative impacts that may arise.

Path: R:\Map Production\2021\P21-143\Workspaces\EIAR\P21-143_GIS_Fig1-1_SiteLocation_A3.mxd



Legend

- Development Planning Boundary
- Study Area Boundary
- Alternative Grid Connection Route
- Turbine Delivery Route

TITLE:	Site Location		
PROJECT:	Barnadivane Wind Farm, Co.Cork		
FIGURE NO:	1-1		
CLIENT:	Barna Wind Energy Ltd.		
SCALE:	1:100000	**REVISION:**	0
DATE:	2/15/2023	**PAGE SIZE:**	A3

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N W E S

0 1.25 2.5 5 Kilometers

There is an existing wind farm, by the name of Garranereagh Wind Farm with 4 operational turbines adjacent to the site. The nearest turbine is approximately 918m from the EIAR study boundary. This development, along with any other planned or permitted wind farms in the vicinity, will be considered in the environmental assessment to evaluate any cumulative impacts that may arise.

In the event that the proposed 110kV substation grid connection is not permitted, an alternative underground grid connection relating to the Carrigarierk Windfarm (Cork County Council Ref. 15/730 & An Bord Pleanála Ref. PL04.246353) will be utilized. This alternative grid connection route will be assessed cumulatively as it relates to an existing permitted development.

In order to deliver the large turbine components to site there will be a requirement to carryout enabling works within the townlands of Barnavidane (Kneeves), Lackareagh & Garranereagh. The enabling Transport Delivery Route (TDR) works will consist of construction of a private roadway, approximately 150 metres long, from the R585 to the L6008 and all associated works. These works have already been consented pursuant to Cork County Council Ref. 14/6803. And will be considered for cumulative effects.

In summary, the Proposed Project for EIA purposes includes 6no. wind turbines (1) and a 110kV substation (2), for which planning consent is sought and, other elements of the project for which permission has already been granted which includes enabling works to facilitate the delivery of turbines to the Proposed Development site (3) and if necessary, an alternative grid connection (4).

1. Proposed 6 no. turbine windfarm also referred to in this report as ‘the Proposed Windfarm’ (pending under An Bord Pleanála planning ref. PL04.308208);
2. Proposed 110kV substation within the site of the Proposed Development, also referred to as ‘the Proposed Substation’ (pending under An Bord Pleanála planning ref. PL04.308210);

   The in-combination effects of the following elements of the Proposed Project are included in the assessment.
3. Enabling works for the Turbine Delivery Route, also referred to in this report as ‘Enabling TDR Works’ (permitted under Cork County Council planning ref. 14/6803);
4. Potential alternative grid connection, also referred to in this report as the ‘the AGCR’ (permitted under Cork County Council planning ref. 15/730 & An Bord Pleanála Ref. PL04.246353).

1.3 Relevant Planning History

1.3.1 Planning Reference No: 03/2365

In May 2003, Barna Wind Energy (B.W.E) Limited. applied for planning permission for 26 wind turbines to Cork County Council. This layout was revised in August 2003 to one of 23 wind turbines. Planning Permission was granted by Cork County Council for 17 wind turbines. In March 2004, following third party and first party appeals, permission was refused by An Bord Pleanála (04.204928).

The reason for refusal was primarily based on the adverse visual impact, the Board considering the development to be excessively dominant and visually obtrusive in the landscape.

1.3.2 Planning Reference No: 05/5907

In August 2005, Barna Wind Energy (B.W.E.) Limited. applied for planning permission for the Previously Consented Development (which originally consisted of 18 wind turbines) to Cork County Council (CCC). This layout was revised in June 2006 to one of 14 turbines, with a revised site boundary to exclude pockets of the site not being developed. In August 2006, planning permission was granted by Cork County Council for 12 wind turbines. In February 2007, following third party and first party appeals, permission was granted by An Bord Pleanála (ABP)(04.219620) for all 14 wind turbines.

An Bord Pleanála were satisfied that that the development, by virtue of its revised scale and turbine configuration, had addressed to a sufficient degree it's concern in relation to the previous wind farm proposal on this site.

1.3.3 Planning Reference No: 11/06605

In December 2011, Barna Wind Energy (B.W.E.) Limited. applied to extend the duration of the appropriate period of Planning Permission 05/5907, under Section 42 of the Planning and Development 2000 Act, as amended (the 2000 Act). Cork County Council granted an extension for a period of 5 years due to considerations of a commercial, economic or technical nature beyond the control of the applicant.

See the extended site planning history in Figure 1-2 below.

Figure 1-2: Extended Site Planning History

1.4 Need for the Development

The Climate Action and Low Carbon Development (amendment) Act 2021 commits Ireland to reach a legally binding target of net-zero emissions no later than 2050, and a cut off of 51% by 2030, transitioning Ireland to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. The Climate Action Plan 2023 (CAP 23) identified the need to increase the share of electricity demand generated from renewable sources by up to 80% where achievable and cost effective, without compromising security of electricity supply, identifying a need for 9 GW of onshore wind generation in order for Ireland to meet its 2030 targets.

As of September 2021, EirGrid estimate that 4.5 – 6.5 GW on-shore wind capacity would be required to meet the 2030 RES-E targets for Ireland. The production of renewable energy from the Proposed Development will assist in achieving the Government's and EU's stated goals.

The recently published EU REPowerEU plan is a plan put in place in response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine. REPowerEU is the European Commission's plan to make Europe independent from Russian fossil fuels well before 2030, in light of Russia's invasion of Ukraine.

One of the main objectives of the REPowerEU Plan is; 'Accelerating clean energy'. Renewables are considered to be the cheapest and cleanest energy available, and can be produced domestically, reducing our need for energy imports. It is the aim of REPowerEU to speed up the green transition and spur massive investment in renewable energy.

1.5 Overview of the Proposed Project

1.5.1 Proposed Development

The Proposed Development will comprise six wind turbines, with a tip height of 131 m and associated turbine foundations & hardstanding areas; 1 no. permanent meteorological mast 90 m in height; upgrade of existing and provision of new site tracks and associated drainage; new access junction and improvements to public road to facilitate turbine delivery; 1 no. borrow pit; underground electrical and communications cables; permanent signage and other associated ancillary infrastructure.

The Proposed Substation will comprise of 1 no. permanent onsite 110kV electrical substation and installation of a loop in loop out grid connection point from the Proposed Substation to the existing 110kV Macroom to Dunmanway overhead line.

The Proposed Wind Farm is also seeking a 10-year planning permission and a 25-year operational life from the date of commissioning of the wind farm. A specific turbine type has not yet been selected for the Proposed Development. The turbine to be used on site will be selected following a competitive tendering process with the various manufacturers in the event of planning consent being achieved. Nonetheless, the selected turbine for the purpose of this EIAR will have the following dimensions:

- blade tip height of 131m;
- hub height of 72.5m; and
- rotor diameter of 117m.

1.5.2 Consented Elements

As outlined above Enabling TDR Works have been consented and will be required in order to deliver large turbine components to site. As these works are permitted they will be assessed in this EIAR for in combination effects.

The AGCR has also been consented and if the Proposed Substation does not proceed the AGCR will be used to connect the Proposed Wind Farm to the national grid via a tail fed connection.

1.6 Application and EIAR Requirements

Under Section 172 of the Planning and Development Act (the Planning Act), as amended, a planning application for a development which comes within a class of development specified under Schedule 2 of Part 5 of the Planning and Development Regulations must be accompanied by an Environmental Impact Assessment Report. Accordingly, as the Proposed Development has more than 5 no. turbines and generating capacity of greater than 5MW this Proposed Development has been subject to impact assessment studies and an EIAR has been prepared in accordance with the Planning Act and Planning and Development Regulations 2001 as amended.

This report constitutes an Environmental Impact Assessment Report (EIAR) in accordance with the Directive 2011/92/EU (the EIA Directive) as amended by Directive 2014/52/EU and complies fully with the EIA Directive as amended.

1.6.1 Requirement for Competent Authority to Conduct an EIA

The European Union Directive 2011/92/EU (the EIA Directive) as amended by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment, requires Member States to ensure that a competent authority (in this instance An Bord Pleanála) carries out an appraisal of the environmental impacts of certain types of projects, as listed in the EIA Directive, prior to development consent being given for the project.

The requirement for EIA of certain categories of development is transposed into Irish legislation under the 2000 Act and the Planning and Development Regulations 2001 as amended (the “2001 Regulations”). Given the scale of the Proposed Development it meets the mandatory threshold for EIA. Therefore, an EIAR has been prepared in accordance with the 2001 Regulations and the EIA Directive.

1.6.2 Appropriate Assessment

In compliance with the provisions of Article 6 of the Habitats Directive (92/43/EEC), as implemented by Part XAB of the 2000 Act, in circumstances where a proposed plan or project not directly connected with or necessary to the management of the European site is likely to have a significant effect on a European (or Natura 2000) site, either individually or in combination with other plans or projects, an Appropriate Assessment (AA) must be undertaken by the competent authority of the implications for the site in view of the site’s conservation objectives.

European Sites include Special Areas of Conservation (SAC) designated under the Habitats Directive, Special Protection Areas (SPA) designated under the Birds Directive (2009/147/EEC) and candidate SACs (cSACs) or proposed SPAs (pSPAs), all of which are afforded the same level of protection as fully adopted sites.

The first stage is a screening stage the purpose of which is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in-combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives. There is no necessity to establish such an effect; it is merely necessary for An Bord Pleanála, the 'Competent Authority' to determine that there may be such an effect. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether a Stage Two AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required.

A Stage Two AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority (in this case, An Bord Pleanála) of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives.

In the context of the Proposed Wind Farm, an Appropriate Assessment Screening Report and Natura Impact Statement have been prepared and submitted to An Bord Pleanála with this application for permission so to enable An Bord Pleanála to carry out the Appropriate Assessment.

1.7 EIAR Methodology and Structure

An Environmental Impact Assessment Report (EIAR) is a report of the effects, if any, which a proposed development, if carried out, would have on the environment. The EIAR provides the competent authority and the public with a comprehensive understanding of the project, the existing environment, the likely significant effects of the project and the mitigation measures proposed.

Article 3 of the 2014 EIA Directive states that an "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).

The effects referred to above 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.

1.7.1 EIAR Methodology

The EIAR has been prepared in accordance with Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive). Schedule 6 of the 2001 Regulations and Article 5 of the EIA Directive set out the information to be contained in an EIAR.

In addition, in the preparation of this EIAR a scoping of possible impacts of the Proposed Development was carried out to identify impacts thought to be potentially significant, not significant or uncertain. Consultation with the relevant private and public agencies ensured that the most significant impacts and the areas of key concern were addressed. Details of the consultation carried out to date for the Proposed Development are outlined in Chapter 4 EIA Scoping, Consultation and Key Issues of this EIAR.

Schedule 6 of the 2011 Regulations describes the information to be contained in EIAR:

1.
   a) A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development;
   b) A description of the likely significant effects on the environment of the proposed development;
   c) A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development;
   d) A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, 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 effects of the proposed development on the environment.

2. Additional information, relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected, on the following matters, by way of explanation or amplification of the information referred to in paragraph 1:

   a) A description of the proposed development, including in particular:
      i. A description of the location of the proposed development;
      ii. A description of the physical characteristics of the whole proposed development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
      iii. A description of the main characteristics of the operational phase of the proposed development (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; and;
      iv. 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 construction and operation phases.

   b) A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;

   c) A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without the development 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;

d) A description of the factors specified in paragraph (b)(i) (I) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act likely to be significantly affected by the proposed development: population, human health, biodiversity (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;

e) (i) a description of the likely significant effects on the environment of the proposed development resulting from, among other things:

(I) the construction and existence of the proposed development, including, where relevant, demolition works,

(II) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources,

(III) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste,

(IV) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters),

(V) the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources,

(VI) the impact of the proposed development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the proposed development to climate change, and;

(VII) the technologies and the substances used, and;

(ii) the description of the likely significant effects of the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act 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 proposed development, taking into account the environmental protection objectives established at European Union level or by a Member State of the European Union which are relevant to the proposed development.

f) 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.

g) 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 an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development.

h) A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events.

The assessment of environmental impacts has been conducted having regard to the guidance set out in the following:

- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (EC, 2017);
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoHPLG, 2018);
- Wind Energy Development Guidelines for Planning Authorities (DoEHLG, 2006);
- Draft Revised Wind Energy Development Guidelines (DoHPLG, 2019);
- European Commission Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment, EU 2013;
- European Commission notice: Guidance document on wind energy developments and EU nature legislation (2020).

The EIAR firstly sets out the planning context, the background to the Proposed Development, the need for the development, a description of the evolution of the Proposed Development through the alternatives considered and a description of the Proposed Development.
This sets the reader in context as to the practical and dynamic process undertaken, in order to arrive at the layout and design of the proposed development that will cause least impact on the environment.

Subsequent chapters deal with specific environmental topics for example, traffic & transportation, air quality & climate change, hydrology & water quality, noise, etc. These assessments involve specialist studies and evaluations. The methodology applied during these specific environmental assessments is a systematic analysis of the Proposed Development in relation to the existing environment. The broad methodology framework for these assessments is outlined below and is designed to be clear, concise and allow the reader to logically follow the assessment process through each environmental topic. In some instances, more specific topic related methodologies are outlined in the relevant chapters of the EIAR.

The broad methodology framework used in all chapters includes:

- Introduction;
- Methodology;
- Existing Environment;
- Potential Impacts;

- Mitigation Measures;
- Residual Impacts.

Introduction

This section generally introduces the environmental topic to be assessed and the areas to be examined in the assessment.

Methodology

Specific topic related methodologies are outlined in this section. This will include the methodology used in describing the existing environment and undertaking the impact assessment. It is important that the methodology is documented so that the reader understands how the assessment was undertaken. This can also be used as a reference if future studies are required.

Existing Environment

An accurate description of the existing environment is necessary to predict the likely significant impacts of a proposed development. Existing baseline environmental monitoring data can also be used as a valuable reference for the assessment of actual impacts from a development once it is in operation.

To describe the existing environment, desktop reviews of existing data sources were undertaken for each specialist area. This literature review relied on published reference reports and datasets to ensure the objectivity of the assessment.

Desktop studies may also be supplemented by specialised field walkovers or studies in order to confirm the accuracy of the desktop study or to gather more baseline environmental information for incorporation into the EIAR.

The existing environment is evaluated to highlight the character of the existing environment that is distinctive and what the significance of this is. The significance of a specific environment can be derived from legislation, national policies, local plans and policies, guidelines or professional judgements. The sensitivity of the environment is also described.

Potential Impacts

In this section, individual specialists predict how the receiving environment will interact with the proposed development. The full extent of the proposed development's potential effects and emissions before the proposed mitigation measures are introduced is outlined here. Potential impacts from the construction, operational and decommissioning phases of the Proposed Development are outlined. Interactions and cumulative impacts with other environmental topics are also included in this evaluation.

The evaluation of the significance of the impact is also undertaken. Where possible, pre-existing standardised criteria for the significance of impacts will be used.

Such criteria can include Irish legislation, international standards, European Commission and Environmental Protection Agency (EPA) guidelines or good practice guidelines. Where appropriate criteria do not exist the assessment methodology section states the criteria used to evaluate the significance.

Mitigation Measures

If significant impacts are anticipated mitigation measures are devised to minimise impacts on the environment. Mitigation measures by avoidance, by reduction and by remedy can be outlined.

Residual Impacts

The assessment identifies the likely impact that will occur after the proposed mitigation measures have been put in place. These impacts are described in detail and assessment of their significance undertaken.

1.7.2 EIAR Structure

The EIAR has been prepared using the "grouped format structure" in line with the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022). The format of this EIAR is designed to ensure that standard methods are used to describe all sections of the EIAR.

Using this structure there is a separate chapter for each topic, e.g. air quality and climate, biodiversity, hydrology. The description of the existing environment, the Proposed Development and the potential impacts, mitigation measures and residual impacts are grouped in the chapter. The grouped format makes it easy to investigate topics of interest and facilitates cross-reference to specialist studies..

The EIAR will have a number of chapters, including:

- Introduction;
- Description of the Proposed Development &Assessment of Alternatives;
- Policy & Legislation;
- EIA Scoping, Consultation and Key Issues;
- Noise and Vibration;
- Biodiversity;
- Geology, Hydrogeology and Slope Stability;
- Hydrology and Water Quality;
- Population & Human Health & Shadow Flicker;
- Traffic and Transportation;
- Archaeological, Architectural and Cultural Heritage;
- Landscape and Visual;
- Telecommunications and Aviation;
- Air Quality and Climate Change;
- Interactions of the Foregoing.

The structure proposed for the EIAR is as follows:

Volume 1 – Non technical summary (including figures)

Volume 2 – Main EIAR (including figures)

Volume 3 – Appendices to the Main EIAR

Volume 4 – Landscape and Visual Maps and Photomontages

It should also be noted, for the sake of completeness, that a separate Natura Impact Statement (NIS) has also been submitted with the application. The application is also supported by Planning Drawings.

Annex IV of the EIA Directive requires the EIA to include 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.

Two key areas need to be considered namely:

- The Project's potential to cause accidents and/or disasters.

The vulnerability of the Project to potential disaster/accident, both natural and manmade. The Construction and Environmental Management Plan submitted as part of this EIAR includes an emergency response plan in the event of emergencies or disaster situations.

It also outlines the statutory obligations of the Developer, Designer and Contractor pursuant to the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 with regard to safety management.

The CEMP also includes mitigation in the event of a catastrophic event associated with operational wind turbines.

Chapter 10 – Population, Human Health and Material Assets assesses the projects vulnerability to major accidents and natural disasters and the potential adverse impacts on human health and the environment.

The chapter examines potential disaster situations including:

- Flooding;
- Fire;
- Major incidents involving dangerous substances;
- Catastrophic events; and
- Landslides.

1.7.3 Cumulative Impact

The potential cumulative impact of the Proposed Development has been assessed in line with Annex IV of the EIA Directive which provides that the EIAR must contain a description of the likely significant effects of the project on the environment resulting from 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.

The assessment of projects in combination with other projects has four principal aims:

1. To establish the range and nature of existing projects within the cumulative impact study area of the project.
2. To summarise the relevant projects which have a potential to create cumulative impacts.
3. To establish anticipated cumulative impact findings from expert opinions within each relevant field. Detailed cumulative impact appraisals are included in each relevant section of the EIAR.
4. To identify the projects that hold the potential for cumulative or in combination effects and screen out projects that will neither directly or indirectly contribute to cumulative or in combination impacts.

The geographic extent of the cumulative assessment is considered on a case-by-case basis, in line with the Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission, 1999). Assessment material for this cumulative impact appraisal was compiled based on relevant developments within the vicinity of the Proposed Development. For the purpose of Cumulative Assessment of Landscape and Visual, all existing and approved wind farms and wind farms pending a decision from the planning authority within 20km from the outermost turbines of the Proposed Development were identified for Cumulative Visual Assessment. This study area is derived from the Wind Energy Development Guidelines (2006) and is further detailed in Chapter 8 of the EIAR.

All existing and approved large-scale projects and large-scale projects pending a decision from the planning authority within 20km of the Proposed Development were considered for potential Cumulative Assessment in all other chapters of this EIAR. This measurement was taken from the outermost turbines of the Proposed Wind Farm. A 20km distance was considered appropriate due to the size and extent of the Proposed Development and the nature of the potential effects as detailed throughout the EIAR.

All existing and approved projects and projects pending a decision from the planning authority within 500m of the Proposed Wind Farm were considered for potential Cumulative Assessment in all other chapters of this EIAR. This distance was considered appropriate in order to capture small-scale projects within the immediate vicinity of the Proposed Development in a rural area.

The material for the cumulative assessment was gathered through a search of relevant County Councils' Online Planning Registers, the An Bord Pleanála website and the EIA Portal. Relevant EIA documents, planning application details and planning drawings were reviewed, which served to identify the locations of existing and approved projects and projects pending a decision from the planning authority, their activities and their environmental impacts.

The relevance of the projects was considered on a case by case basis in each chapter as necessary depending on the interaction and likelihood of in combination impacts.

Considering that separate planning permissions relating to both the Enabling TDR Works and the alternative grid connection route are still valid, the cumulative assessment also included these permissions. Although, the permission relating to the AGR will only be built out in the event that the Proposed Substation is not consented or constructed.

A full list of projects identified for cumulative assessment is set out in Appendix 1.2 of Volume 3 of this EIAR.

1.8 Contributors to the EIAR

Fehily Timoney and Company (FT) is a consultancy based in Cork, specialising in civil and environmental engineering, and environmental science. FT is well established as a leading consultancy in wind farm development in Ireland. The company has established a professional team specialising in wind farm development. This team has the support of many in-house engineers and scientists.

FT has led the environmental assessment of the Proposed Development from the beginning and have undertaken this Environmental Impact Assessment Report (EIAR) for submission to An Bord Pleanála to facilitate their determination of the current planning appeal cases (Ref. PL04.308208 & Ref. PL04.308210).

Specialist and competent contributors involved in the preparation of the EIAR are outlined in Table 1.1.

Curricula Vitae (CVs) of contributors are presented in Appendix 1.1 of Volume 3 of this EIAR. Each CV demonstrates the experience and expertise of each respective contributor. Statements of authority are included in Chapter 5 for contributors to the Biodiversity Chapter.

Table 1-1: Contributors to the EIAR

EIAR Topic	Company	Name and Qualifications
Chapter 1 - Introduction	FT	Conor Crowther, BSc, MRM, MIPI (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 2 – Project Description & Alternatives	FT	Conor Crowther, BSc, MRM, MIPI (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 3 – Policy & Legislation	FT	Conor Crowther, BSc, MRM, MIPI (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 4 – EIA Scoping Consultation & Key Issues	FT	Conor Crowther, BSc, MRM, MIPI (Co-Author) Sinead Lynch, MEng (Co-Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 5 - Biodiversity	FT	Jon Kearney, BSc, MSc, MCIEEM (Reviewer) David Daly, BSc, MSc (Author)
Chapter 6 – Land, Soils & Geology	FT	Aaron T. Clarke BSc, MSc, PGeo, EurGeol (Co-Author) Emily Archer BEng, MSc (Co-Author) Tom Clayton, MEng, CEng (Reviewer
Chapter 7 – Hydrology & Water Quality	FT	Roberto Mione, BEng, Meng (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 8 - Landscape and Visual	Macroworks	Richard Barker BA PG Dip MLA (Co-Author) Cian Doughan BSc (Co-Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 9 - Noise	FT	Maureen Marsden, MEng (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 10 – Population & Human Health (incl. Shadow Flicker)	FT & TNEI Unit S12, Synergy Centre TU Dublin Tallaght Campus Tallaght D24 A386	Colum Breslin, BSc, MSc (Author) Jim Singleton, BSc, IOA Dip (Reviewer) Nathan Cooney, BA, MRUP (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)

EIAR Topic	Company	Name and Qualifications
Chapter 11 - Traffic and Transportation	**Alan Lipscombe Traffic and Transport Consultants** Claran Headford Co. Galway	Alan Lipscombe, B.Eng (hons) Transportation Engineering MIHT (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 12 - Archaeological, Architectural and Cultural Heritage	**Tobar Archaeological Services** Saleen Midleton Co. Cork	Miriam Carroll, MSc (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 13 – Telecommunication & Aviation	FT	Sinead Lynch, MEng (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 14 – Air & Climate	FT	Brian Cronin, BSc, MSc (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)
Chapter 15 – Interactions of the foregoing	FT	Sinead Lynch, MEng (Author) Jim Hughes, BA, EIA/SEA Dip, MSc (Reviewer)

1.9 Permission Period

A ten-year planning permission is being requested for the Proposed Development. That is, planning consent would remain valid for ten years from the date of the grant of permission. We note that the 2006 Wind Energy Guidelines state that *"Planning Authorities may grant permission for a duration longer than 5 years if it is considered appropriate, for example, to ensure that the permission does not expire before a grid connection is granted. It is, however, the responsibility of the applicants in the first instance to request such longer durations in appropriate circumstances."* This text also appears in section 7.22 of the Draft Revised Wind Energy Development Guidelines (2019).

A 10 year planning permission is considered appropriate for a development of this size to ensure all consents are in place. The expected physical lifetime of the turbine is approximately 25 years. After this time, the Applicant will make a decision whether to replace or decommission the turbines. It should be noted that section 7.2 of the Planning Guidelines 2006 includes for the following:

> *'The inclusion of a condition which limits the life span of a wind energy development should be avoided, except in exceptional circumstances'*

In this respect, the applicant requests the grant of permission is on the basis of a 25 year operational period from the date of commissioning of the wind farm. With permission for the onsite substation sought in perpetuity given that the substation could form part of the national electricity network. Therefore, the substation will be retained as a permanent structure and will not be removed.

25 years is the typical minimum useful lifespan of wind turbines which are being produced for the market today. The lifespan of wind turbines has been increasing steadily in recent years and therefore this duration is likely to improve and in turn improve the overall carbon balance of the development, therefore maximising the amount of fossil fuel usage that will be offset by the wind farm. Leaving the wind turbines in-situ until the end of their useful lifespan would be preferrable from an environmental viewpoint, particularly in relation to carbon savings.

1.10 Difficulties Encountered

There were no technical difficulties encountered during the preparation of this EIAR.

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

www.fehilytimoney.ie

CORK OFFICE
Core House,
Pouladuff Road,
Cork, T12 D773,
Ireland
+353 21 496 4133

Dublin Office
J5 Plaza,
North Park Business Park,
North Road, Dublin 11, D11 PXT0,
Ireland
+353 1 658 3500

Carlow Office
Unit 6,Bagenalstown Industrial Park, Royal Oak Road,
Muine Bheag,
Co. Carlow, R21 XW81,
Ireland
+353 59 972 3800