FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DERRYNADARRAGH WIND FARM, CO. KILDARE, OFFALY & LAOIS

Volume I – Non-Technical Summary

Dara Energy Limited

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1. INTRODUCTION

1.1 Introduction

This Non-Technical Summary (NTS) has been prepared by Fehily Timoney and Company (FT) on behalf of Dara Energy Ltd in respect of their proposed Derrynadarragh Wind Farm, located within the administrative boundaries of County Kildare, Offaly and Laois. The report summarises the findings contained in each of the Chapters within Volume II, which is the Main EIAR.

1.2 Site Description

The Site is located in the jurisdictions of Kildare County Council, Offaly County Council, and Laois County Council, with the turbine array located approximately 1.7km south of Bracknagh, 5km north-west of Monastervin and 6.5km north-east of Portarlington. Land use within the site is mainly dominated by agriculture, with areas of turbary activities located outside of, but adjacent to, the site boundary to the centre and south (Derrylea Bog). Furthermore, there is an area of forestry land within the northern portion of the site.

The settlement patterns in the area consists of one-off rural housing fronting onto the road network in a linear rural settlement pattern. There are approximately 208 no. residential and commercial properties within 2km of the site. The closest property to a turbine is located c. 770 m distance south of T1. All other residential properties are located greater than 780m from the turbine array. Bracknagh village is the most proximate settlement located 2km to the north-east.

The Site is located within the lowland topography with predominantly flatlands. Red Hill (194m), Dunmurry Hill (234m) and Grange Hill (223m) are located within 10km to the east of the site. The site is located on the Derrylea Bog which is connected to Clonsast Bog to the north and Derryounce Bog to the west.

The location of the Proposed Development is set out in Figure 1.1, Volume IV of the EIAR.

1.3 Development Description

The Proposed Development location is outlined below, and is described in detail in Chapter 2 - Development Description. The Proposed Development covers 3 no. County Council jurisdictions including; Kildare County Council, Offaly County Council, and Laois County Council. Permission is being sought for a period of 10 years, for development comprising the construction and operation of a wind farm and related works within the townlands of Kilbeggan South, Hallsfarm, Stonehouse Farm; Ballybought, Durrow Demesne, Aghancarnan, Gormagh, Acantha, Ballynasrah or Tinnycross, Ardan, Puttaghan, Cappancur, Cloncollog, Meelaghans, Annagharvey, Ballycollin, Ballina, Ballyknockan, Ballymooney, Ballycue, Ballinagar, Knockballyboy, Clonad, Townparks, Castlebarnagh Big, Killoneen, Killeen, Esker Beg, Ballycon, Drumcaw or Mountlucas, Derrycricket, Ballaghassaan, Walshisland, Bunnagappagh, Coolagary, Raheenakeeran, Enaghan, Moanvane, Cushina, Clonsast Lower, and Chevychase or Derrynadarragh in County Offaly; Aughrim and Derrylea in County Kildare; and Inchacooly, Coolnaferagh, Ullard or Controversyland, Clonanny, Lea, Loughmansland Glebe, and Bracklone in County Laois.

The Wind Farm site comprises approximately 213.67 hectares of land, and is contained within the townlands of Cushina, Clonsast Lower, and Chevychase or Derrynadarragh in County Offaly, and Aughrin and Derrylea in County Kildare. It is located within both the jurisdictions of Kildare County Council and Offaly County Council, approximately 1.7km south of the village of Bracknagh, 5km northwest of Monasterevin, and approximately 6.5km northeast of Portarlington.

The Proposed Grid Connection (GC) identified to supply power from the proposed development to the Irish National Electricity Grid will exit the site to the south and follow the public road to Bracklone Substation (currently under construction). It will exit the Site to the south and will comprise 11.4km of underground electrical cabling which will pass through the townlands of Cushina in County Offaly; Aughrim and Derrylea in County Kildare, and Inchacooly, Coolnaferagh, Ullard or Controversyland, Clonanny, Lea, Loughmansland Glebe, and Bracklone in County Laois. The underground cabling will traverse the following roads; L70481 (;Derrylea Road); L71764; L7050; L7051; L7176; L71761; R424; and R420 (Lea Road).

The Proposed Development consists of a 9 no. turbine wind farm and associated infrastructure including internal access tracks, hard standings, onsite 110 kV substation and associated grid connection infrastructure, internal electrical and communications cabling, temporary construction compounds, drainage infrastructure, biodiversity enhancement measures, amenity area, temporary accommodations works along the Proposed Turbine Delivery Route, and all associated works related to the construction of the Proposed Development.

1.4 Structure of the EIAR

The EIAR has been prepared using the "grouped format structure". 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 structure proposed for the EIAR is as follows:

- Volume I – Non-Technical Summary (NTS)
- Volume II – EIAR Chapters
- Volume III – EIAR Appendices
- Volume IV – EIAR Figures
- Volume V – Photomontages

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

The EIAR consists of the following chapters:

- Chapter 1 - Introduction
- Chapter 2 - Description of the Proposed Development
- Chapter 3 - Site Selection and Alternatives
- Chapter 4 - Planning Policy Context
- Chapter 5 - EIA Scoping and Consultation
- Chapter 6 - Population and Human Health
- Chapter 7 - Air Quality and Climate
- Chapter 8 - Noise and Vibration
- Chapter 9 - Biodiversity
- Chapter 10 - Ornithology

- Chapter 11 - Soils, Geology and Hydrogeology
- Chapter 12 - Flooding, Hydrology and Water Quality
- Chapter 13 - Shadow Flicker Assessment
- Chapter 14 - Traffic and Transportation
- Chapter 15 - Archaeology and Cultural Heritage
- Chapter 16 - Landscape and Visual Impact
- Chapter 17 - Material Assets, Telecommunications and Aviation
- Chapter 18 - Interactions of the Foregoing

1.5 Permission Period

A ten-year planning permission and 35-year operational life from the date of commissioning of the Proposed Wind Farm is being requested. This reflects the lifespan of modern-day turbines.

A 10-year planning permission is considered appropriate for a development of this size to ensure all consents are in place. After this time, the developer will make a decision whether to replace or decommission the turbines. It should be noted that section 7.2 of the Planning Guidelines 2006[i] 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 35-year operational period from the date of commissioning of the wind farm.

A permanent planning permission is being sought for the Grid Connection and onsite 110 kV substation as these will become an asset of the national grid under the management of EirGrid and will remain in place upon decommissioning of the Proposed Wind Farm.

1.6 Difficulties Encountered

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

2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Proposed Development

The Proposed Development consists of a 9 no. turbine wind farm and associated infrastructure including internal access tracks, hard standings, onsite 110kV substation and associated grid connection infrastructure, electrical and communications cabling between turbines and on-site substation (medium voltage) and between on-site substation to Bracklone Substation (high voltage), temporary construction compounds, drainage infrastructure, amenity provision, biodiversity enhancement measures, temporary accommodations works along the Proposed Turbine Delivery Route and all associated works related to the construction of the Proposed Development.

The Proposed Development for which consent is being sought will consist of the following:

- A 10-year permission and a 35-year operational life from the date of commissioning of the entire Wind Farm.
- Construction of 9 no. wind turbines – 4 no. turbines will have a tip height of 186m above existing ground level with a hub height of 105m and rotor diameter of 162m, and 5 no. turbines will have a tip height of 187m above existing ground level with a hub heigh of 106m and rotor diameter of 162m.
- Construction of permanent turbine foundations and crane pad hardstanding areas and associated drainage;
- Construction of 1 no. new main site entrance on Regional Road R419 to serve as construction and operation access, and upgrade works to 1 no. existing site entrance (Derrylea Road) to the south to service for construction only;
- Construction of 9,360m of new internal access tracks and associated drainage infrastructure;
- Upgrading of 550m of existing tracks and associated drainage infrastructure;
- All associated drainage and sediment control including interceptor drains, cross drains, sediment ponds and swales;
- Installation of 1 no. permanent single span bridge crossing Cushina River within the proposed Wind Farm site;
- All associated infrastructure, services and site works including excavation, earthworks, peat and spoil management;
- Creation of dedicated peat and spoil deposition areas for the management of peat and spoil within the site;
- Establishment of 3 no. temporary construction compounds, and associated ancillary infrastructure including parking;
- Establishment of 2 no. temporary wheel washing areas during construction only;
- Forestry felling of 6.01ha (60,100 m2) to facilitate construction and operation of the Proposed Development;
- Provision of recreational amenity area comprising 2 no. parking spaces and picnic table;
- Biodiversity enhancement measures within the site boundary;
- Construction of 1 no. IPP Substation and associated compound including:
    - Wind farm Control building with welfare facilities
    - Electrical infrastructure
    - Parking
    - Security Fencing
- Construction of 1 no. permanent onsite 110kV TSO electrical substation and associated compound including:
    - Welfare facilities;

  - TSO control building
  - Electrical infrastructure;
  - Parking;
  - Wastewater holding tank;
  - Rainwater harvesting tank;
  - Security fencing.
- Installation of medium voltage electrical and communication cabling underground between the proposed turbines and the proposed on-site TSO substation and associated ancillary works;
- Installation of 11.4km of permanent high voltage (110kV) and communication cabling underground, primarily within the public roads between the proposed on-site substation and the Bracklone Substation (within the townland of Bracklone in Co. Laois) and associated ancillary works. The proposed grid connection cable works will include trenching, laying of ducting, installing 15 no. joint bays and 7 no. watercourse crossings, pulling cables and the back filling of trenches and reinstatement works, within the townlands of Cushina in County Offaly; Aughrim and Derrylea in County Kildare, and Inchacooly, Coolnaferagh, Ullard or Controversyland, Clonanny, Lea, Loughmansland Glebe, and Bracklone in County Laois. The underground cabling will traverse the following roads; L70481 (; Derrylea Road); L71764; L7050; L7051; L7176; L71761; R424; and R420 (Lea Road);
- Accommodation works required along the Proposed Turbine Delivery Route (TDR) to facilitate turbine component deliveries at the following seven locations:
  - Construction of load bearing surface, removal of vegetation and trees, and reprofiling of embankment on R420/R402 Junction within the townland of Ballina, Co. Offaly;
  - Construction of load bearing surface, removal of railing and planters, and reprofiling of road on R402 at junction to L2025 Ballinagar, within the townland of Ballinagar, Co. Offaly;
  - Installation of 1 no. permanent single span bridge crossing Daingean River at R402/R400 Junction and Philipstown Bridge along Turbine Delivery Route, within the townlands of Esker Beg and Drumcaw or Mountlucas, Co. Offaly;
  - Construction of load bearing surface, removal of vegetation and trees, reprofiling on R400, within the townlands of Drumcaw or Mountlucas, Co. Offaly;
  - Construction of load bearing surface, removal of vegetation and trees, reprofiling on R400 at junction to L1013 Enaghan, within the townland of Enaghan, Co. Offaly;
  - Construction of load bearing surface on northeastern verge, removal of vegetation and trees, reprofiling on R400, within the townland of Moanvane, Co. Offaly;
  - Construction of load bearing surface, removal of vegetation and trees, and reprofiling of embankment on R419 at junction to R400, within the townland of Cushina, Co. Offaly.

A 10-year planning permission and 35-year operational life from the date of commissioning of the Proposed Wind Farm is being sought. This reflects the lifespan of modern-day turbines.

A permanent planning permission is being sought for the Grid Connection and onsite 110 kV substation as these will become an asset of the national grid under the management of EirGrid and will remain in place upon decommissioning of the Proposed Wind Farm.

Derrynadarragh Wind Farm has been designed in accordance with the current Section 28 Ministerial Guidelines (section 28 of the Planning and Development Act 2000, as amended), 'Wind Energy Guidelines 2006'. and has regard to the 'Draft Revised Wind Energy Development Guidelines' (draft WEGs) where its best practice. Should new Guidelines be adopted before this application is assessed by An Coimisiun Pleanála, the applicant would welcome the opportunity to demonstrate compliance with same. Presented hereunder are the elements of the Proposed Development for which development consent is being sought, and all other associated project components subject to EIA but for which development consent is not being sought within the current application.

This EIAR assessed the overall development, comprising both the Proposed Wind Farm and the Proposed Substation as described above.

2.2 Wind Turbine Description

The proposed turbine model will be a conventional three-blade horizontal axis turbine. Schematic drawings of the candidate turbine accompany the planning application. The plans and particulars are precise and provide specific dimensions for the turbine structures which have been used in this assessment and for which permission is being sought. The turbine specifications are as follows; 4 no. turbines (T2, T3, T6, T7) will have a tip height of 186m above existing ground level with a hub height of 105m and rotor diameter of 162m, and 5 no. turbines (T1, T4, T5, T8, T9) will have a tip height of 187m above existing ground level with a hub height of 106m and rotor diameter of 162m. Table 2-1 details the elevation for each turbine (including those with the 1m foundation plinth) relative to existing ground levels.

Table 2-1: Turbine Details (above ground level)

Turbine Number	Tip Height	Hub Height	Rotor Diameter
1	187m	106m	162m
2	186m	105m	162m
3	186m	105m	162m
4	187m	106m	162m
5	187m	106m	162m
6	186m	105m	162m
7	186m	105m	162m
8	187m	106m	162m
9	187m	106m	162m

2.3 Elements of the Proposed Development

The Wind Farm site comprises approximately 213.67 hectares of land, and is contained within the townlands of Cushina, Clonsast Lower, and Chevychase or Derrynadarragh in County Offaly, and Aughrin and Derrylea in County Kildare. It is located within both the jurisdictions of Kildare County Council and Offaly County Council, approximately 1.7km south of the village of Bracknagh, 5km northwest of Monasterevin, and approximately 6.5km northeast of Portarlington.

The Proposed Grid Connection (GC) identified to supply power from the proposed development to the Irish National Electricity Grid will exit the site to the south and follow the public road to Bracklone Substation (currently under construction). It will comprise 11.4km of underground electrical cabling which will pass through the townlands of Cushina in County Offaly; Aughrim and Derrylea in County Kildare, and Inchacooly, Coolnaferagh, Ullard or Controversyland, Clonanny, Lea, Loughmansland Glebe, and Bracklone in County Laois. The underground cabling will traverse the following roads; L70481 (~~,~~ Derrylea Road); L71764; L7050; L7051; L7176; L71761; R424; and R420 (Lea Road);.

There are several ports that have proven capability to accept and store large wind turbine components. These ports include Waterford, Cork, Foynes, Galway and Dublin. Transportation of wind turbine components from these ports to the national motorway network has been demonstrated. The facilities within the ports and access to and from the ports is continually being upgraded as part of general improvements and as anticipated in the due to be released National Ports Policy. It is on this basis that it is not foreseen that this project will require any material change to the port or to the access to the national motorway network should the project be consented and enter the construction phase.

The EIAR and NIS is prepared in respect of the construction, operation and, decommissioning of the proposed development and works to facilitate turbine delivery from the port of entry of Galway from Lough Atalia Road, R339, crossing junction with R338, continuing on R339, R336, N6, onto the M6, exiting M6 at Junction 5 Tullamore, N52, R420, R402, R400, R419, onto the proposed new site entrance off the R419. For the purpose of this EIAR, the following transport route has been selected and assessed to facilitate turbine delivery to the Site:

- The Turbine components will be delivered to the Galway Port and travel to the M6.
- At Junction 5, depart the M6 and continue south on the N52.
- Depart the N52 to the east of Tullamore and turn left onto the R420, eastbound.
- Turn left onto the R402 northbound.
- Continue north and then east on the R402 through Ballinager and Daingean.
- Turn right from the R402 onto the R400 travelling south.
- Remain on the R400 until reaching R419.
- Turn left from to join the R419 then proceed northeast towards the site entrance.

The Proposed Development consists of a 9 no. turbine wind farm and associated infrastructure including internal access tracks, hard standings, onsite 110 kV substation and associated grid connection infrastructure, internal electrical and communications cabling, temporary construction compounds, drainage infrastructure, biodiversity enhancement measures, amenity area, accommodations works along the Proposed Turbine Delivery Route, and all associated works related to the construction of the Proposed Development.

2.4 Community Benefit Package

As part of this Development Proposal, an amenity space is being proposed to be located to the south of the wind farm site. This amenity space will include a grassed area with picnic benches, and 2 no. dedicated car parking spaces for visitors.

The Applicant will set up a community benefit fund which will allocate funds from the Proposed Development to community groups in the area should the Proposed Development be granted planning permission, and be successful under the Government's RESS support programme. If consented, the Proposed Development will apply for the RESS 4 supports and will therefore provide €2 per MWh to the Community Benefit Fund, which is calculated in accordance with the 'Terms and Conditions for the Fourth Onshore Competition under the Renewable Electricity Support Scheme (RESS 4)'.

In line with Community Benefit Fund Guidelines, as governed by the Sustainable Energy Authority of Ireland (SEAI), and based on the current project scope, Dara Energy Ltd will generate a Community Benefit Fund estimated at over €3.9 million over the lifetime of the project, estimated at c. €260,000 per annum. The actual fund will vary around this average from year to year, depending on each year's wind conditions. 40% of the fund, totalling c. €104,000, will be allocated to initiatives and projects that support Sustainable Development goals within the area, with 50% of the fund, c. €130,000, allocated to local clubs, societies and near neighbours.

If consented, the Proposed Development will provide sustainable, low carbon energy generation infrastructure in County Kildare, Offaly and Laois to meet Ireland's growing demand. The development benefits to the local community would include significant investment in local infrastructure and electrical systems, local job creation over the project lifetime of 35 years.

3. NEED FOR THE DEVELOPMENT, SITE SELECTION, AND ALTERNATIVES CONSIDERED

The alternatives chapter sets out the reasonable alternatives that were considered in the preparation and design of the Proposed Development. This is included in order to give an indication of the main reasons for selecting the chosen options and alternatives considered.

3.1 Need for the Development

The Proposed Development is necessary to produce renewable energy for the Irish national grid, in order to transition Ireland to a low carbon economy. The Proposed Development will have a Maximum Export Capacity (MEC) of approximately 64.8 MW.

At a strategic level, the need for the Proposed Development is supported by International, European, National and Regional environmental and energy commitments and policies. In Chapter 4: Policy of this EIAR, a detailed analysis of these commitments and policies is outlined. This is in the context of substantial and continuing failure by Ireland in meeting climate targets to date, as copper fastened in the EPA's Greenhouse Gas (GHG) emissions projections as described in "*Ireland's Greenhouse Gas Emissions Projections 2023-2050*", published in May 2024. This report indicates that Ireland will fall short of its climate targets. Despite this, increased renewable energy generation, from wind and solar, if delivered as planned in the *Climate Action Plan 2024* (CAP24), can reduce Energy Industry emissions by 60 per cent and achieve over 80 per cent renewable electricity generation by 2030.

The Government published Climate Action Plan 2024 (CAP24) on 20th December 2023, this was the third updated action plan following on from the inaugural plan of 2019 which was a result of the Irish Government declaring a climate and biodiversity emergency on 9th May 2019. As of April 2025, Climate Action Plan 2025 (CAP25) has been published, with the government's website stipulating that CAP25 is to be read in conjunction with CAP24. The CAP provides a framework for delivering the Government's target of a 51% reduction (relative to 2018) in Greenhouse Gas (GHG) emissions by 2030. CAP24 follows the *Climate Action and Low Carbon Development* (Amendment) Act 2021, which commits Ireland to a legally binding target of net zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.

Furthermore, the revised NPF supports the co-location of renewable technology within forestry lands, and emphasises the importance of energy production in rural areas.

3.2 Alternatives Considered

The requirement in relation to alternatives in the EIA process is set out in Directive 2011/92/EU, amended by Directive 2014/52/EU, in Article 5 (1)(d), which states that an EIAR should include:

> *"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."*

Article 5(1)(f) of the EIA Directive requires that the EIAR contains *"any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."*

Annex IV of the EIA Directive states that the information provided in an EIAR should include 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."*

This section has particular regard to the environmental considerations which influenced the selection of alternatives and details the evolution of the Proposed Development through alternatives considered, indicating the main reasons for selecting the chosen option taking into account the effects of the Proposed Development on the receiving environment and considering the comparison of environmental effects of each alternative.

The alternatives considered have been described in line with the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022). The Guidelines state that:

> *"It is generally sufficient to provide a broad description of each main alternative, and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."*

Furthermore, the Guidelines note the following regarding high level plans and strategies which may influence or pre-determine decisions in the development process:

> *"Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that level is likely to have taken account of environmental considerations associated. Thus, these prior assessments of strategic alternatives may be considered and referred to in the EIAR."*

The section also details non-environmental factors of the development process where they are relevant to the evolution of the Proposed Development.

3.3 Site Selection

Please refer to 'Chapter 3 – Site Selection and Alternatives', Volume II of the EIAR, for the full extent of the site selection process and consideration of alternatives. A short synopsis is included below for context.

Under the "Do-Nothing" scenario, the Proposed Development would not go ahead, the development of a renewable energy project is not pursued, and the likely evolution of the baseline is that the site would remain in use as agriculture and forestry.

Alternative sources of energy generation form part of the renewable energy development portfolio of the Applicant, and a number of options were considered at a high level prior to the Strategic Site Selection. The alternative renewable energy source considered was solar, which was requested for consideration by locals during the early consultation engagement. Commercial solar energy production is the harnessing and conversion of sunlight into electricity using photovoltaic arrays (panels). In order to achieve the same energy output from solar energy, a site would require a significantly larger development footprint due to the significant difference in capacity factors between solar and wind technologies and the footprint of the technology infrastructure. The capacity factor of solar energy is significantly lower than that of wind energy, requiring approximately three times the installed capacity of the Proposed Development to produce the same amount of energy. A commercial solar energy project was discounted from a viability perspective due to the significantly larger land take requirement to deliver comparable energy output to a wind farm and was thus considered not to be in line with the project objectives.

Prior to the selection of the site for this proposed development, the Applicant undertook a detailed screening exercise using selection criteria and several stages to assess the potential of accommodating a Wind Farm development. The site selection criteria included:

- Compliance with County Development Plan Policies and Designations
- Scale of available land to accommodate a Wind Farm, taking into account turbine spacing requirements
- Natura 2000 sites
- Avoidance of Environmental Designations
- Lands utilized for other wind farm developments
- Separation distance from dwellings
- Level of visual impact
- Amenity, Tourist or Scenic Areas
- Proximity to National Electricity Grid
- Proximity to protected airspace
- Wind Resource
- Potential project scale
- Site accessibility

The site selection process was, by necessity, strategic and desk-based in nature in order to devise a short list of candidate sites. This is considered industry best practice, a rational and appropriate approach and its implementation was underscored by desk study research, local knowledge from Applicant Land Agent(s) in addition to site observations. Alternative locations were eliminated in the early stages of the site selection process due to quantum of land available, as the goal for this project was to deliver a large-scale wind farm of more than 6 no. wind turbines. Following a comprehensive assessment of all criteria, the proposed development site was deemed the most optimal to progress as a potential wind farm location.

3.4 Layout, Design, Alternatives and Constraints

The design has been carried out in accordance with industry guidelines and best practice, namely the Department of Environment, Heritage and Local Government's (DoEHLG) Wind Energy Development Guidelines (2006), The Department of Housing, Planning and Local Government's (DoHPLG), and the Irish Wind Energy Association Best Practice Guidelines (2012). The design process of the Proposed Development has had regard to the Draft Revised Wind Energy Development Guidelines (2019) in the aesthetic considerations in the siting and design of the wind farm and in terms of mitigation by design including increased setback from nearby dwellings and the policy regarding zero shadow flicker.

The design of the Proposed Development was an iterative process which considered a range of alternative designs throughout the evolution of the project, including;

- Set back from houses;
- Set back from village and town cores, designated sites;
- Set back from other constraints such as watercourses and power lines;
- Suitable wind speeds;
- Landscape and visual sensitivity;
- Ecology
- Ornithology;
- Soils and Geology;
- Hydrology;
- Noise; and
- Cultural Heritage.

Constraints and environmental sensitivities were first identified, and buffers applied in order to determine appropriate areas within the site to accommodate development. This constraints exercise resulted in a developable area being defined. Once the viable area is established, the siting requirements of the wind turbines in terms of separation distances etc. are considered and a preliminary layout can be developed for the site.

Following the constraint analysis of the site to determine available development area and following discussions with Turbine suppliers on the potential available turbines and the suitability of turbines for the site it was determined that a rotor diameter of 162m and tip height of 186 was the most suitable and economical for the site, and would seek to maximise the contribution to 2030 targets.

It was through this refinement process, the results of the Landscape Visual Impact Assessment and public consultation, that the Proposed Development came to its final iteration of 9 no. turbines - 4 no. turbines will have a tip height of 186m above existing ground level with a hub height of 105m and rotor diameter of 162m, and 5 no. turbines will have a tip height of 187m above existing ground level with a hub heigh of 106m and rotor diameter of 162m.

3.5 Alternative Grid Routes / Substation Locations

Danu Energy Consulting (the Electrical Engineering Consultants) were engaged by Dara Energy Ltd (the Applicant) to identify and analyse potential grid connection options available for the Derrynadarragh Wind Farm Project. An initial desk study was completed to identify potential substations and grid connection routes to Derrynadarragh Wind Farm. Several substations were selected in proximity to the wind farm, and potential grid routes were identified to connect to the proposed wind farm substation.

A total of 4 no. 110kV substations were identified within 20km of the wind farm which have connection capacity, and these were then considered further as potential grid connections for the proposal. It is important to note that all 4 no. options are either existing substations or are currently under construction:

- Bogtown 110kV Substation
- Bracklone 110kV Substation
- Cushaling 110kV Substation
- Mount Lucas 110kV Substation

On review of Mount Lucas Substation, it was confirmed that establishing a connection to the Mount Lucas 110 kV substation would require routing the proposed cable along the same corridor as a connection to the Bogtown Substation. Given the presence of an existing underground cable (UGC) between Bogtown–Mount Luca, the assessment of a route to Mount Lucas substation was unfeasible and this option was subsequently excluded from further comparative assessment.

From the remaining 3 no. identified substations, a total of 5 no. potential grid route options were identified connecting from the proposed onsite substation.

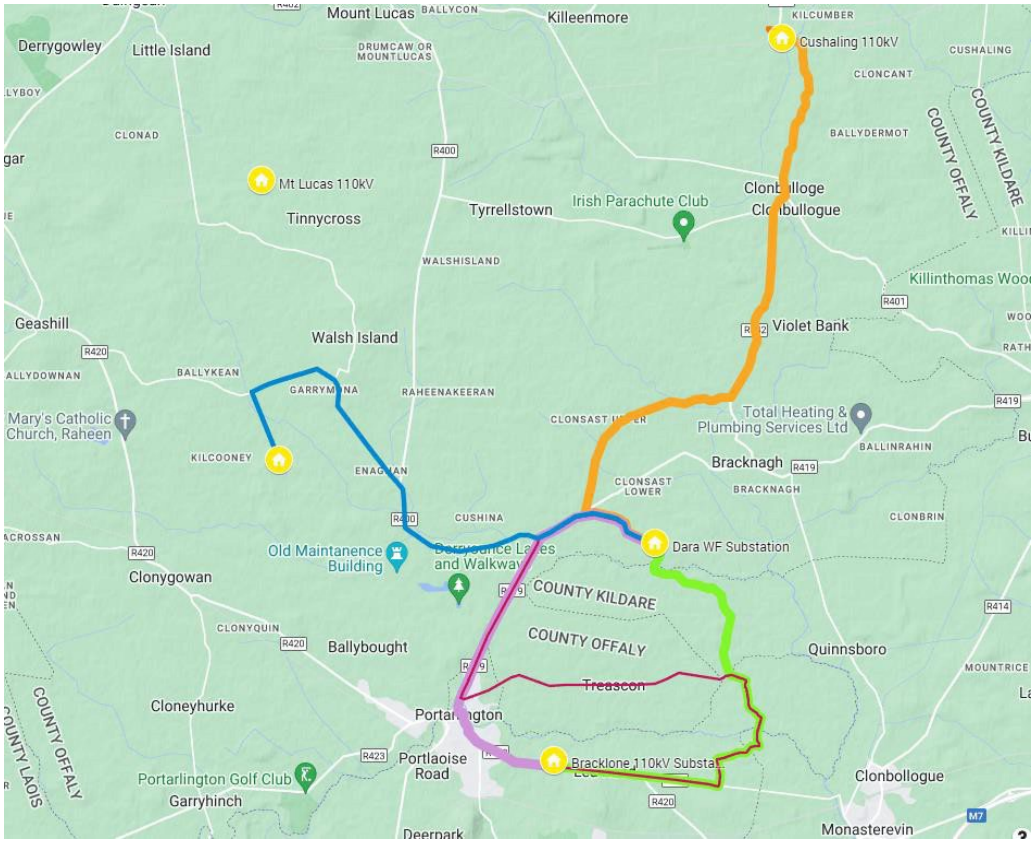

Plate 3-1 Potential Grid Route Options

Route 1	Green – Bracklone eastern route
Route 2	Orange – Cushaling
Route 3	Purple – Bracklone [western route through Portarlington]
Route 4	Pink – Bracklone [north of Portarlington]
Route 5	Blue – Bogtown [Moanvane Wind Farm]

The identified grid routes were compared against the following criteria:

- Route Length [km], including:
  - Route length on private lands [km]
  - Route length on public road [km]
  - National Road [km]

    - Regional Road [km]
    - Local Roads [km]
    - Potential floating public road (bog road) [km]
- Traffic Management (through towns/villages)
- Existing Utilities (through towns/villages)
- Watercourses & bridge crossings
- Number of HDD crossings along the routes

3.6 Conclusion

The alternative layouts of the Proposed Development were established through the project philosophy of mitigation by design. Alternative density and scale were considered, and the potential environmental effects of various alternative turbine numbers were compared.

Alternatives were also considered for other individual elements of the Proposed Development including the grid connection route and turbine delivery route. The alternative turbine delivery and grid connection options were examined, and the optimal options was chosen as a result of environmental assessment, as detailed in the comparisons provided throughout this Chapter.

The final proposed layout of the Derrynadarragh Wind Farm as assessed throughout this EIAR is thought to be the optimal design which minimises effects on the receiving environment, while providing significant renewable electricity to the national grid, in line with national energy and climate policy.

4. PLANNING POLICY CONTEXT

4.1 Compliance with European and National Energy and Climate Policy

The EU Directive (2018/2001/EU), known as the Renewable Energy Directive II (RED II), entered into force on 11 December 2018 with one of its aims being to provide guiding principles on financial support schemes for RED, renewable energy self-consumption, energy communities and district heating. As part of RED II, Ireland's overall national target for the share of renewable energy sources (RED-E), forms the backbone of Ireland's strategy to achieve the overall renewable energy target for 2030.

Following on from RED II, the EU adopted 'Directive (EU) 2023/2413', known as Renewable Energy Directive III (RED III) on 20th November 2023, aiming to further increase its renewable energy ambitions. RED III amends RED II, and is in line with the 'European Green Deal (2019), described in 4.3.6 below. RED III sets a new binding target of c. 42.5% renewable energy in the EU's total energy consumption by 2030, with an aspirational target of 45% being introduced. RED III introduces sector-specific targets for transport, heating, cooling and industry, to ensure a balanced contribution from all parts of the economy, and also includes measures to streamline and accelerate the permitting process for renewable energy projects, addressing one of the key bottlenecks in the deployment of renewables.

Under RED III, Member States must ensure that in the permit-granting procedure, the planning, construction and operation of renewable energy plants is presumed to be in the overriding public interest. The faster consenting timelines for renewable energy projects required under RED III have been transposed into Irish law by the European Union (Planning and Development) (Renewable Energy) Regulations 2025 (S.I. 274/2025). RED III reflects the EU's commitment to achieving higher renewable energy targets, and facilitating clean energy.

As of 15th August 2025, new measures aimed at fast tracking the permitting procedures for renewable energy projects have been adopted into Irish Law. The European Union (Planning and Development) (Renewable Energy) Regulations 2025 (the Regulations) transpose several provisions of the third Renewable Energy Directive (EU Directive 2023/2413) (RED III). The Regulations introduce measures relevant to the following categories of renewable energy development:

- Energy from a renewable non-fossil source - wind energy, solar energy, geothermal energy, osmotic energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas or biogas
- Repowering development
- Small-scale renewable energy installations, including heat pumps and solar energy equipment.
- The Regulations introduced a new completeness check for applications for renewable energy development.

This new rule provides that where a planning authority or An Coimisiún Pleanála (the Commission) receives an application for permission for the applicable renewable energy and repowering development, it must acknowledge and assess the application for completeness within 45 days of receipt. Once an application has been confirmed as complete, a planning authority or the Commission has 52 weeks to make a decision on whether to grant permission or not.

The commencement of the Regulations marks an important step in ensuring that renewable energy development is fast-tracked and Ireland's wider obligations under RED III are met. The introduction of completeness checks is aimed at addressing issues with applications at an early stage and before the clock starts for the mandatory decision-making periods. For this reason, pre-application consultation will be all the more important particularly for those developments which can no longer be subject to further information requests.

The majority of the new rules are effective immediately with the exception of the EIA opinion provisions. These came into force on 1 October 2025.

In particular, Article 16b of RED III makes it clear that the occasional or incidental killing or significant disturbance of birds by the construction and operation of renewable energy plant shall not be considered to be 'deliberate' and therefore prohibited by Article 5 of the Birds Directive. Article 16b has the same effect as regards species protected by Article 12 of the Habitats Directive. This is on condition that the renewable energy project has adopted appropriate and necessary mitigation measures as noted in Chapter 10 – Ornithology of the EIAR.

4.2 Relevant National Energy Policy and Legislation

Ireland declared a climate emergency on May 9, 2019. This declaration was made through an amendment to a parliamentary motion related to a report on climate action. The amendment, which declared a *"climate and biodiversity emergency,"* was accepted by both the government and opposition parties, making Ireland the second country in the world, after the United Kingdom, to declare a climate emergency formally.

The Emergency was declared against a backdrop of GHG emissions that were described by the Governments' Climate Change Advisory Council as "*disturbing"* and that Ireland was *"completely off course in terms of its commitments to addressing the challenge of climate change*".[1]

It was in this context that the Climate Action and Low Carbon Development (Amendment) Act 2021 was adopted. The Climate Action and Low Carbon Development Act 2015 and its subsequent amendments in 2021 serve as the primary legislative framework guiding Ireland's approach to addressing climate change and promoting a sustainable, low-carbon economy.

The 2021 amendment to the 2015 Act significantly enhanced the original 2015 Act in response to increasing global momentum on climate action and a heightened awareness of the urgency to address the climate crisis. In particular the Act includes:

- **Carbon Budgets:** The amendment introduced a system of rolling carbon budgets, which are five-year ceilings on total greenhouse gas emissions in Ireland. These budgets are set for successive periods, and the government must develop a plan to adhere to them.

- **Formal 2030 Target and strengthened 2050 Target on Emissions:** The amendment committed Ireland to halving emissions by 2030 and achieving climate neutrality (net-zero emissions) by 2050.

- **Enhanced Role of the Climate Change Advisory Council**: The Council was given a stronger role in recommending carbon budgets and assessing the government's progress.

- **Strengthened Reporting and Accountability**: The amendment introduced stricter requirements for the government to report on its progress and to align its policies with the carbon budgeting framework.

[1] Climate Change Advisory Council Annual Report 2018 at ppii-iv.

- **Sectoral Emissions Ceilings**: To support the carbon budgets, the amendment required the government to set binding sectoral emissions ceilings, ensuring that different sectors (e.g., transport, agriculture, energy) contribute to meeting the national targets.

Also, critically and importantly for the purposes of the Commission's (ACP) consideration of this application, it provides that a relevant body, such as the Commission, shall, insofar as practicable, perform its functions in a manner consistent with the mostly recently approved Climate Action Plan and other matters set out in section 15 of the 2015 Act.

Climate Action Plan

It is within the context of the European Policy and National Policy and legislation that the Climate Action Plan is set. The Climate Action Plan 2023 (CAP23) was the first Plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and follows the introduction, of the carbon budgets and legally binding sectoral emissions ceilings.

Since 2023, 2no. revisions of the Plan has been prepared, CAP 24 and CAP 25.

CAP25 underlines the important role the planning regime will play in developing Ireland's renewable energy capacity. The latest Climate Action Plan 2025 (hereafter CAP25) was approved by Government on 15 April 2025. It is the third statutory Climate Action Plan since the Climate Action and Low Carbon Development (Amendment) Act 2021 was passed and the fifth overall. It is the last Climate Action Plan of Ireland's first five-year carbon budget, representing an important half-way mark to 2030. If Ireland is to close the Greenhouse Gas (GHG) emissions gap and make headway towards our 2030 and 2050 emissions reduction targets, we must accelerate progress already made and deliver on the actions in CAP25 as well as rapidly and fully implementing those legacy/delayed actions and policies from CAP23 and CAP24.

CAP25 is to be read in conjunction with CAP24 as an updated and amended plan. All the measures and actions to support the delivery of binding climate targets are set out within the plan. CAP25 has an Annex of Actions which sets out new, high impact actions for 2025 and includes delayed actions from both CAP24 and CAP23 which will be tracked until completion.

A key element of CAP25 is the decarbonization of Ireland's electricity system, primarily through a significant increase in renewable energy generation. The plan reiterates ambitious targets for renewable electricity, aiming for 50% by 2025 and 80% renewable energy by 2030. These goals will be met by accelerating the deployment of:

- Onshore wind: 2 GW by 2025; 9 GW by 2030
- Offshore wind: 5 GW by 2030
- Solar energy: Up to 5 GW by 2025; 8 GW by 2030

Delivery of Climate Change Targets

The targets set out in CAP 24/25 are legally binding by virtue of the Climate Action and Low Carbon Development Act 2015 (as amended), however despite this, multiple assessments, including the Climate Change Advisory Council (CCAC) Annual Review[2] and the Environmental Protection Agency (EPA) emissions projections[3], confirm that Ireland is not on track to meet these targets. Significant gaps remain in renewable energy deployment, particularly in grid capacity expansion and wind farm development, while continued reliance on fossil fuels threatens national and EU climate commitments.

As identified in the National Planning Framework First Revision[4], the Eastern and Midlands Region target requires facilitating a further 1,966MW of renewable power up to 2040. Securing planning permissions for appropriately located and well-designed renewable energy projects, such as the Proposed Development, is essential in order to meet this target.

Derrynadarragh Wind Farm would make a meaningful contribution to the renewable energy targets for the Southern Region as set out in the National Planning Framework First Revision while also supporting the broader national goals set out in CAP 25 and required under Climate legislation. Its approval would make a noteworthy contribution (approximately 64.8MW) towards renewable energy ambitions, and help bridge the widening gap between policy commitments and actual energy infrastructure development.

Implications of approvals with respect to Ireland's climate action targets

The approval of well-planned, appropriately located renewable energy projects, such as the Proposed Development, would support not only Ireland's ability to meet CAP 25 targets but also its legal commitments under national and EU law. CAP 25, the CCAC Annual Reviews for 2023 and 2024, and Ireland's Updated National Energy and Climate Plan (published in July 2024)[5] all highlight the central role of renewable energy targets in addressing climate change.

The 2024 and 2025 Climate Action Plan's established a target of 6GW of installed onshore wind capacity by 2025 and 9 GW by 2030, with c. 4.6 GW's installed onshore wind capacity currently in the Republic of Ireland. This leaves a gap of c. 4.4 GW's to achieve the 2030 target. As such, the Proposed Development has the potential to contribute c. 1.1% of the total additional onshore wind capacity require nationally.

4.3 Local Planning Policy

Under Section 28 of the Planning & Development Act 2000 (as amended), in making Development Plans a Planning Authorities must have regard to national policy on renewable energy. A County Development Plan (CDP) is required to indicate how the implementation of the Development Plan will contribute to realising overall national targets on renewable energy and climate change mitigation. This applies in particular to wind energy production and the potential wind energy resource.

The planning application boundary of the Proposed Development spans across multiple local authorities' administrative boundaries, namely Kildare County Council and Offaly County Council, with the proposed grid route connection also stretching into Laois County Council.

[2]https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR2025-Electricity-FINAL.pdf
[3]https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/07875-EPA-GHG-Projections-Report-FINAL.pdf
[4] https://cdn.npf.ie/wp-content/uploads/National-Planning-Framework-First-Revision-April-2025-1.pdf
[5] https://assets.gov.ie/static/documents/irelands-integrated-national-energy-and-climate-plan-2021-2030.pdf

4.3.1 Kildare County Development Plan 2023 - 2029

The Kildare County Development Plan (CDP) 2023-2029, which took effect on 28th January 2023, sets out the strategic framework for land use planning in the county over the plan period up to 2029. The 'Strategic Vision for the County, as set out within Chapter 1 – Introduction and Strategic Context of the Kildare CDP, is as follows:

> *'To build on the strengths of the county in order to improve the quality of life of all residents, through the creation of high-quality job opportunities, by the provision of high-quality residential development supported by high quality community and social infrastructure, through the provision of a high-quality sustainable transport network, by healthy placemaking and transformational regeneration. The vision for County Kildare also supports the transition to a low carbon climate resilient environment, by embracing inclusiveness, enhancing our built environment and enshrining the importance of conserving, restoring and protecting Kildare's biodiversity for future generations.'*

One of the key principles within the Kildare CDP (see Paragraph 1.8.1 of Chapter 1, Kildare CDP) is focused on climate change, '*To develop a county that is resilient to climate change, plans for and adapts to climate change and flood risk, facilitates a low carbon future, supports energy efficiency and conservation, and enables the decarbonisation of our lifestyles and economy.'*

Chapter 7 of the Kildare CDP sets out the Energy Communications aim for the County:

> *"To encourage and support energy and communications efficiency and to achieve a reasonable balance between responding to EU and National Policies on climate change, renewable energy and communications and enabling resources to be harnessed in a manner consistent with the proper planning and sustainable development of the county"*

A review of all relevant CDP policies and objectives relating to Climate Change, Renewable Energy, Biodiversity and Landscape and Visual Impact, and associated development management standards was undertaken as part of the planning policy assessment, as set out at 'Chapter 4 – Planning Policy', Volume II of the EIAR.

A high-level overview of the relevant policies and objectives within the Kildare CDP is set out within Table 4-1 below. Please refer to 'Chapter 4 – Planning Policy', Volume II of the EIAR.

Table 4-1: Relevant Policies and Objectives from the Kildare CDP (2023-2029)

Policy / Objective Reference	Description
EC P1	Reduce our carbon footprint in line with national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emission reductions.
EC P2	Promote renewable energy use generation and associated electricity grid infrastructure at appropriate locations within the built environment and open countryside to meet national objectives towards achieving a net zero carbon economy by 2050.
EC P3	Support the roll-out of the Smart Grids and Smart Cities Action Plan enabling new connections, grid balancing, energy management and micro grid development

Policy / Objective Reference	Description
EC P4	Have regard to the Department of the Environment, Heritage and Local Government's 'Guidelines for Planning Authorities on Wind Energy Development' (or any subsequent updates) and the Kildare County Council Wind Energy Strategy when assessing planning applications for wind farms.
EC O11	*Encourage wind energy developments in suitable locations in an environmentally sustainable manner whilst having regard to Government policy and the County Wind Energy Strategy, while being sensitive to the EU and national target of 30% of land for biodiversity. Subject to AA screening and where applicable, Stage 2 AA so as to ensure and protect the favourable status of European sites and their hydrological connections. Such developments will have regard for protected species and provide mitigation and monitoring where applicable.*
EC O14	Support the establishment of a local Community Benefit Fund as part of any significant wind energy development application, which supports the development of local recreation amenities, provides additional community project funding or community owned Renewable Energy projects.
EC O15	*Require applicants to submit a report addressing the issues contained in Section 6 of the County Wind Energy Strategy 'Considerations for Wind Farm Development Planning Applications' at application stage. Decommissioning and site rehabilitation plans shall also be submitted at application stage and shall identify sustainable waste management solutions for wind turbine components (battery storage, blades etc.) at end-of-life in accordance with the waste management hierarchy. The disposal of same to landfill will not generally be permitted.*
EC O16	*Require comprehensive winter and summer bird and wildlife surveys for all proposed wind farms sites in accordance with EIA, EU Habitats and Species Directives and all other relevant environmental legislation, so that impacts on wildlife can be fully assessed and evaluated and so that appropriate mitigation and adaptation measures can be considered. Turbine design and adaptation should use the best available technology to minimise harm to birds and other wildlife.*
EC 065	Support the target in the Climate Action Plan 2021 for a doubling of existing on-shore wind energy from circa 4GW (today) to 8GW by 2030.
EC O66	*Facilitate the delivery of necessary integration of transmission network requirements to allow linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner.*
EC O72	Require that in all new developments, local services such as electricity shall be located underground. Multiple services shall be accommodated in shared strips underground and access covers shall be shared, where possible."

Policy / Objective Reference	Description
EC O73	*Consider the removal of trees (singular or in stands) and hedgerows (in part or in whole) only in circumstances where it can be clearly demonstrated that the removal of hedgerow material and or tree(s) is essential for the provision of energy and cannot be designed out. Where proven, the vegetation is to be replaced with equivalent number, species, variety and size as was in situ. Where non-native species are removed, they will be required to be replaced with native species. In all cases, plants of local provenance are to be planted within 1 year of removal and maintained to establishment to negate the habitat and biodiversity loss within 3 years. Existing vegetative or 'stepping-stone' linkages are to be maintained and improved upon to increase wildlife corridors. Opportunities should be sought to translocate existing species rich hedgerows, where possible, and subject to proper biosecurity protocols.*
EC P11	Support Ireland's renewable energy commitments outlined in national policy.
EC T1	Support the target in the Climate Action Plan 2021 for a doubling of existing on-shore wind energy from circa 4GW (today) to 8GW by 2030.
EC P1	Reduce our carbon footprint in line with national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emission reductions.
EC P2	Promote renewable energy use generation and associated electricity grid infrastructure at appropriate locations within the built environment and open countryside to meet national objectives towards achieving a net zero carbon economy by 2050.
EC O54	Require an Ecological Impact Assessment to be carried out and submitted with any planning application for energy infrastructure projects (e.g., wind and solar developments).
EC O57	Ensure that renewable energy projects located on or near peatlands do not negatively impact on any rehabilitation measures including enhanced rehabilitation measures (i.e. blocking and re-wetting).
TM O95	Restrict new access onto regional roads where the 80km per hour speed limit currently applies, except in the following exceptional circumstances: • Developments of strategic, local, regional or national importance, where there is a significant gain to the county through employment creation or other economic benefit. • Where applicants comply with Schedule of Local Need Criteria (see Chapter 3), are proposing to build a home on their family landholding and cannot provide access onto a nearby county road. In this instance, applicants will only be permitted to maximise the potential of existing entrances. The onus will be on the applicant(s) to demonstrate that there are no other accesses or suitable sites within the family landholding.

Policy / Objective Reference	Description
	Where it is proposed to demolish an existing dwelling and replace with a new dwelling, where there is an existing entrance onto the regional road.
TM O102	Minimise the extent of hedgerow removal in order to achieve adequate sightlines. However, where it has been satisfactorily demonstrated that there is no other suitable development site (for planning reasons) any removed hedgerow shall be replaced with native hedgerow species. Opportunities should be sought to translocate existing species rich hedgerows, where possible, and subject to proper biosecurity protocols.
RD O7	Support the development of renewable energy production in rural areas where appropriate.
AH O4	Ensure that development in the vicinity of a site of archaeological interest is not detrimental to the character of the archaeological site or its setting by reason of its location, scale, bulk or detailing and to ensure that such proposed developments are subject to an archaeological assessment prepared by a suitably qualified archaeologist. Such an assessment will seek to ensure that the development can be sited and designed in such a way as to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features, objects and areas of underwater archaeological heritage.
LR P1	Protect and enhance the county's landscape, by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the existing local landscape.
LR O2	Require a Landscape/Visual Impact Assessment to accompany proposals that are likely to significantly affect: • Landscape Sensitivity Factors; • A Class 4 or 5 Sensitivity Landscape (i.e. within 500m of the boundary); • A route or view identified in Map V1 - 13.3 (i.e. within 500m of the site boundary). • All Wind Farm development applications irrespective of location, shall be required to be accompanied by a detailed Landscape/Visual Impact Assessment including a series of photomontages at locations to be agreed with the Planning Authority, including from scenic routes and views identified in Chapter 13.
LR O26	Contribute towards the protection of waterbodies and watercourses, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains, from inappropriate development. This will include buffers free of development in riverine and wetland areas, as per Chapter 12.
LR P3	Protect, sustain and enhance the established appearance and character of all important views and prospects.

Policy / Objective Reference	Description
LR O32	Avoid any development that could disrupt the vistas or have a disproportionate impact on the landscape character of the area, particularly upland views, river views, canal views, views across the Curragh, views of historical or cultural significance (including buildings and townscapes), views of natural beauty and specifically those views listed in Tables 13.5 – 13.7 of this plan.
BI P1	Integrate in the development management process the protection and enhancement of biodiversity and landscape features by applying the mitigation hierarchy to potential adverse impacts on important ecological features (whether designated or not), i.e. avoiding impacts where possible, minimising adverse impacts, and if significant effects are unavoidable by including mitigation and/or compensation measures, as appropriate. Opportunities for biodiversity net gain are encouraged.
BI O5	Move towards no net loss of biodiversity through strategies, plan, mitigation measures, appropriate offsetting and/or investment in Blue/Green infrastructure.
BI O6	Apply the precautionary principle in relation to proposed developments in environmentally sensitive areas to ensure that all potential adverse impacts on a designated NHA or Natura 2000 Site arising from any proposed development or land use activity are avoided, remedied, or mitigated.
BI O9	Avoid development that would adversely affect the integrity of any Natura 2000 site and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive, to support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site.
BI O10	Ensure an Appropriate Assessment Screening, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, Section 177A of the Planning and Development Act (2001-2022) or any superseding legislation and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest.
BI O15	Ensure that any new development proposal does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2012, the Birds Directive 1979 the Habitats Directive 1992 and the Flora Protection Order species and any species listed under the national red lists or that could be listed on a national red list.

Policy / Objective Reference	Description
BI O16	Ensure appropriate species and habitat avoidance and mitigation measures are incorporated into all new development proposals.
BI O18	Require all applications for new developments to identify, protect and sensitively enhance the most important ecological features and habitats, and incorporate these into the overall open space network, keeping free from development and to provide links to the wider Green Infrastructure network as an essential part of the design process and by making provision for local biodiversity (e.g. through provision of swift boxes or towers, bat roost sites, hedgehog highways, green roofs, etc.).
BI O29	Require the undertaking of a comprehensive tree survey carried out by a suitably qualified arborist where development proposals require felling of mature trees; the tree survey shall assess the condition, ecological and amenity value of the tree stock proposed for removal as well as mitigation planting and a management scheme. It should be noted that rotting and decaying trees are an integral part of a woodland ecosystem and can host a range of fungi and invertebrates, important for biodiversity. While single or avenue trees that are decaying may be removed, others that are part of group or cluster may be subject to retention.
BI P7	Recognise and promote inland waters, natural environmental assets and to protect rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment
BI O37	Ensure the protection of rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment. Endeavour to re-open previously culverted streams and watercourses through any future development/redevelopment proposals.
BI O41	Maintain riparian buffer zones and potential uses as identified in Table 12.4 when considering potential development and proposed development layouts within or adjacent to waterways
BI O45	Ensure that any runoff from developed areas does not result in any deterioration of downstream watercourses or habitats and require that pollution generated by a development is treated within the development area prior to discharge to local watercourses.
BI P8	Ensure that Kildare's wetlands and watercourses are retained for their biodiversity, climate change mitigation properties and flood protection values and at a minimum to achieve and maintain at least good ecological status for all wetlands and watercourses in the county by, at the latest, 2027 in line with the Water Framework Directive and Ramsar Convention.

1.1.2 Kildare Wind Energy Strategy (Appendix 2 of Kildare CDP)

Regard has also been had to the Kildare Wind Energy Strategy, which forms part of the current Kildare County Development Plan 2023 – 2029.

The Wind Energy Strategy recognises how important of a resource wind energy is to Ireland having one of the most advantageous wind regimes in Europe. The report describes how we are at a "cross-roads" in terms of planning the development of our future energy markets. It is acknowledged that relying on the old ways of imported fossil fuels creates problems associated with climate change as well as volatile fuel markets. Wind Energy, on the other hand, would offer a low-carbon, indigenous energy supply which would allow us to have better control over the pricing of energy in the country. Such an indigenous supply would be insulated from the volatile pricing associated with fossil fuels which fluctuates according to geopolitical event, global health scares such as the COVID-19 pandemic, and global supply-and-demand trends.

The Wind Energy Strategy takes a stepwise approach to assigning "strategy zones" across the county of Kildare. The strategy zones are:

- Zone 1 - Acceptable in principle
- Zone 2 - Open to consideration
- Zone 3 - Not normally permissible

Table 4-2: Extract from Kildare WES - Definitions of strategy zones

Strategic Area	*Description and Guidance*
Acceptable in Principle	This is the preferred area for wind energy development characterised by a robust landscape[6], a low housing density, adequate windspeeds and proximity to the existing electricity transmission and distribution grid, while having no significant conflicts with natural heritage designations. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan.
Open for Consideration	This area is characterised by medium landscape sensitivity[7] which is a less robust category of landscape sensitivity. It has the potential to accommodate wind farm development subject to a detailed assessment on the visual impact of the proposal on the landscape in particular, and cumulative visual impacts with existing and permitted wind farms. Wind farm developments will be facilitated in this area subject to compliance with normal planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan. Wind farm proposals in this area will be required to demonstrate potential for cumulative visual impacts at application stage.
Not Normally Permissible	This area is considered to be generally unsuitable for wind farm development as it is defined by highly sensitive landscapes[8], settlements[9], designated sites[10], areas of aviation significance[11] and/or low windspeeds[12]. Individual small-scale turbines and community led initiatives may be considered on a case-by-case basis. Any development in this area will be subject to compliance with planning and environmental criteria outlined in Section 5 of this report and the development management standards in the County Development Plan.

The 4 no. southernmost turbines within the Derrynadarragh Wind Farm site (within the jurisdiction of County Kildare) fall within an area of 'Acceptable in Principle', which is noted in the CDP as a zone which *'is predominantly flat, rural and well serviced by the existing electricity transmission grid. It contains the North Western Lowlands, the Northern Lowlands, the Central Undulating Lands and the Southern Lowlands'*.

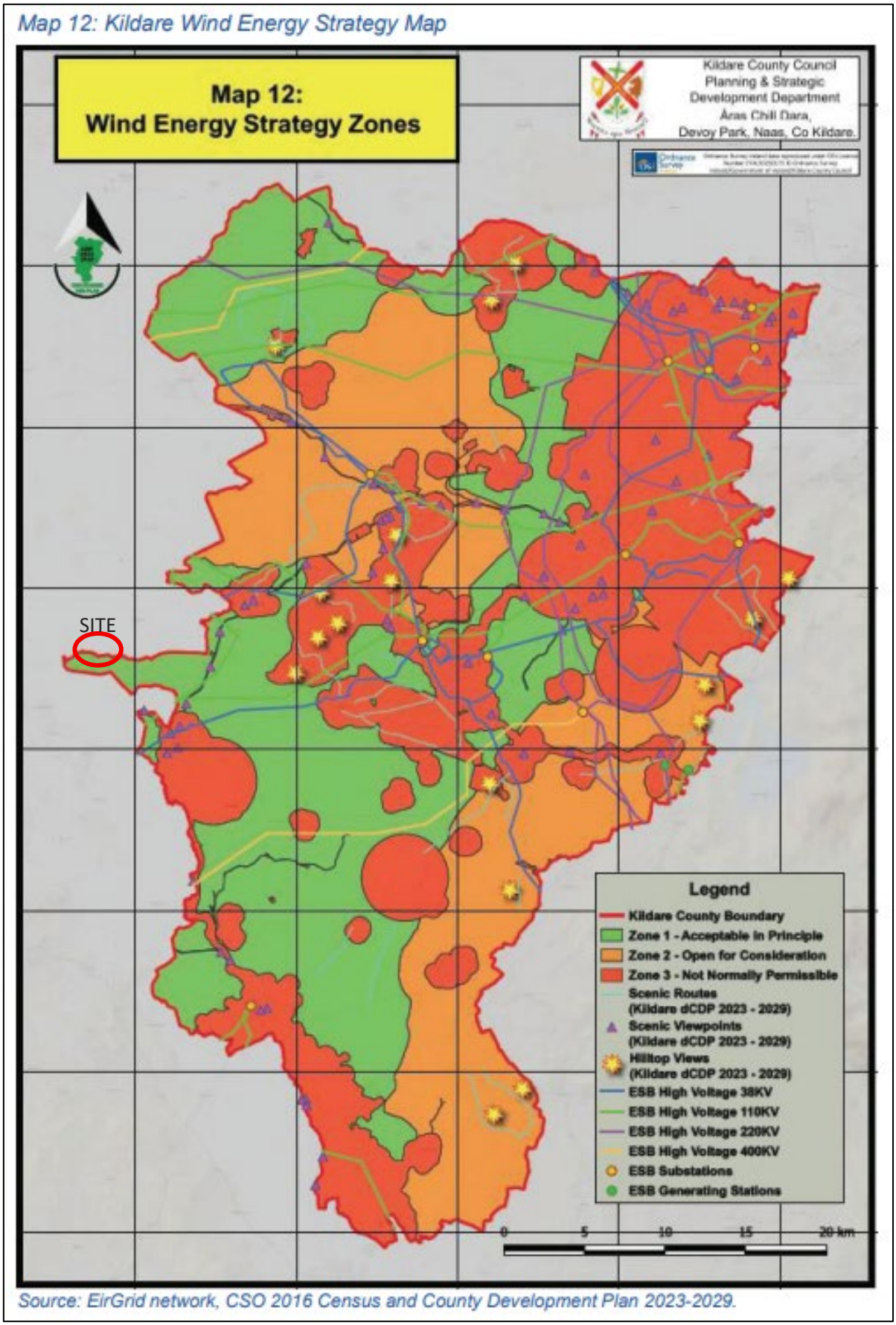

Plate 4-1 **Extract of Map 12 – Kildare Wind Energy Strategy Map (subject site outlined in red)**

4.3.2 Offaly County Development Plan 2021 – 2027

The Offaly County Development Plan (CDP) 2021-2027, adopted on 10th September 2021, sets out the strategic framework for land use planning across Offaly. The 'Strategic Vision for the County', as set out within the CDP, is as follows:

> *"To create a sustainable and competitive county that supports the health and wellbeing of our people and places, from urban to rural, with access to employment opportunities supported by high quality housing and physical, social and community infrastructure for all, in a climate resilient manner and with respect for our biodiversity."*

The 3 no. key strategic outcomes of the Offaly CDP reflect the key principles of the RSES:

- Healthy Placemaking is focused on promoting people's quality of life through the creation of healthy and attractive places to live, work, visit and study in.
- Climate Action recognises the need to enhance climate resilience and to accelerate a transition to a low carbon economy recognising the role of natural capital and ecosystem services in achieving this.
- Economic Opportunity develops from creating the right conditions and opportunities for the county to realise sustained economic growth and employment that ensures good living standards for all.

'Chapter 3 – Climate Action and Energy' of the CDP notes that a County Wind Energy Strategy forms part of this Development Plan. The Strategy constitutes a plan led approach to wind energy development in County Offaly and sets out areas 'open for consideration' for wind energy developments and considerations for the evaluation of wind energy planning applications. Table 3.1 demonstrates County Offaly's contribution to realising overall national targets (under the Climate Action Plan 2019) on renewable energy and climate change mitigation, and in particular wind energy target of 466.3MW by end of plan period (up to 2027).

A high-level overview of the relevant policies and objectives within the Offaly CDP is set out within Table 4-2 below. Please refer to 'Chapter 4 – Planning Policy', Volume II of the EIAR.

Table 4-3: Relevant Policies and Objectives from the Offaly CDP (2021-2027)

Policy / Objective	Description
CAEP-01	It is Council policy to support and facilitate the development, reinforcement, renewal and expansion of the electricity transmission and distribution grid, including the development of new lines, pylons and substations as required to provide for the future physical and economic development of Offaly.
CAEP-03	It is Council policy that proposals for new electricity distribution lines 38 kV or above along with transmission lines 110 kV or above will be considered subject to the protection of Designated and Non Designated Sites as outlined in Objectives BLO-02 to BLO-06 and landscape considerations as outlined in objectives BLO-22 Areas of High Amenity, BLO-24 Landscape and BLO 26 and BLO-27 Protection of Key Scenic Views, Prospects and Key Amenity Routes.
CAEP-07	It is Council policy to support and facilitate European and national objectives for climate adaptation and mitigation as detailed in the following documents, taking into account other provisions of the Plan (including those relating to land use planning, energy, sustainable mobility, flood risk management and drainage);

Policy / Objective	Description
	• Climate Action Plan (2019 and any subsequent versions); • National Mitigation Plan 2017 (or subsequent editions); • National Climate Change Adaptation Framework (2018 and any subsequent versions); • Relevant provisions of any Sectoral Adaptation Plans prepared to comply with the requirements of the Climate Action and Low Carbon Development Act 2015, including those seeking to contribute towards the National Transition Objective, to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050; and • Offaly Climate Change Adaptation Strategy.
CAEP-10	It is Council policy to support local, regional, national and international initiatives for climate adaptation and mitigation and to limit emissions of greenhouse gases through energy efficiency and the development of renewable energy sources which make use of all natural resources, including publicly owned lands, in an environmentally acceptable manner.
CAEP-11	It is Council policy to support the transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, by way of reducing greenhouse gases, increasing renewable energy, and improving energy efficiency.
CAEP-23	It is Council policy to require that environmental assessments should address reasonable alternatives for the location of new energy developments, and where existing infrastructural assets such as sub-stations, power lines and roads already exist within the proposed development areas, then such assets should be considered for sustainable use by the proposed development where the assets have capacity to absorb the new development.
CAEP-25	It is Council policy to encourage and facilitate the production of energy from renewable sources, such as from bioenergy, waste material, solar, hydro, geothermal and wind energy, subject to proper planning and environmental considerations.
CAEP-26	It is Council policy to encourage developers of proposed large scale renewable energy projects to carry out community consultation in accordance with best practice and to commence the consultation at the commencement of project planning.
CAEP-27	It is Council policy to ensure that whenever possible, community benefits are derived from all renewable energy development in the county such as near-neighbour benefit funds and general community benefit funds, which may take the form of contributions in kind to local projects, assets and facilities such as public amenities on the renewable energy site, measures to promote energy efficiency or a local energy discount scheme.
CAEP-28	It is Council policy to co-operate if required with the Eastern and Midland Regional Assembly in identifying Strategic Energy Zones as areas suitable for larger energy generating projects, community and micro energy production, whilst ensuring environmental constraints and a regional landscape strategy are considered.

Policy / Objective	Description
CAEP-37	It is Council policy to recognise the importance of wind energy as a renewable energy source which can play a vital role in achieving national targets in relation to reductions in fossil fuel dependency and therefore greenhouse gas emissions.
CAEP-38	It is Council policy that in assessing planning applications for wind farms, the Council shall: (a) have regard to the provisions of the Wind Energy Development Guidelines 2006, the Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change 2017 and the Draft revised Wind Energy Guidelines 2019 which are expected to be finalised in the near future; (b) have regard to 'Areas Open for Consideration for Wind Energy Developments' in the Wind Energy Strategy Designations Map from the County Wind Energy Strategy; (c) the impact of the proposed wind farm development on proposed Wilderness Corridors as detailed in Objective BLO-28 of Chapter 4; (d) have regard to Development Management Standard 109 on wind farms contained in Chapter 13 of this Plan; and (e) have regard to existing and future international, European, national and regional policy, directives and legislation.
CAEP-53	It is Council policy to support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive, the Flood Risk Regulations (S.I. No. 122 of 2010) and the 'The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) and Department Circular Pl2/2014 or any updated / superseding version.
CAEP 54	It is Council policy to protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/land uses into the appropriate Flood Zone in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 (or any superseding document) and the guidance contained in Development Management Standard DMS-106. Where a development/land use is proposed that is inappropriate within the Flood Zone, then the development proposal will need to be accompanied by a Development Management Justification Test and site specific Flood Risk Assessment in accordance with the criteria set out under with The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 and Circular PL2/2014 (as updated/superseded). In Flood Zone C, (See DMS-106 where the probability of flooding is low (less than 0.1%, Flood Zone C), site-specific Flood Risk Assessment may be required, and the developer should satisfy themselves that the probability of flooding is appropriate to the development being proposed. The County Plan SFRA datasets (including Benefitting Lands mapping), emerging CFRAMS mapping (including National Indicative Fluvial mapping), and the most up to date CFRAM Programme climate scenario mapping should be consulted by prospective planning applicants and the planning authority in determining planning applications.

Policy / Objective	Description
CAEP 55	It is Council policy to require a Site-specific Flood Risk Assessment (FRA) for all planning applications in areas at risk of flooding (fluvial, pluvial or groundwater), even for developments deemed appropriate in principle to the particular Flood Zone. The detail of these site-specific FRAs will depend on the level of risk and scale of development. A detailed site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The assessments shall consider and provide information on the implications of climate change with regard to flood risk in relevant locations. The 2009 OPW Draft Guidance on Assessment of Potential Future Scenarios for Flood Risk Management (or any superseding document) and available information from the CFRAM Studies shall be consulted with to this effect.
CAEP-57	It is Council policy to work with other bodies and organisations, as appropriate, to help protect critical infrastructure, including water and wastewater, within the county, from risk of flooding. Any potential future variations to the Plan shall consider, as appropriate any new and/or emerging data, including, when available, any relevant information contained in the CFRAMS Flood Risk Management Plans and as recommended in the SFRA for the Plan.
CAEP-58	It is Council policy to have regard to the findings and recommendations of the current Strategic Flood Risk Assessment prepared as part of the County Development Plan.
CAEP-59	It is Council policy to consult with the Office of Public Works (OPW) in relation to proposed developments in the vicinity of drainage channels and rivers for which the OPW are responsible, and the Council will retain a strip of 10 metres on either side of such channel where required, to facilitate access thereto.
CAEP-62	It is Council policy that where resources are available and subject to compliance with the Habitats and Birds Directives, the Council will contribute towards the improvement and / or restoration of the natural flood risk management functions of flood plains.
CAEP-67	It is Council policy to minimise and limit the extent of hard surfacing and paving and require the use of sustainable urban drainage systems (SuDs) where appropriate, for new developments or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.
CAEO-03	It is an objective of the Council to achieve a reasonable balance between responding to government policy on renewable energy and in enabling the wind energy resources of the county to be harnessed in an environmentally sustainable manner.
CAEO-04	It is an objective of the Council to ensure the security of energy supply by supporting the potential of the wind energy (and other renewable) resources of the County in a manner that is consistent with proper planning and sustainable development of the area.
CAEO-05	It is an objective of the Council to implement the Council's Wind Energy Strategy as follows: 1. In 'Areas Deemed Open for Consideration for Wind Energy Development' as identified in Map No. 10 'Wind Energy Strategy Designations', the development of windfarms and smaller wind energy projects will be considered;

Policy / Objective	Description
	2. In all other areas, wind energy developments shall not normally be permitted – except as provided for under relevant exemption provisions in the Planning and Development Regulations 2001 (as amended); and 3. Applications for re-powering (by replacing existing wind turbines) and extension of existing and permitted wind farms will be assessed on a case by case basis and will be subject to criteria listed in Development Management Standard 109 contained in Chapter 13 of Volume I of this County Development Plan and the Section 28 Ministerial Wind Energy Development Guidelines.
BLP-01	It is Council policy to protect, conserve, and seek to enhance the county's biodiversity and ecological connectivity.
BLP-02	It is Council policy to conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 (as amended) and the Flora Protection Orders.
BLP-24	It is Council policy to support the protection and management of existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character, and to strengthen local networks.
BLP-25	It is Council policy to encourage the planting of native species in all new residential developments (individual and multiple units) and as part of landscaping for commercial and industrial developments.
BLP-38	It is Council policy to protect and enhance the county's landscape, by ensuring that development retains, protects and where necessary, enhances the appearance and character of the county's existing landscape.
BLO-02	It is an objective of the Council that no plans, programmes or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects[6]).
BLO-12	It is an objective of the Council to maintain a riparian zone for larger and smaller river channels based on the Inland Fisheries Ireland updated guideline document, 'Planning for Watercourses in the Urban Environment, a Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning'.

[6] Except as provided for in Article 6(4) of the Habitats Directive, viz. there must be: a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed, and c) Adequate compensatory measures in place

Policy / Objective	Description
BLO-16	It is an objective of the Council to encourage the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, not listed in Table 4.13 and 4.14; (a) in particular on the grounds of Country Houses, Gardens and Demesnes and on approaches to settlements in the county; and (b) as part of the development management process, require the planting of native, deciduous, pollinator friendly trees in all new developments where possible.
BLO-18	It is an objective of the Council to encourage the retention, wherever possible, of hedgerows and other distinctive boundary treatment in the county. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, provision of the same type of boundary will be required of similar length and set back within the site in advance of the commencement of construction works on the site (unless otherwise agreed by the Planning Authority).
BLO-19	It is an objective of the Council to require all new developments to identify, protect and enhance ecological features by making provision for local biodiversity (for example, through provision of swift boxes or towers, bat roost sites, green roofs, etc.) and provide ecological links to the wider Green Infrastructure network as an essential part of the design process.
BLO-24	It is an objective of the Council to have regard to the Landscape Sensitivity Areas in Tables 4.18, 4.19 and 4.20 in the consideration of planning applications.
DMS-109	When assessing planning applications for wind energy developments the Council will have regard to; • the Wind Energy Development Guidelines for Planning Authorities, DoEHLG, (2006) and any amendments to the Guidelines which may be made; and • the Wind Energy Strategy Designations Map from the County Wind Energy Strategy showing areas identified as 'Areas Open for Consideration for Wind Energy Developments' and 'Areas not deemed suitable for Wind Energy Developments', and specific policy for wind development in these areas as outlined in Section 8 of the County Wind Energy Strategy; In addition to the above, the following local considerations will be taken into account by the Council in relation to any planning application; • Impact on the visual amenities of the area; • Impact on the residential amenities of the area; • Scale and layout of the project, any cumulative effects due to other projects and the extent to which the impacts are visible across the local landscape;

Policy / Objective	Description
	• Visual impact of the proposal with respect to protected views, scenic routes and designated scenic landscapes and proposed Wilderness Areas as detailed in Chapter 4 of this Plan; • Impact on nature conservation, ecology, soil, hydrology, groundwater, archaeology, built heritage and public rights of way; • Impact on ground conditions and geology; • Consideration of falling distance plus an additional flashover distance from wind turbines to overhead transmission lines; • Impact of development on the road network in the area; • Impact of the development on radio observatories and broadcast communications in the area; and • Impact on human health in relation to noise disturbance (including consistency with the Word Health Organisations 2018 Environmental Noise Guidelines for the European Region), shadow flicker and air quality. This list is not exhaustive, and the Council may consider other requirements contained in the chapter on a case by case basis with planning applications should the need arise. Where impacts are predicted to arise as a result of the development proposed, suitably detailed mitigation measures shall be proposed.

4.3.3 Offaly County Wind Energy Strategy

The Wind Energy Strategy forms part of the Offaly CDP, which sets out the mapping analysis undertaken by the Council to identify suitable locations for wind energy development areas within the County. This included assessment of wind speeds and accessibility to the grid, and evaluation of the landscape and sensitivity areas (scenic views and prospects). Figure 4-8 is an extract from the Offaly Wind Energy Strategy which demonstrates the areas of potential for wind energy development in blue. The Derrynadarragh Wind Farm site falls within 'Potential Area 2' which is deemed as an area '*Open for consideration for Wind Energy Development' in principle'*:

"2. Area generally from Cloneygowan to Clonbullogue

This area is characterised by a predominantly flat and in places slightly undulating landscape with a number of significant tracts of peatlands and transitional woodlands and coniferous forestry, in particular in areas around Walsh Island, Bracknagh and Clonbulloge, along with improved agricultural land, large landholdings and a dispersed pattern of rural housing. The extensive tracts of flat peatlands in this area offer potential to accommodate a wind farm layout with depth, comprising a grid formation giving a better sense of balance and visual cohesion. In addition, there exists a precedent of windfarm and renewable energy projects developed in the area such as Mount Lucas windfarm while other projects have been deemed suitable and are awaiting commencement of development. There exists both good wind speeds and electricity infrastructure in the area.

A potential constraint in this area is the objective in Chapter 4 to examine the feasibility of developing Wilderness Corridors at bogs at Cavemount, Esker, Ballycon, Derrycricket, Clonsast North, Clonsast and Derryounce. The Council will not be in favour of any developments proposed on these bogs with the potential to impact upon the character, uniqueness and wilderness potential of these areas. The impact on a potential Wilderness Corridor from any wind farm development will be assessed at project level by the Council."

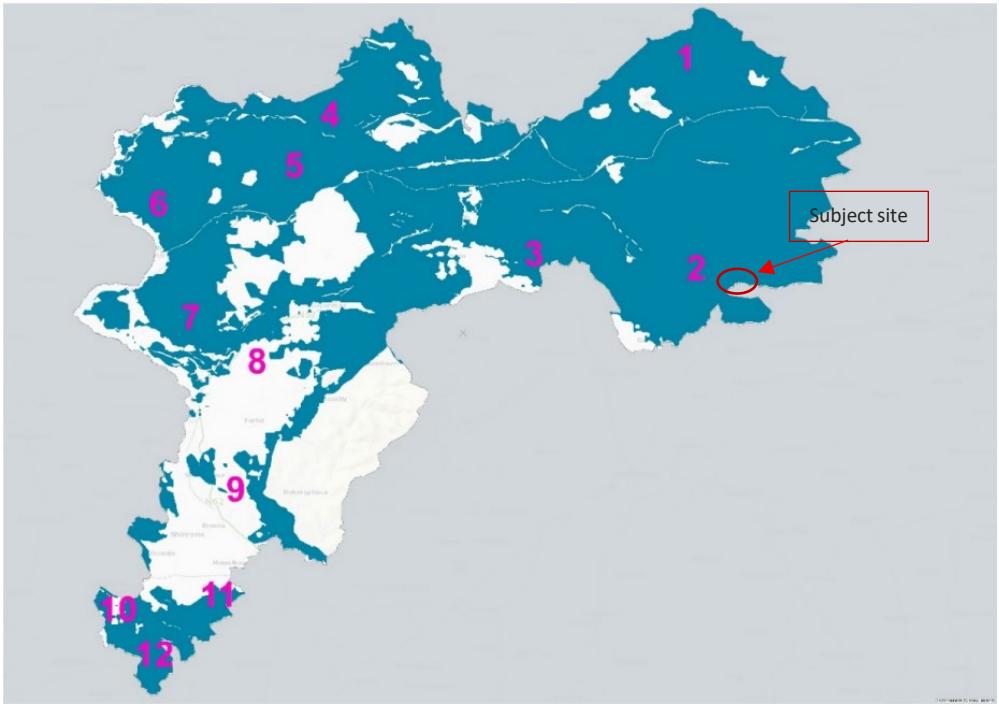

Plate 4-2: Extract from Offaly Wind Energy Strategy - Potential Wind Energy Areas

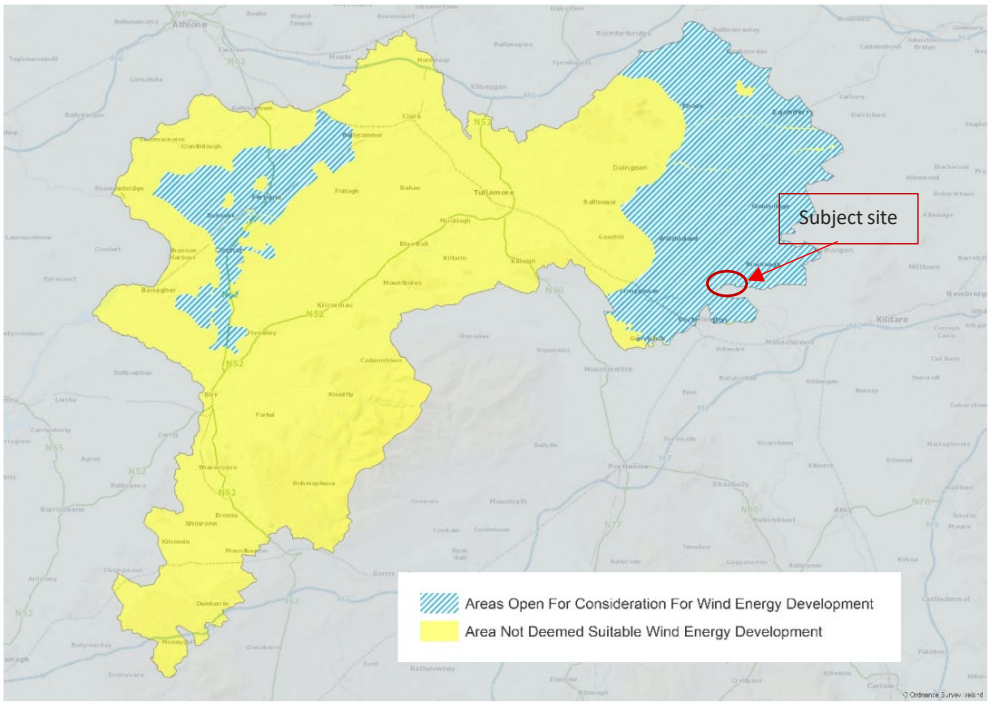

Plate 4-3: Extract from Offaly Wind Energy Strategy – Wind Energy Strategy Designations

Section 8 of the Wind Energy Strategy includes the 'Wind Energy Development Policy' which states that,

> *"It is the policy of the Council to assess proposals for new wind energy developments in accordance with Map No. 10 'Wind Energy Strategy Designations', Climate Action Energy Objective CAEO-05 (Chapter 3 Climate Action and Energy) and the following parameters:*
>
> ***Areas Deemed Open for Consideration for Wind Energy Developments***
> *These areas are open for consideration for wind energy development as these areas are characterised by low housing densities, do not conflict with European or National designated sites and have the ability by virtue of their landscape characteristics to absorb wind farm developments. Notwithstanding this designation, wind farm developments in these areas will be evaluated on a case by case basis subject to criteria listed in Development Management Standard 109 contained in Chapter 13 of Volume 1 of this County Development Plan and the Section 28 Wind Energy Development Guidelines……"*

Section 9 of the Wind Energy Strategy looks at the consistency between Offaly County Council Wind Energy Strategy. and the adjacent Local Authorities Wind Energy Strategies. Relevant to the Derrynadarragh Wind Farm proposal is Kildare County Council and Laois County Council, since preparation of the Offaly CDP, the Kildare CDP 2023-2029 now includes a Wind Energy Strategy, as detailed at Section 4.3.2 of this Planning Statement. The subject lands are still considered as an area 'open for consideration' for wind farm development.

4.3.4 Laois County Development Plan 2021 – 2027

The Laois County Development Plan 2021-2027 came into effect on 8th March 2022. The proposed wind farm site itself falls within the administrative boundaries of Kildare and Offaly, however the proposed grid connection route runs from the site, through the administrative boundary of Laois County Council, to Bracklone Substation. Due regard has therefore been given to the following relevant policies within the Laois County Development Plan 2021 – 2027.

Table 4-4: Relevant Policies and Objectives from the Laois CDP (2021-2027)

Policy / Objective	Description
Objective CM RE 2	Promote and encourage the development of energy from renewable sources such as hydro, bio-energy, wind, solar, geothermal and landfill gas subject to compliance with normal planning and environmental criteria in co-operation with statutory and other energy providers.
Objective CM RE 5	Promote and facilitate wind energy development in accordance with the Guidelines for Planning Authorities on Wind Energy Development (Department of Housing, Planning and Local Government) and any update thereof and the Appendix 5 Wind Energy Strategy of this Plan, the Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change, and subject to compliance with normal planning and environmental criteria.
Objective CM RE 6	Ensure a setback distance for Wind turbines from schools, dwellings, community centres and all public roads in all areas open for consideration for wind farm development as per the Guidelines for Planning Authorities on Wind Energy Development (Department of Housing, Planning and Local Government).
Objective CM RE 7	Promote the location of wind farms and wind energy infrastructure in the 'preferred areas' as outlined on Map 3.2 to prohibit such infrastructure in areas identified as 'Areas not open for consideration' and to consider, subject to appropriate assessment, the location of wind generating infrastructure in areas 'open for consideration' and as per the Laois Wind Energy Strategy 2021-2027.
NRE 4	Facilitate the provision of and improvements to energy networks in principle, provided that it can be demonstrated that: i. The development is required in order to facilitate the provision or retention of significant economic or social infrastructure; ii. The route proposed has been identified with due consideration for social, environmental and cultural impacts; iii. The design is such that will achieve least environmental impact consistent with not incurring excessive cost; iv. Where impacts are inevitable mitigation features have been included; v. Proposals for energy infrastructure should be assessed in accordance with the requirements of Article 6 of the Habitats Directive: vi. Ensure that the ability of the area to absorb overhead transmission lines is considered with reference to the National Landscape Strategy 2015:

Policy / Objective	Description
	Cognisance will be taken of the Code of Practice between the DoECLG and Eirgrid (2009). Ensure that landscape and visual assessment of planning application shall focus on the potential to impact upon landscape designations and important designated sites.

Section 6.13 of the Wind Energy Strategy Plan contained at Appendix 5 of the Laois Development Plan, outlines details pertaining to Grid Connections. It states the following key points:

> *"While the grid provider is responsible for grid connections, details of likely routes shall be included with the planning application. Connections within the wind farm will be laid underground…*
>
> *Separate to the grid connection, the transport of electricity from the turbines to a substation, which connects to the grid, will usually require the establishment of ancillary infrastructure which may cause separate additional visual impact although undergrounding of services, albeit more costly, usually lessens this impact."*

The Laois CDP includes 'Map 3.2 – Wind Energy' which sets out the 'preferred areas' for wind energy development, those 'areas open for consideration', and 'areas not open to consideration'. The Derrynadarragh Wind Farm site itself falls outside of the Laois Administrative boundary, however sections of the grid connection route traverse Laois as it connects into Bracklone Substation.

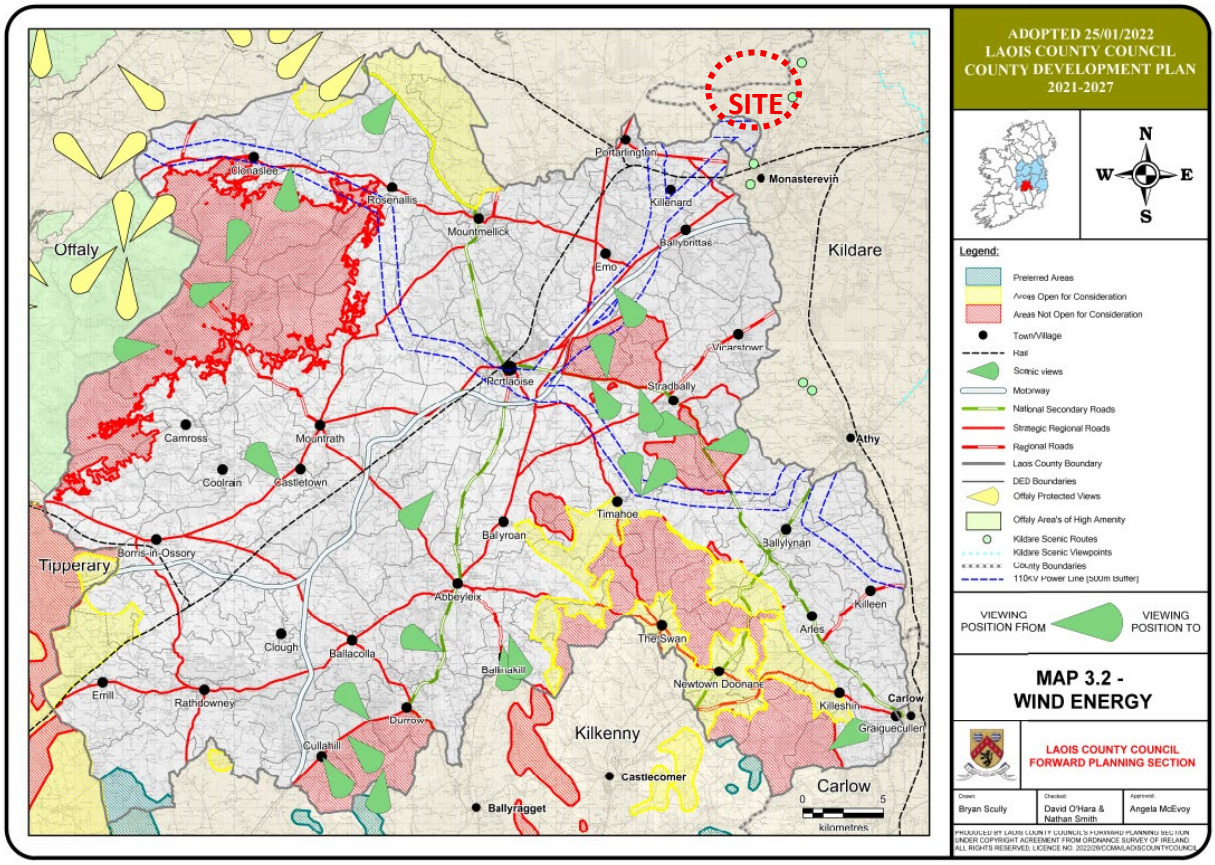

Plate 4-4: Extract of Map 3.2 – Wind Energy of the Laois CDP (Site location outlined in red dashed line)

5. EIA SCOPING AND CONSULTATION

5.1 Purpose of the EIA Scoping

The purpose of the EIA scoping process is to identify the key points and issues which are likely to be important during the Environmental Impact Assessment (EIA) of the Project and to eliminate those that are not. The scoping process identifies sources or causes of potential environmental effects, the pathways by which the effects can happen, and the sensitive receptors which are likely to be affected. It defines the appropriate level of detail for the information to be provided in the EIAR. In essence, the primary focus of scoping is to define the most appropriate assessment of significant effects related to the Project. Scoping was carried out, in accordance with the European Commission's EIA Scoping Checklist (2017), under the EU's Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU).

The requirement to consider cumulative effects is outlined in EU and national legislation. The EIA Directive requires the consideration of:

> *'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'*

A desk study was undertaken to identify other existing and Proposed Developments with which significant cumulative effects could plausibly occur. This was further informed by consultation.

Consultation is an important part of the Environmental Impact Assessment (EIA) process. The consultation process carried out for this site has been a lengthy, detailed and thorough process. The list of consultees is provided in Table 5-1 of Chapter 5, Volume II of the EIAR. Consultees were invited to contribute to the EIAR by suggesting baseline data, survey methodologies and potential impacts that should be considered as part of the impact assessment process and in preparation of the EIAR. Copies of the consultation responses received are included in Appendix 5.2, Volume III of the EIAR.

5.2 Stakeholder Consultation

A number of issues and submissions were raised as part of the consultation process which have informed the EIAR and survey methodologies. Throughout the consultation process specific regard was had to the 'Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement' published in December 2016 including the fundamentals of the Code including engaging with the local community in an open, honest and transparent manner with the aim to not only provide clear and understandable information but also to gain feedback to understand the views of the local community and to use this information to inform the design process, thus allowing the local community an opportunity to have an influence on the final project design.

Consultation was carried out with a number of stakeholders, including Kildare County Council, Offaly County Council, Laois County Council, An Coimisiun Pleanála (formerly An Bord Pleanála), Government Departments, Non-Governmental Organisations, aviation organisations, and local residents. Their comments and feedback were incorporated into the project design iterations and to the assessments conducted in the EIAR.

5.3 Pre-Application Consultation

Pre-planning consultation was held with Kildare County Council, Offaly County Council, Laois County Council, to determine the key points and potential impacts of the proposed development and to inform the assessment methodology. Further detailed correspondence was received from Offaly County Council during the scoping exercise which informed various aspects of the EIAR assessment.

Pre-planning consultation was held with An Coimisiun Pleanála in accordance with Section 37B of the Planning and Development Act 2000 (as amended) to determine the key points and potential impacts of the proposed development and to inform the assessment methodology. These meetings also took place to conform with the Strategic Infrastructure Development (SID) process.

5.4 Public Consultation

The public consultation stage commenced in September 2023 and has been facilitated for 2 years through organisation of; public consultation meeting, door-to-door engagement, engagement with the local newspapers, and materials circulated to local residents by post. The developer is committed to continued community engagement with residents as the planning process progresses.

A dedicated email address, phone number and postal address was provided with circulated materials so members of the public could directly contact the project team. This process was commenced as early as possible in order to inform the design of the project and to inform the EIA process prior to its commencement. A dedicated website was also set up to allow for further open communication between the applicant and community throughout the development process and to run-up to the application submission. In addition, a project website was set up to provide information and materials to inform the public of the proposed project.

A dedicated project phone line and email service went live on 1st September 2024. The phone and email were highlighted to all stakeholders engaged with. Stakeholders made contact through both the phone and email for more in-depth conversations about the project or to have follow up conversations.

- Phone line: 087-1698635
- Email: Community@derrynadarraghwindfarm.ie
- Website: www.derrynadarraghwindfarm.ie

A number of materials informing the community about the project were circulated in the community by RPS on behalf of Dara Energy Ltd. And made publicly available on the project website. These resources included:

- A Community Information Leaflet was produced to give stakeholders within approximately 1km distance from the proposed site, which included project information in an accessible way while also providing contact information for the project.
- A calling card was also produced to accompany the project information leaflet if there was no engagement with a property.
- Maps of the proposed development area, with turbine locations included in due course.
- An updated project leaflet circulated to stakeholders within 1km prior to Public Event in June 2025.
- Pull-ups to display the project information and a map showing the proposed preliminary layout of the turbines were also produced for the public information event.

A public information event was held from 2-8pm on the 7th of May 2025 for local residents, stakeholders and members of the public. The event was organised by the Community Liaison Officer (CLO) on behalf of Dara Energy Limited.

The event was held in the local community hall, Bracknagh Community Hall, which is located within one of the housing estates in the village. This location was selected to ensure convenient access for the local community.

In general, stakeholders were positively disposed to the project, and there were a number of stakeholders opposed to the proposal. A detailed Community Consultation report is included in Appendix 5.4, Volume III of this EIAR. A summary of the topics raised by local residents/stakeholders is set out below:

- Some stakeholders proposed that the project be developed as a Solar Farm instead, which they said would get community support.
- Stakeholders questioned if forestry or trees will be planted around the turbines and if bog cutting will still be allowed on the site.
- On Ecology, it was asserted by local people that there are at least two curlews nesting in the area. People asked if the project could improve the biodiversity of the site for wildlife, rewet the bogland and create an eco-park centred around renewable energy generation.
- On the project's operational phase, residents requested that a designated person be made available for the community to contact to address any potential issues that may arise.

5.5 Conclusion

Observations and issues that arose during the scoping and consultation process have informed the design, assessment and mitigation measures proposed as part of this project as set out throughout the EIAR.

Over the course of engagement with the local community/individuals, local businesses and community groups, feedback was actively sought on ideas regarding the form that the community benefit scheme should take and how best to achieve maximum potential benefit for the local area from the community funding that would be associated with this project.

6. POPULATION AND HUMAN HEALTH

6.1 Land Use

Land use within the site is mainly dominated by agriculture, with areas of turbary activities located outside of, but adjacent to, the site boundary to the centre and south (Derrylea Bog). Furthermore, there is a small area of forestry land within the northern portion of the site.

The settlement patterns in the area consists of one-off rural housing fronting onto the road network in a linear rural settlement pattern. There are approximately 208 no. residential and commercial properties within 2km of the site. The closest property to a turbine is located c. 770 m distance south of T1. All other residential properties are located greater than 780m from the turbine array. Bracknagh village is the most proximate settlement located 2km to the north-east.

The Site is located within the lowland topography with predominantly flatlands. Red Hill (194m), Dunmurry Hill (234m) and Grange Hill (223m) are located within 10km to the east of the site. The site is located on the Derrylea Bog which is connected to Clonsast Bog to the north and Derryounce Bog to the west.

The Corrine Land Cover database for Ireland (based on interpretation of satellite imagery and national vector mapping data) identifies Quaternary deposits present at the site mostly comprise cut over raised peat. There are sections in the north and west of the site that are underlain by till derived from limestones, while the eastern section of the site is underlain by lake marl. The site is predominantly underlain by the Lucan Formation (dark limestone and shale) with a section in the north of the site underlain by the Ballyadams Formation (crinoidal wackestones/packstone limestone).

There is 1 no. European site designated for nature conservation within a 5km radius of the potential wind farm site, which is the River Barrow and River Nore Special Areas of Conservation (SAC) (Site code: 002162). The Grand Canal Proposed Natural Heritage Area (pNHA) (Site code: 002104) is located approx. 4km to east of subject site.

The proposed wind farm site contains a number of habitats that are of ecological importance including treelines to the west of the site, woodland to the south-west and lowland rivers within the Cushina River. The proposed wind farm site also has designation for a number of fauna on site which include records of hare, a moderate-high value of Irish bat species, otter associated with the Cushina River and a number of identified badger setts within the site. The proposed site also has a number of river catchments located within the proposed site including the River Barrow Watercourse, River Figile Watercourse and the River Cushina Watercourse which are all dominated by coarse fish species.

Based on the National Monuments Service database map-viewer, 1 no. recorded monument is located within the proposed site within County Kildare. (A circular Enclosure Site Code KD021-009) approximately 0.4km from T04 on the south-eastern Boundary. There are no recorded monuments within the proposed site within County Offaly.

There are a number of sites in close proximity including a number of Record of Monuments and Places (RMPS) to the south. Within a wider 2km radius, there are approximately 13 no. RMP's. The most proximate recorded monuments are located approximate 800m south-east of the site in County Kildare, there are 5 RMP sites located in the townland of Derrylea approximately 800m south of the site (KD021-010: Enclosure, KD021-00805: Enclosure, KD021-00801: Enclosure, KD021-00804: Enclosure and KD021-00803: Enclosure). These 5 no. sites are linked small enclosures visible as cropmarks with no visible surface trace of the features.

There are several archaeological features located adjacent to the GC and TDR, including ringforts and enclosures. The GC will be predominantly contained within the public road corridor throughout its length with the exception of the start and finish points where the cables will be terminated in the proposed network substation at Bracklone, and the proposed onsite substation which is located within the Site.

Similarly, the TDR will be confined to the public road corridor with the exception of locations where accommodation works (mainly comprising laying of load bearing surface, verge widening and furniture/pole removal) will be required in private lands to facilitate the delivery of abnormal loads.

A total of two TDR Nodes involves the crossing of private lands at R402/R400 Junction at Philipstown Bridge and R400 South of Enaghan. Please refer to Chapter 14 – Traffic and Transportation, and the accompanying Appendix 2.3 - Turbine Delivery Route Assessment and Appendix 2.4 - Turbine Delivery Route Nodes at 5 no. locations (Volume III of this EIAR), for further details of the TDR node works we are seeking planning permission for.

There is a total of 5 no. permitted and operational wind farm developments located within 20 km of the proposed Derrynadarragh Wind Farm. Table 14-7 in Chapter 14, Volume II of the EIAR, highlights the location of existing wind farms within 20 km of the Site. The closest operational wind farm is Cloncreen Wind Farm, Co. Offaly, located c.10.6km to the north of the site which has been in operation since 2022.

The existing land-uses in proximity to the proposed Derrynadarragh Wind Farm will remain broadly unchanged during the construction phase of the project, however, some land use within and in close proximity to the Site will be temporarily disrupted during the construction phase. This will occur on the forestry lands and the boglands where turbines and associated infrastructure are proposed.

There are 1 no. proposed wind turbines located within cutover bogs and 5 no. proposed turbines located on improved Agricultural grassland. Existing access tracks will be used and upgraded where possible and new tracks will be required in agricultural grasslands.

Felling of approximately 0.28 ha of forested is required to accommodate Turbine 2 and an access track running in a west to east direction. Additional felling of trees and vegetation will also be required at various points along the TDR. It should be noted that the clear-felling of trees in the State requires a felling licence. The Forest Service of the Department of Agriculture, Food & the Marine is Ireland's national forest authority and is responsible for all forest licensing which is governed by the Forestry Act 2014 as amended and the Forestry Regulations 2017 (S.I. No. 191 of 2017).

The operational phase of the Derrynadarragh Wind Farm will have minimal adverse effects on existing land use.

The operational phase of the Derrynadarragh Wind Farm will result in a change of land use in areas where access tracks, wind turbine bases, hardstanding areas, substation, grid connection and associated drainage infrastructure will be located. The lands affected are currently in use for Agricultural grassland and Cutover Bog.

The operational phase of the Derrynadarragh Wind Farm will not adversely affect agricultural practices on lands adjacent to the site.

The decommissioning phase of the Project is described in Section 2.7 in Chapter 2, Volume II of the EIAR, and provides for the removal of turbines and associated infrastructure from the site. The potential impacts associated with the decommissioning phase in relation to land use will be similar to those associated with construction phase but of a reduced magnitude.

6.2 Population

One of the principal concerns in the development process is that individuals or communities, should experience no significant diminution in their quality of life from the direct, indirect or cumulative effects arising from the construction, operation and decommissioning of a development.

Relevant demographic data within proximity of the Proposed Development has been sourced from the Central Statistics Office (CSO) Census of Ireland (2016 - 2022) records.

The population density recorded within the State, Counties Kildare, Offaly, Laois and the Project Area during the 2011, 2016 and 2022 Census are set out hereunder in Table 6-2 below. It is clear from the population density figures below that from 2011 to 2022 the Project Area especially the Site ED's have low population density compared to state, county and TDR / GCR population density. Higher figures for the TDR may be attributed to a growth of the towns falling within the TDR EDs.

The high population density in Kildare is reflective of its status as among one of the most densely populated counties in the country which is likely attributed due to their proximity to Dublin and location within the Greater Dublin Metropolitan Area. A number of towns especially in the east of the counties act as commuter towns to those working in Dublin and numerous rail and transport links to Dublin.

Laois and Offaly have a lower population density as compared to Kildare and the State. As highlighted above, Kildare's density is influenced by its location in the commuter belt around Dublin, with towns like Naas, Newbridge, and Celbridge growing rapidly. In contrast, Laois and Offaly have more dispersed populations and larger rural areas.

Compared to the overall population density of the County, the relatively low population density at the Proposed Development site highlights the suitability for a wind farm development at this location.

The population of the Project ED's recorded in the 2022 Census was 1,307 persons. Workers availing of temporary residence during the construction phase would be assessed as a population impact, but workers commuting daily and returning to their home residence are not considered as they have no impact on the local population during the construction phase. The population of the Project Area will increase temporarily during construction hours and return back to normal outside of working hours on a daily basis over the 24 month construction period. As construction work is temporary, it is unlikely that workers coming from outside the ED's will take up residence within the Project ED's. However, it is likely that some workers may stay in accommodation in the larger settlements surrounding the site such as Portarlington or Monasterevin located outside the ED's. Overall, this will result in a slight, short-term increase in population resulting in a slight, short-term neutral impact.

Once constructed, it is envisaged that there will be direct and indirect employment associated with the operational phase of the Proposed Development. Opportunities for mechanical-electrical contractors and craftspeople to become involved with the operation and maintenance of the Proposed Development will arise.

It is expected that the operational phase of the Proposed Development could create 77.76 long term jobs (with an installed capacity of approximately 64.8 MW). These jobs include operations and maintenance, back-office support and indirect jobs created by other activities related to installed turbines including IPP/utilities, consultancy firms, research institutions, universities and financial services.

The decommissioning phase of the Proposed Development is described in Chapter 2 - Development of Proposed Description of this EIAR provides for the removal of turbines and associated infrastructure from the Proposed Development site. The potential impacts associated with the decommissioning phase in relation to population trends will be similar to those associated with the construction phase but of a reduced magnitude.

A construction crew will be required for dismantling the infrastructure and carrying out remediation works where necessary.

As removal works will be of relatively short duration, it is unlikely that workers will take up residence in the Wind Farm Site, however, it is likely that some workers will stay in accommodation within the area of the Wind Farm Site or nearby towns, resulting in potential temporary population increases. The decommissioning phase is therefore likely to result in a slight, temporary increase in population within the Wind Farm Site and nearby towns, producing a slight temporary impact on population trends. It is not likely that the decommissioning phase will result in any permanent impact to population in terms of changes to population trends and density.

6.3 Employment and Socio-Economics

According to the European Wind Energy Association's (EWEA) Report 'Wind at Work' (2009), 1.2 jobs per MW are created during installation of wind energy projects based on 1 year construction period. Using this figure, The Sustainable Energy Authority of Ireland 2015 report 'A Macroeconomic Analysis of Onshore Wind Deployment to 2020' also puts direct construction jobs from wind farm developments at 1.7 per MW. With a maximum export capacity of approximately 64.8 MW, this provides an estimate of between 77.76 and 110.16 jobs associated with the construction stage of the Project (anticipated to be 24-month period).

It is possible that there will be direct employment for people living in the Study Area who may be qualified for construction related roles. Materials will also be sourced in the general locality where possible. This will assist in sustaining employment in the local construction trade. Furthermore, local businesses in the nearby towns and villages will likely receive a slight indirect positive economic impact due to the influx of workers to the area who will require services such as shops and food places.

Once the proposed Derrynadarragh Wind Farm is constructed, it is envisaged that there will be direct and indirect employment associated with the operational phase of the Proposed Development. Opportunities for mechanical-electrical contractors and craftspeople to become involved with the operation and maintenance of the project will arise.

Although only a small proportion of operational jobs are likely to be directly based at the Derrynadarragh Wind Farm Site, it is likely that the indirect jobs for the operational phase will support, such as consultants, research institutions, universities and financial services, will provide a slight effect to the employment profile of the wider economy of Counties Kildare and Offaly. It is not expected that these jobs will be based at the wind farm Site, however, the employment of tradespeople, labourers, and specialised contractors for the operation phase in the form of maintenance will have a direct, short-term significant, positive impact on employment in the Study Area.

As part of this Development Proposal, an amenity space is being proposed to be located to the south of the wind farm site. The Proposed development will incorporate an amenity area to enhance community access and recreational opportunities along the bog road (L70481). This space will include two parking spaces integrated with the existing landscape. Informational signage will promote environmental awareness and local heritage, with seating and will allow for rest and appreciation of the natural surroundings.

The Applicant will set up a community benefit fund which will allocate funds from the Proposed Development to community groups in the area should the Proposed Development be granted planning permission, and be successful under the Government's RESS support programme. If consented, the Proposed Development will apply for the RESS 4 supports and will therefore provide €2 per MWh to the Community Benefit Fund, which is calculated in accordance with the 'Terms and Conditions for the Fourth Onshore Competition under the Renewable Electricity Support Scheme (RESS 4)'.

In line with Community Benefit Fund Guidelines, as governed by the Sustainable Energy Authority of Ireland (SEAI), and based on the current project scope, Dara Energy Ltd will generate a Community Benefit Fund estimated at over €3.9 million over the lifetime of the project, estimated at c. €260,000 per annum. The actual fund will vary around this average from year to year, depending on each year's wind conditions. 40% of the fund, totalling c. €116,000, will be allocated to initiatives and projects that support Sustainable Development goals within the area, with 50% of the fund, c. €145,000, allocated to local clubs, societies and near neighbours.

The potential impacts associated with the decommissioning phase in relation to socio-economics, employment and economic activity will be similar to those associated with the construction phase but of a reduced magnitude. A construction crew will be required for dismantling the infrastructure and carrying out remediation where necessary. As the decommissioning of the project is expected to be less intensive than the construction phase, it is likely that less construction workers will be required for this phase. During the decommissioning employment opportunities will be available at the Wind Farm Site and outlying areas. This will have a temporary to short-term indirect positive effect on local businesses and services contributing to the local economy, similar to that of the construction phase but of lesser magnitude.

There will be a temporary to short-term slight, positive impact to socio-economics, employment and economic activity in the Wind Farm Site associated with the employment of construction workers within the vicinity of the development during the decommissioning phase.

6.4 Recreation, Amenity and Tourism

There are no significant tourism attractions located in proximity to the proposed Derrynadarragh Wind Farm site and TDR, and as such, the construction phase of the Proposed Development is not expected to impact on major tourism attractions, tourism numbers or tourism revenue.

Cushina presents the greatest potential for cumulative visual effects because of its closer proximity to the proposed Derrynadarragh Wind Farm site. The nine turbine Cushina Wind Farm is located 3.1km to the northwest of the proposed Derrynadarragh site. This scheme would include turbines with a tip height of 185m, arranged in a similarly staggered layout to the Proposed Development. As illustrated by the cumulative ZTV, in Chapter 16. – Landscape and Visual, there is potential for intervisibility between the two schemes, reflective of the flat, lowland landscape setting. At a distance of just over 3km, there will be a clear spatial separation between the developments, avoiding any sense of visual tension (as shown in the wirelines of VP16, VP7 and VP6). However, at greater distances (i.e. >10km), where intervisibility is present, the two developments may be perceived as being closely related to one another. There is a reasonable degree of cohesion between these two developments where they either appear as a single larger entity or two clusters of a single development, but seldom with clutter or scale confusion or a sense of being surrounded by turbines.

On balance of the reasons outlined in Volume II Chapter 6 of the main EIAR, it is considered that the proposed Derrynadarragh Wind Farm development has a **Low** magnitude contribution to cumulative effects with other existing, permitted and proposed wind farms in the Study Area.

The decommissioning phase will have similar temporary impacts as the construction phase with the movement of large turbine components away from the site. There may be a minor loss of roadside and trackside vegetation that has grown during the operational phase of the Proposed Development, but this can be reinstated upon completion of decommissioning. Areas of hard standing that are of no further use will be reinstated and reseeded to blend with the prevailing surrounding land cover of the time. It is expected that the decommissioning phase would be completed within a period of approximately 3 months.

Furthermore, within 2-3 years of decommissioning, there will be little evidence that a wind farm ever existed on the site, albeit the proposed on-site substation will remain in perpetuity as part of the national grid infrastructure, in addition to residually useful access tracks.

6.5 Human Health & Safety

Under normal conditions, operational wind turbines do not pose a threat to public safety or the safety of animals.

The Proposed Development has been examined with respect to potential impact from major accidents and natural disasters. This relates to:

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

There is limited potential for major accidents or natural disasters to occur at the Proposed Development site. Bulk storage of hydrocarbons, chemicals and wastes will not occur on the Proposed Development site to provide further potential risks in the unlikely event of flooding, fire or landslides. Emergency protocols will be in place should an accident occur at the Proposed Development.

There is currently no published credible scientific evidence to positively link wind turbines with adverse health effects.

An analysis of the general health statistics for the area encompassing the wind farm site and the TDR reveals that the majority of the population reports their health as 'Very Good'. While this is a positive indicator, the proportion in the Site EDs (53.75%) is slightly higher than the State and County averages, which range from 53.2% (State) to 56.81% (Kildare).

The second most reported category is 'Good' health, where figures across the State (29.7%) and Counties (29.24% in Kildare, 31.2% in Offaly, and 30.43% in Laois) are closely aligned, with a maximum variation of just under 2%. The Site EDs report 27.71%, which is at least 1.5% lower than the County and State averages, indicating a modest deviation in perceived health quality.

In the 'Fair' health category, the Site EDs report 7.87%, which is generally consistent with the State (8.6%) and County averages (ranging from 7.73% to 9.4%), suggesting a stable middle-ground in health perception across jurisdictions.

For the 'Bad' and 'Very Bad' health categories, proportions are low across all areas. The Site EDs report 1.39% (Bad) and 0.52% (Very Bad), which are slightly higher than the State averages of 1.4% and 0.3%, and marginally above County figures. The overall impact is limited due to the small proportions. Notably, the TDR EDs report lower figures in these categories (1.48% Bad, 0.32% Very Bad), indicating a better health profile in that sub-region.

Following the implementation of the mitigation measures, the Proposed Development will result in slight to moderate residual impacts arising from fugitive dust emissions during construction activities involving excavations, felling or earthmoving. These will be localised in nature and as they will be associated with particular elements of the construction phase, they will be temporary in nature and will not result in any permanent residual impacts.

The construction phase of the Proposed Development will not have a significant adverse effect on air quality.

Considering the mitigation measures as set out in Volume II, Chapter 11: Soils, Geology and Hydrogeology, the impact on human health during construction works period is expected to be temporary, negligible and imperceptible.

A flood risk assessment has been carried out and a drainage design has been incorporated into the Proposed Development as detailed in Volume II, Chapter 12: Flooding, Hydrology and Water Quality. As a result, the Proposed Development is expected to not have any adverse effects on flood risk in the surrounding area of the wind farm site or along the TDR.

There is limited potential for major accidents or natural disasters to occur at the Proposed Development site. Bulk storage of hydrocarbons, chemicals and wastes will not occur on the Proposed Development site to provide further potential risks in the unlikely event of flooding, fire or landslides. Emergency protocols will be in place should an accident occur at the Proposed Development.

There is currently no published credible scientific evidence to positively link wind turbines with adverse health effects.

7. AIR QUALITY AND CLIMATE

This section describes the existing air quality and climate environment of the Proposed Development.

If the Proposed Development does not proceed, local air quality and the microclimate will remain unchanged. On a national scale, there will be an increase in greenhouse gas emissions if increasing future electricity needs are not met by alternative renewable sources which have the potential to contribute to air pollution and climate change. The opportunity to contribute to Ireland's commitments under the Kyoto Protocol and to meet national targets as set out in the Climate Action Plan (2023) would also be lost.

European air quality legislation requires that each member state be defined in terms of Zones and Agglomerations for air quality, with Ireland divided into four zones. The EPA has designated four zones within Ireland:

- Zone A: Dublin City and its environs
- Zone B: Cork City and its environs
- Zone C: 24 cities and towns (such as Galway, Limerick and Waterford cities and towns such as Naas, Newbridge, Celbridge, Leixlip) with a population of greater than 15,000
- Zone D covers the remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Clean Air for Europe (CAFE) Directive (as amended) and the Fourth Daughter Directive. The site of the proposed development lies within Zone D, which represents rural areas located away from large population centres.

7.1 Existing Environment

The study area is located in Zone D and the air quality index for health map on the EPA website shows that the current air quality within the study area is classed as 1 – Good. In terms of climate, the dominant influence on Ireland's climate is the Gulf Stream. Consequently, Ireland does not suffer from the extremes of temperature experience by other countries at the same latitude. Climatic data from Met Eireann's Mullingar weather station is presented in the chapter.

7.2 Impact Assessment

If the Proposed Development does not proceed, local air quality and the microclimate will remain unchanged. On a national scale, there will be an increase in greenhouse gas emissions if increasing future electricity needs are not met by alternative renewable sources which has the potential to contribute to air pollution and climate change. The opportunity to contribute to Ireland's commitments under the Kyoto Protocol and to meet national targets as set out in the Climate Action Plan would also be lost.

The principal sources of potential air emissions during the construction of the Proposed Development will be from the Site, GCR and TDR; from dust arising from earthworks, tree felling activities, trench excavation along cable routes, construction of the new access tracks, the temporary storage of excavated materials, the construction of the proposed substation, the movement of construction vehicles, loading and unloading of aggregates/materials and the movement of material around the site.

Due to the small number of receptors, and distance from the source of the dust emissions, with the closest residential dwelling being approximately 745m from Turbine 2, the "sensitivity" of the area is considered to be "low", as per the criteria set out in the guidance (DMRB, 2007).

The construction phase for the Proposed Development will lead to 24,861 additional HGV trips (two-way) over the duration of the construction works. Calculations of HGV movements associated with the construction of the project indicate an average daily increase of 40 HGV trips per day over a construction period of 24 months. This increases to an average of 68 HGV trips per day during the peak month which occurs in months 10 - 12 of the programme for HGV traffic.

For context, this figure is significantly below the threshold of 1,000 annual average daily traffic (AADT) referenced in standard traffic and air quality assessment criteria, below which construction traffic impacts are generally considered to be not significant. The relatively low volume of additional traffic is not expected to result in a perceptible impact on local traffic conditions or air quality.

Once the proposed wind farm and grid connection are constructed there will be no significant direct emissions to atmosphere. A diesel generator will be located at the proposed wind farm substation; however, this will only be operated as a back-up/emergency power supply.

In terms of decommissioning, there will be truck movements associated with removing the wind turbines, earthmoving to cover foundations and landscaping resulting in vehicular emissions and dust. However, the number of truck movements will be significantly less than the construction phase and will potentially result in a slight temporary impact. There will also be emissions from machinery on site including for the movement of soil to cover the foundations, however, this is not likely to result in significant impacts.

In terms of carbon losses and savings, the online Scottish Windfarm Carbon Assessment Tool (https://informatics.sepa.org.uk/CarbonCalculator/index.jsp) was used to estimate carbon savings as a result of the proposed construction and operation of the wind farm. Appendix 7.1, Volume III of the EIAR, details the inputs to the model.

For the Proposed Development with 9 no. turbines assuming a turbine power rating of 7.2 MW, and operational period of 35 years, the payback time for the manufacture, construction and decommissioning phases (including carbon losses from soil, felling of forestry etc.) of the Proposed Development is estimated at approximately 1.6 years. Should further restoration measures be put in place, the total carbon emissions and carbon payback time would be reduced.

7.3 Mitigation Measures

The impact assessment has not identified any significant negatives impacts on Air and Climate. Therefore, while mitigation measures are not required to mitigate against significant impacts, they are provided in Section 7.5 of Chapter 7, Volume II of the EIAR, as best practice.

Mitigation measures in relation to air quality include the use of a water bowser to spray works areas and haul routes; loads to be covered; revegetation of exposed soils; good maintenance of machinery; implementation of a dust control plan as part of the Construction and Environmental Management Plan; no idling of vehicles. As the operation of the wind farm will have positive impacts on air quality, mitigation measures are not required.

It is considered that the proposed development will have an overall positive impact in terms of carbon reduction and climate change. It will assist Ireland in meeting its targets set under the latest national policy, including the Climate Action Plan (CAP25) which is driven by the requirements for a reduction in greenhouse gas emissions along with energy security and competitiveness.

7.4 Residual Impacts

Following the implementation of the above mitigation measures, the proposed development may result in slight to moderate residual impacts arising from fugitive dust emissions during particular construction activities. These will be localised in nature and as they will be associated with particular elements of the construction phase, they will be temporary in nature and will not result in any permanent residual impacts. Impacts related to vehicle emissions will cease following construction and no significant impacts are anticipated.

Should the Proposed Development not be developed, fossil fuel power stations will likely be the primary alternative to provide the required quantities of electricity. This will further contribute to greenhouse gas and other air pollutant emissions, as well as hindering Ireland in its commitment to meet its target to increase electricity production from renewable sources and to reduce greenhouse gas emissions.

There will be residual positive impacts from the operation of the Proposed Development in terms of the displacement of fossil fuel energy generation with renewable energy.

7.5 Conclusion

There are no significant impacts expected on Air Quality or Climate as a result of the construction, operation and decommissioning of the proposed project.

There are no significant cumulative impacts expected on Air Quality and Climate as a result of other existing or proposed projects.

There will be a long term positive residual impact on air quality and climate as a result of the development due to the displacement of fossil fuels.

The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and have been incorporated into the construction stage CEMP included in Appendix 2.1, Volume III of the EIAR.

8. NOISE AND VIBRATION

8.1 Existing Environment

Baseline noise monitoring was undertaken at seven no. noise monitoring locations (NML1-NML7) surrounding the proposed Derrynadarragh Wind Farm to establish the existing background noise levels at noise sensitive locations in the vicinity of the proposed development. These include the closest noise sensitive locations (NSLs) to the proposed development, as well as representing different noise environments in the vicinity of the proposed development.

The predicted noise levels are comparable to existing background noise measured and the limits are based on the quietest background noise levels measured across the site and therefore are considered conservative.

8.2 Potential Noise Impacts

Noise during the construction phase will arise from the deliveries and/or removal of material to and from site, preparation of access roads and drainage, concrete mixing and pouring of foundations, preparation of hardstands and drainage, installation of wind turbines and works associated with grid connection and Turbine Delivery Route (TDR). Construction noise levels were predicted using computational noise modelling software and based on current best practice construction standards. The predicted general construction noise levels are typically below the best practice construction noise criteria outlined in British Standard BS5228-12009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1 -Noise, and the effects are expected to be negative, moderate and temporary in duration. There are a number of instances where the predicted noise is above the noise limit but this is expected to occur at a limited number of dwellings during the grid connection works and TDR enabling works only. These exceedances are for a scenario without mitigation, and will be temporary and at a limited number of dwellings. These works are expected to have a significant temporary negative effect, in the absence of mitigation measures. Mitigation measures, mentioned below, will bring the noise levels below the limit.

The potential for vibration at neighbouring sensitive locations during construction is typically limited to piling works, excavation works, and lorry movements on uneven road surfaces. Considering the construction activities proposed, distances between the works and the nearest sensitive locations, vibration from construction activities will not have a significant impact.

Noise during the operational phase will arise from the wind turbines as they rotate to generate power. Noise may also be generated from the substation on site.

The noise criteria used to assess operational noise from the proposed development is based on a Best Practice Approach, which is considered current best practice and currently used by the acoustics industry. This best practice approach is based on:

- Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006);
- ETSU-R-97, The Assessment and Rating of Noise from Wind Farms (1996);
- Institute of Acoustics' A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, (2013).

Operational noise predictions were carried out using International Standard ISO 9613-2:2024, Acoustics – Attenuation of Sound during Propagation Outdoors, Part 2: Engineering method for the prediction of sound pressure levels outdoors. The predicted operational noise levels were found to be below the derived noise limits at all NSLS during daytime and night-time periods. At NSLs within the study area, a new source of noise will be introduced into the soundscape and it is expected that there will be a long-term, slight to moderate negative effect at the closest dwellings to the proposed wind farm.

The potential noise impacts of the proposed substation has been assessed using BS4142:2014+A1:2019 Methods for rating industrial and commercial sound and the predicted noise levels at the nearest dwelling are not considered likely cause significant adverse effects at any NSL during daytime or night-time periods.

There are no significant vibration effects associated with the day-to-day operation of the wind farm.

Noise during the decommissioning phase will arise from dismantling of turbines, earthworks and removal of material from site. These activities would be of a lesser impact than for construction and these activities will be controlled through the relevant guidance and standards in place at the time of decommissioning.

8.3 Mitigation Measures

The predicted noise levels from on-site activity from the general construction works associated with the proposed project are below the noise criteria in BS 5228-1:2009+A1:2014. Nonetheless, several mitigation measures will be employed, as good practice, to minimise any potential impacts from the proposed project.

There is potential for temporary elevated noise levels due to the grid connection works that has the potential to exceed the noise limits at up to 93 properties. However, the impact of these works at any particular receptor will be for a short duration (i.e. less than 3 days). Where the works at elevated noise levels are required over an extended period, greater than 3 days, at a given location, a temporary barrier or screen will be used to reduce noise levels below the noise limit where required. The noise impact will also be minimised by limiting the number of plant items operating simultaneously, where reasonably practicable. The resulting effects during grid connection works are expected to be negative, moderate and temporary in duration, post-mitigation.

The works associated with the installation of load bearing surfaces and offline track and bridge construction along the TDR are expected to exceed the noise limits at the closest receptors by approximately 3 dB. However, the impact of these works at any particular receptor will be for a short duration (i.e. less than 3 days). Where the works at elevated noise levels are required over an extended period, greater than 3 days, at a given location, a temporary barrier or screen will be used to reduce noise levels below the noise limit where required. The noise impact will also be minimised by limiting the number of plant items operating simultaneously, where reasonably practicable. The resulting effects are expected to be negative, moderate and temporary in duration, post-mitigation.

Should the project be granted permission, an operational noise survey will be undertaken to ensure the project complies with the noise limits once the windfarm is operational. It has been predicted that the noise limits will be met. However, in the unlikely event of an exceedance, mitigation measures will be implemented to ensure compliance with the noise limits is achieved at all noise sensitive locations. In the event of an exceedance, noise mitigation will be provided by running the relevant turbine(s) in noise reduced modes of operation. The noise level can be lessened by reducing the rotational speed of the turbines, with a resultant loss of electrical energy production.

It is proposed that the wind farm development will implement a complaints-based monitoring procedure for AM in accordance with the 'Reference Method' outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (2016), or subsequent revisions. This will provide a robust and reliable indicator of AM and if a correction/penalty for AM needs to be applied to the Proposed Development and will yield important information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions that cause AM and allow for the specification of mitigation measures.

Decommissioning works are predicted to be below the relevant noise limit of 65 dB LAeq,1hr for construction noise and are expected to result in moderate negative effects and will be temporary in duration. As good practice, the noise control measures outlined in the Appendix 2.1 Construction Environmental Management Plan (CEMP) of Volume III of this EIAR and in section 8.7.1 will be implemented, in addition to any best practice guidance available at the time of decommissioning.

8.3.1 Potential Cumulative Impacts

Other existing, consented and proposed developments located within 20km of the proposed Derrynadarragh Wind Farm have been considered as part of this assessment.

It is not expected that there will be cumulative construction noise impacts with any other large or small scale developments in the vicinity of the proposed wind farm, given the distance between the developments and nature of the works proposed as part of these developments.

The proposed 11 no. turbine windfarm at Cushina, approximately 4.3km northwest of the site is the only development located close enough to the proposed Derrynadarragh Wind Farm that it has potential to contribute to cumulative noise emissions at noise sensitive locations and has been assessed cumulatively with the Proposed Development. Cumulative noise predictions indicate that the proposed daytime and night-time noise limits are not exceeded at any location. The effects are expected to be negative, slight to moderate and long term in duration, and there are no changes to the mitigation measures required.

No potential cumulative impacts have been identified in respect of noise associated with the decommissioning of the Proposed Development.

8.3.2 Residual Impacts

With mitigation measures, general construction activities with a duration longer than one month are expected to be below the construction noise limit at residential properties. As a result, residual construction impacts are not considered to be significant when assessed under these criteria.

There is potential for temporary elevated noise levels due to the grid connection works and TDR accommodation works. However, these works will be for a short duration at a particular property (i.e. less than 3 days) and where the works are to occur over an extended period, a temporary barrier or screen will be used to reduce noise level below the noise limit, resulting in a moderate short-term residual impact.

The predicted operational wind farm noise levels meet the daytime and night-time noise limits derived using the best practice Wind Energy Development Guidelines 2006 at all noise sensitive locations. The predicted noise levels from the proposed substation are below the level that would lead to a significant adverse effect at all NSLs.

For some receptors in the study area, the operational wind farm will result in, a new source of noise being introduced into the local soundscape, and it is expected that there will be a slight to moderate long-term impact at dwellings closest to the Proposed Development.

9. BIODIVERSITY

The biodiversity assessment for the proposed Derrynadarragh Wind Farm evaluates the potential ecological impacts of a nine-turbine wind farm and associated infrastructure across Counties Offaly, Kildare, and Laois. The study area includes the wind farm site, grid connection route (GCR), turbine delivery route (TDR), and lands designated for biodiversity enhancement.

Comprehensive ecological surveys were conducted between 2021 and 2025, including habitat mapping, mammal and bat surveys, aquatic ecology assessments, and invasive species monitoring. The site supports a mix of habitats typical of the Irish Midlands, including improved agricultural grassland, wet grassland, bog woodland, hedgerows, treelines, and drainage ditches. A small area of degraded raised bog is also present.

Key ecological receptors (KERs) identified include the Cushina River (a lowland river habitat), bog woodland, hedgerows, treelines, and protected species such as bats, badger, and otter. The River Barrow and River Nore SAC was found to be within the zone of likely impact due to hydrological connectivity. The Grand Canal pNHA was found to be within the zone of likely impact due to the potential for the Grand Canal pNHA and the Proposed Development site to be used by the same population of Otters.

Potential impacts include habitat loss, disturbance during construction, and operational risks such as bat collisions. However, the project has been designed to avoid sensitive habitats and species, and a comprehensive suite of mitigation measures has been incorporated to ensure protection and enhancement of biodiversity.

9.1 Mitigation Measures

9.1.1 Design and Avoidance

- Infrastructure has been sited to maintain a minimum 50m buffer from watercourses and badger setts.
- Clear-span bridges are proposed for river crossings to prevent in-stream works.
- Horizontal Directional Drilling (HDD) will be used for grid connection crossings under the River Barrow, avoiding direct impacts.

9.1.2 Construction Phase

Water Quality Protection: A Surface Water Management Plan (SWMP) will be implemented, including interceptor drains, sediment ponds, swales, and real-time water quality monitoring. These measures will prevent pollution and sedimentation in sensitive aquatic habitats.

Habitat Protection: Sensitive habitats such as bog woodland and riparian zones will be fenced to prevent grazing and disturbance. Hedgerows and treelines removed during construction will be replaced with native species on non-peat soils.

Species Protection: Pre-construction surveys for otter, badger, bats, pine marten, and red squirrel will be conducted. Buffer zones will be enforced, and any necessary derogation licences will be obtained.

Invasive Species Control: Giant Hogweed and other invasive species will be eradicated following best practice guidelines. Biosecurity protocols will be enforced to prevent spread during works.

9.1.3 Operational Phase

Bat Protection: Blade feathering and adaptive turbine curtailment will be implemented at turbines with high bat activity. Post-construction monitoring will guide ongoing mitigation, with SCADA systems used to automate turbine control based on bat activity and weather conditions.

Habitat Enhancement: The Biodiversity Enhancement Management Plan (BEMP) includes riparian restoration along 2.4km of the Cushina River, creation of in-ditch wetlands to trap sediment, and planting of 950m of hedgerow and 550m of treeline to improve ecological connectivity.

Monitoring: Continued ecological monitoring will assess the effectiveness of mitigation and inform adaptive management. Water quality, invasive species, and bat activity will be monitored throughout the operational phase.

9.2 Residual and Cumulative Effects

Residual impacts are predicted to be minimal. Habitat loss is limited to 2.19ha of KER habitats and 1,411m of linear features, with compensatory planting and habitat enhancement measures in place. Water quality risks are mitigated through robust drainage and monitoring systems. Bat collision risks are addressed through adaptive turbine management.

Cumulative effects with projects have been assessed. The Proposed Development is not expected to contribute to significant cumulative impacts. In fact, long-term biodiversity benefits are anticipated due to habitat restoration and reduced reliance on fossil fuels.

10. ORNITHOLOGY

This chapter assesses the likely significant effects that the Proposed Development may have on bird species.

Firstly, a brief description of the Proposed Development is provided, along with the relevant legislation, guidance and policy context. This is followed by a comprehensive description of the survey and impact assessment methodologies that were followed to obtain the information necessary to complete a thorough assessment of the potential effects of the Proposed Development on bird species.

The survey data is presented within this chapter and is supported by Appendix 10.3, and Appendix 10.5 Collision Risk Modelling. An analysis of the results is then provided, which discusses the ecological significance of the birds recorded within the Site. The potential effects of the Proposed Development are then described in terms of the construction, operation, and decommissioning phases.

An accurate prediction of the effects is derived following a thorough understanding of the nature of the Proposed Development along with a comprehensive knowledge of bird activity within the Site and surrounds. The identification of Key Ornithological Receptors (KORs) and the assessment of effects follow a precautionary approach.

Based on the detailed assessment, it is considered that the potential effects of the Proposed Development upon birds will not be significant. Effects associated with habitat loss, disturbance/displacement, collision risk and cumulative effects have been assessed to be no greater than a 'low' effect significance (Percival, 2003) or 'slight' effect significance (EPA, 2022).

In conclusion, no significant effects as a result of the Proposed Development are foreseen on the avian community of the Site.

In addition, robust mitigation plan will be followed which will include:

- Prior to construction confirmatory surveys will be undertaken by suitably qualified person prior to the initiation of works at the Wind Farm Site. The survey will aim to identify nests or roosts. The removal of woody vegetation hedgerows and forestry will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022 and will commence outside the bird nesting season 1st of March to 31st of August inclusive.
- It is proposed to undertake bird collision surveys at periods during the lifetime of the wind farm. A report summarising the findings of the bird surveys will be submitted to the Planning Authority and in the light of the information gathered, and if required to ensure no significant adverse impact on the relevant avian population, additional appropriate measures will be agreed with Planning Authority and implemented.

11. SOILS, GEOLOGY AND HYDROGEOLOGY

11.1 Existing Environment

Based on regional and site-specific information available the type of geological/hydrogeological environment as per Figure 2 of the IGI Guidelines is **Type A – Passive Geological / Hydrogeological Environments**.

Based on the TII (previously NRA) methodology (2009), criteria for rating site importance of geological features, the importance of the bedrock and soil features at this site is rated as 'Low Importance' due to local geological attribute has a low quality, significance or value on a local scale.

Based on the TII methodology (2009) the importance of the hydrogeological features at this site is rated as 'medium importance' based on the assessment that the attribute has a medium quality significance or value on a local scale. The aquifer is a locally important aquifer and is not widely used for public water supply or generally for potable use.

The GSI Quaternary mapping indicates the Site is predominantly underlain by a mantle of cut over raised peat (peat). The remaining areas of the Site are underlain by lake marl. In general, the Quaternary deposits across the Site can be categorised as being poorly drained.

The Quaternary geology of the proposed project and surrounding area is presented in Figure 11.1 of Volume IV of the EIAR. Mapping shows the turbines and hardstands are underlain by the following Quaternary deposits:

- Cut over raised peat at turbines **2, 3, 4, 5, 6 and 7.**
- Lake marl at turbines **1, 8 and 9.**

The GSI 1:100,000 scale bedrock mapping (Figure 11.2) indicates the Site is entirely underlain by lower Carboniferous limestone. The Site is fully underlain by the Lucan Formation comprising dark grey-black, fine-grained limestone interbedded with shaly limestones and shales, known as 'calp'.

Groundwater mapping (Figure 11.3) indicates that the entire Site is underlain by a Locally Important Aquifer – Moderately productive bedrock in local zones. The Site lies within the Cushina Groundwater Body (GWB).

According to Flood Info interactive map viewer, there is a risk associated with fluvial flooding within the site, around the Cushina River. The CFRAMS flood extents extend through the east of the site for a "Medium" probability (1 in 100 year) event.

The nearest flood occurrence took place at Bracknagh, on the River Figile, approximately 1km northeast of the site. A Site-Specific Flood Risk Assessment (SSFRA) has been undertaken as part of this submission and is included in Appendix 12.1, Volume III of this EIAR.

The groundwater vulnerability is variable across the site and ranges from 'Low' to 'Moderate' as classed by the GSI.

A peat probe survey was undertaken during January and May 2023 and an additional peat probing survey was carried out in January 2025. Findings from the peat probe survey indicates that peat occurs across the majority of the site, however it is predominantly shallow. The minimum, maximum and mean peat depth recorded out of 354 peat probe locations were 0.1m, 4.2m and 1m respectively. Approximately 94% of peat depths recorded as part of the peat probe survey were less than 2m.

From a review of the GSI Landslide Susceptibility database, the Project and proposed infrastructure locations are almost exclusively within an area mapped as having a 'Low' landslide susceptibility.

There are no known areas of soil contamination on the Site.

11.2 Characteristics of the Proposed Project

The proposed project will involve the removal of topsoil, peat and overburden for the construction of turbine foundations, hardstands, substation, temporary construction compounds, cable route and access roads.

Aggregate for construction of these access roads and hardstands will be imported to the Site.

11.3 Potential Impacts

The environment will change, even without the construction of the proposed project. However, any such changes in the natural environment will be small in nature and will alter the current classification of the site as a passive geological/hydrogeological environmental, nor will it impact on the current importance rating of the site in terms of geology (low) or hydrogeology (medium).

The following on-Site activities have been identified as the sources of potential impacts on the existing geological and hydrogeological conditions during the construction phase of the Project:

Site Clearance

- Topsoil and vegetation clearance
- Permanent felling of approximately 2.8ha of conifer plantation forestry at T02

Earthworks

- Excavation of Topsoil
- Excavation of Peat deposits
- Excavation of Glacial Till
- Construction of a 2.1km long floating road

Filling and Material Deposition Operations

- Deposition of surplus topsoil/peat and spoil in berms for reinstatement purposes around turbine bases hardstands, and along access roads. Material placed alongside access roads will generally not exceed 1m in height and will be shaped and sealed to prevent the ingress of water.
- Importation and filling of site won and imported General Fill and Engineering Aggregates.

Internal Access Roads and Hardstands

- Deposition of surplus topsoil, peat and Glacial Till deposits in berms for reinstatement purposes around, hardstands, temporary construction compound and substation compound.
- Importation and Filling of imported General Fill and Engineering Aggregates.

Internal Cabling and Grid Connection

- The proposed grid connection, associated excavations and ducting may present a preferential pathway for the movement of groundwater and/or contamination in the subsurface. However, the subsoil is predominantly Glacial Till which has a low to medium permeability.
- The excavations for the grid connection trenches and joint bays can have a direct impact on the exposed soils and rock in the form of increased erosion from surface water ingress.
- Where the material excavated from the proposed grid connection excavations are not suitable for reuse as backfill or deposition on Site, this material shall be disposed of at a facility licenced (subject to environmental testing and classification) to accept this waste type.

Very few potential direct impacts are envisaged during the operational phase of the Project. These are:

- Some construction traffic may be necessary for maintenance of turbines, hardstands and access tracks which could result in minor accidental leaks or spills of fuel/oil.
- The grid transformer in the Proposed Substation and transformers in each proposed wind turbine will be oil cooled. There is potential for spills / leaks of oils/battery fluids from this equipment resulting in contamination of soils and groundwater.

The potential impacts associated with decommissioning will be similar to those associated with construction but of reduced magnitude.

During decommissioning, it may be possible to reverse or at least reduce some of the impacts caused during construction by rehabilitating construction areas such as turbine bases and hardstanding areas. This will be done by covering with topsoil to encourage vegetation growth and reduce run-off and sedimentation.

11.4 Mitigation Measures

The following section outlines appropriate mitigation measures by design and best practice to avoid or reduce the potential impact of the Project. Further details are given in the CEMP which is contained in Appendix 2.1 of Volume III of the EIAR.

One of the primary mitigation measures employed at the preliminary design stage is the minimisation of volumes of soil excavation and lengths of track and trench construction.

The proposed turbine locations have been carefully selected in areas of the site which is relatively close to the existing access tracks to minimise the length of new access tracks required. Drainage will be towards the existing drainage network.

To mitigate against erosion of the exposed soil or rock, all excavations will be constructed and backfilled as quickly as possible. Excavations will stop during or immediately after heavy rainfall (>10mm/hour).

Excavation will precede the turbine, cable trench and access track construction, whereby topsoil and soft soils will be excavated and replaced with granular fill where required. Excavation will be carried out from access tracks where possible in order to reduce the compaction of topsoil.

No spoil stockpiles will be left on site after construction.

Any contaminated soils will be handled, removed and disposed of in accordance with the requirements of the local authority and/or EPA and waste management legislation.

Prior to removal of material from site for disposal WAC (Waste Acceptance Criteria) testing should also be undertaken in accordance with recommended standards and in-line with the acceptance criteria at a suitably licenced landfill or treatment facility.

All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Gravel fill will be used to provide additional support to drains where appropriate. Where appropriate and necessary, temporary cuts and excavations will be protected against the ingress of water or erosion by covering during adverse weather. Where necessary sheet piling or other measures will be used to provide integrity for unstable excavations, particularly within peat, alluvial, gravel or for excavations below the water table.

11.5 Residual Impacts

Following the implementation of the mitigation measures to be applied, the wind farm is expected to have a low impact on the receiving environment. As such, The Project is not expected to contribute to any significant, negative cumulative impacts of other existing or known developments in the vicinity. Slight residual cumulative impacts from the excavation of fill material from local quarries and disposal of material deemed unsuitable for reuse are considered to result from the Project by placing demand on existing quarries and available void space at licensed facilities during the construction phase of the development.

11.6 Conclusion

A study has been undertaken which has identified the principal impacts of the construction of the proposed project in relation to the Land, Soils, Geology and Hydrogeology.

The assessment of Land, Soils, Geology and Hydrogeology has established a baseline for the receiving environment for the impact assessment. Potential impacts were considered for the construction, operational and decommissioning phases of the Project as well as potential residual and cumulative impacts. Mitigation measures have been proposed where relevant.

The Project site is not a sensitive site in terms of land, soil, geology and hydrogeology, and poses a low risk for landslide.

Findings from the site walkover surveys indicates no visual evidence of historic or contemporary landslides or ground instability at or adjacent to the proposed infrastructure locations.

A number of potential impacts have been identified associated with the excavation of soil and rock on the site. The significance of these potential impacts is assessed as being '**imperceptible**' to '**moderate/slight**' significance prior to mitigation.

The Project is not expected to result in any significant, negative cumulative impacts with other existing, permitted or proposed developments in the vicinity.

12. FLOODING, HYDROLOGY AND WATER QUALITY

12.1 Existing Environment

Within The proposed wind farm site is located within the Barrow Catchment (ID 14) and the Barrow_SC_040 sub-catchment as defined by the WFD. *The waterbody in this sub-catchment that is crossing the proposed site is known as FIGILE_080 (EPA Name: Cushina 14).*

In addition, the wind farm is located within two sub-basins:

- *FIGILE_070- IE_SE_14F010510.*
- *FIGILE_080- IE_SE_14F010600*.

The elevation range of the overall wind farm site varies between approximately 66 m OD and 59 m OD, and it generally has a flat topography. Turbines will be installed in the range between approximately 64 m OD and 60 m OD.

The main hydrology feature within the wind farm site is the Cushina River (FIGILE_080). A large area of the surface runoff drains into this river within FIGILE_080 sub-basin. The Cushina River runs in an easterly direction, and it is a tributary of the Figile River (FIGILE_080). The remaining of the site drains into FIGILE_070 sub-basin or directly into Figile River. In addition, there are no lakes or reservoirs within the wind farm site study area.

During the Scoping and Consultation process, Inland Fisheries Ireland pointed out that the Cushina River has a "highly degraded hydromorphology".

12.2 Flood Risk

A Site-Specific Flood Risk Assessment (SSFRA) has been prepared for the Proposed Development and is presented as Appendix 12.1 of Volume III of the EIAR. The SSFRA investigated the local hydrological conditions relevant to the proposed wind farm and the TDR watercourse crossing. The study indicates that the proposed development, including a section of the TDR, is susceptible to fluvial flooding during 1-in-100-year (Flood Zone A) flood events, as identified in Stage 1 – Flood Risk Identification and further analysed in Stage 2 – Initial Flood Risk Assessment. It was also established that the site is affected by pluvial flooding, as evidenced by historical records.

The areas particularly affected include turbines T1, T4, T5, T8, and T9, along with their associated access tracks, as well as other areas where localised impacts on access roads were identified. A proposed bridge crossing the River Cushina is necessary to access the turbines located on the southern side of the site and to facilitate the grid connection route.

Mitigation measures have been incorporated to minimise potential impacts, protect the proposed development and its surroundings, and reduce any residual flood risks. It is therefore considered that any residual risks associated with the development can be managed to an acceptable level and that the proposed works are not expected to have a negative impact on flood extents or levels either on-site or elsewhere. The increase in flood levels resulting from the inclusion of the proposed bridge and associated infrastructure is within acceptable limits and not considered significant. In the case of the TDR watercourse crossing, the increase in flood levels is considered negligible.

12.3 Description of Proposed Project

Surface water drainage features will be installed as part of the construction phase and retained where required such that they can be used during the decommissioning phase, ensuring that there would be no increase in the risk of surface water flooding to off-site areas during any phase of the Project. Further details of proposed site drainage is included in the Surface Water Management Plan, which forms Appendix 12.1, Volume III of this EIAR, and in the 1:500 series layout planning drawings (P22-145-0100-0006 to P22-145-0100-0059).

The drainage strategy within internal areas of the Site will incorporate three main components of Sustainable Drainage Systems (SuDS):

- Interceptor drains;
- Swales; and
- Settlement Ponds

The substation will be drained via an underground piped surface water drainage network. The network will also utilise linear drainage channels and filter drains.

The network will discharge overland via a Class 1 Full Retention Oil Separator at a restricted greenfield rate. Attenuation for flows exceeding this rate will be provided within an underground tank.

In accordance with SuDS best practice, a rainwater harvesting tank will be included. Rainwater will be filtered and stored within the underground tank for reuse.

There will also be no discharge of foul flows from welfare units within the substation, with water stored in tanks and removed from site by a contractor.

There will be 49 drain crossings and one watercourse crossing within the wind farm site. It is proposed to construct one single-span bridge to cross the Cushina River between T6 and the on-site substation. The proposed crossing design will be is in line with consultation feedback and in accordance with Inland Fisheries Ireland (IFI) 2016 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' and TII 2008 'Guidelines for the Crossing of Watercourses During the Construction of Road Schemes'. Details of proposed crossing structures are presented in planning drawing P22-145-0300-0001 and the location of the crossing is shown on planning drawing P22-145-0100-0001.

The turbine delivery route will utilise a number of existing watercourse crossings. In addition, a new single span bridge will be constructed along the TDR to cross the Philipstown River, constructed adjacent to the existing Philipstown Bridge.

There will be seven crossing points comprising six watercourse crossings and one dry stone arch bridge crossing at a disused canal. There will be six Horizontal Directional Drilling (HDD) and one flat formation crossing within the road above an existing culvert.

12.4 Potential Impacts

The use of cementitious materials like concrete, cement, or lean mix can lead to changes in soil and water pH, as well as increased concentrations of sulphates and other constituents found in concrete, which can further impact water quality. Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. They can generate very fine, highly alkaline silt (pH 11.5) that can alter water chemistry. A pH range of between 6-9 is set in the Surface Waters Regulations (for hard water) as the standard required to support Good / High WFD Status. Inland Fisheries Ireland (2016) 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' prescribe that artificial variations in waters must not be in excess of ±0.5 of a pH units.

All of the wind turbine foundations are located a minimum of 50 m away from any all watercourses and as such it is unlikely that surface water runoff from these installations would enter watercourses. Where land drains are traversed by the development infrastructure these will be intercepted by clean water interceptor drains and carried as needed by cross drains. This drainage separation of clean water channels from dirty water sources will be in place in advance of the works and as such it is unlikely that concrete runoff would enter the clean surface water drainage. The footings of the new bridge crossings are setback 2.5m landward from the riverbank to retain riverbank integrity. Given the proximity of the bridge to the river, it is likely that pre-mitigation concrete runoff could enter the waterbody.

Other foundation works, i.e. for joint bays and the substation foundation, are not located within 50m of any watercourse. Given setback, it is unlikely that surface water runoff from these installations would enter watercourses.

New culvert crossings will be required in land drains. Pre-mitigation, release of concrete to the aquatic environment is likely.

During the construction phase of the Development, the utilization of plant, equipment and vehicles for excavation, material transport, and construction activities introduces the potential for hydrocarbon spillages and leaks which might enter the aquatic environment, especially during regular refuelling procedures. If hydrocarbons are accidentally introduced into the environment, they are expected to be intercepted by the drainage and surface water networks that will be constructed as part of the Proposed Development in accordance with the surface water management plan. However, areas of particular risk of water pollution are where works will be carried out in stream or on the riverbank i.e. for culvert and bridge construction.

During the operational phase, accidental pollution from spills and leaks of fuel, oil and chemicals from vehicles and maintenance works may occur. Additionally, transformer oil will be used in cooling the transformers associated with the sub-station which creates potential for oil spills during any oil replacement activity or leaks during the operational phase, although the likelihood of this is low. Additionally, permanent drains and settlement ponds will be installed and maintained across the Site as shown on the 1:500 series layout planning drawings (P22-145-0100-0006 to P22-145-0100-0059). These will act to attenuate any accidental spills such that they can be controlled and managed in a timely manner.

In the event of decommissioning of the Wind Farm site, similar activities to the construction phase are carried out. Potential impacts would be similar to the construction phase but to a lesser degree.

In the case of the Proposed Development, both the Moanvane Wind Farm and the Cushina Wind Farm share the same sub-catchment. Due to the distance from site, the Moanvane Wind Farm is unlikely to act cumulatively with the Proposed Development. However, the Cushina Wind Farm is located in relatively close proximity to the Proposed Development and would be likely to act cumulatively with the Proposed Development. Provided the Cushina project implements SuDS drainage design, sizes all watercourse and drain crossings appropriately, and does not have a construction phase that overlaps with the Proposed Development, there will not be any significant cumulative impacts arising.

12.5 Mitigation Measures

Proposed drainage measures to reduce and protect the receiving waters from the potential impacts during the construction of the proposed development are as outlined in detail in Section 12.9 of Chapter 12 of Volume II of the EIAR. These include measures to prevent runoff erosion from vulnerable areas and consequent sediment release into the nearby watercourses to which the proposed development site discharges and the appointment of a suitable qualified person to oversee the implementation of mitigation measures.

It is not envisaged that the operation of the wind farm or the substation will result in significant impacts on the hydrological regime or water quality of the area, as there will be no further disturbance of soils post-construction, and only a minimum of traffic movement.

The conceptual drainage has been designed to operate effectively during the operation period. The stilling ponds will be a permanent feature and will continue to be effective in filtering the run-off from the site should any accidental release of silt combine with the surface water run-off during operational activities.

During the operation period the swales will have vegetated and will serve to attenuate flows and remove suspended solids from the run-off.

12.6 Residual Impacts

The residual significance of the effects of the Proposed Development on sensitive downstream receptors is expected to be low taking account of mitigation measures outlined.

Following the implementation of mitigation measures, the residual risk to receiving watercourses from hydrological impacts would be negligible during the construction period and negligible during the operation of the Proposed Development. The implementation and efficacy of the mitigation measures will be monitored throughout the construction and operation phases.

Mitigation systems will be in place before development works commence.

13. SHADOW FLICKER

Under certain combinations of geographical position, wind direction, weather conditions and times of day and year, the sun may pass behind the rotors of a wind turbine and cast a shadow over the windows of nearby buildings. When the blades rotate and the shadow passes a window, to a person within that room the shadow appears to 'flick' on and off; this effect is known as 'shadow flicker'. The phenomenon occurs only within occupied buildings where shadows are cast across a window aperture, and the effects are typically considered up to a maximum distance of 10 times the rotor diameter from each wind turbine.

The potential for shadow flicker to occur and the intensity and duration of any effects depend upon the following factors:

- the location and orientation of the window relative to the turbines;
- whether a window has direct, unobstructed line of sight to the turbine rotor;
- the distance of the building from the turbines;
- the turbine geometry;
- the time of year (which impacts the trajectory of the sun's path across the sky);
- the frequency of cloudless skies (particularly at low elevations above the horizon); and,
- the wind direction (which impacts on turbine orientation).

All seven conditions outlined above must exist simultaneously for shadow flicker to occur at a dwelling. Shadow flicker does not generally have any effect on health or safety but could on limited occasions present a brief nuisance effect for some human receivers.

Potential levels of shadow flicker were predicted using specialist computer software for all buildings within 10 rotor diameters of the turbines. A two-stage approach was used, which initially identified areas in which shadow flicker has the potential to occur, and for all properties within this area, detailed predictions were undertaken based on the dimensions of each building. Predictions were undertaken using several worst-case assumptions, including a bare-earth model and optimal weather conditions for shadow flicker to occur, and that the full external façade of each building was sensitive to shadow flicker (rather than specific window locations).

Predicted levels of shadow flicker at each property were assessed against applicable threshold levels as set out in national guidance. This assessment considered both worst-case predictions, and predictions that had been corrected to reflect typical monthly hours of sunshine based on meteorological data.

Properties where predicted levels exceed daily and yearly thresholds were identified as requiring mitigation. Mitigation is available in the form of a wind turbine control system which ceases operation of specific wind turbines during periods and conditions where shadow flicker is anticipated to occur.

Beyond the requirements of national guidance, mitigation (in the form of targeted turbine shut-downs during shadow flicker events) will be implemented at all sensitive properties within 10 rotor diameters of the turbines to ensure there is minimal shadow flicker occurrence at any receptor, subject to the response time of the system.

13.1 Existing Environment

All receptors identified within the study area are assumed to be either residential or mixed residential and commercial buildings, and are located in a predominantly flat, rural landscape, with no major towns or large villages present. The majority of the area around the Proposed Wind Farm is bogland, farmland and limited forestry, with trees and hedges along the field boundaries. With the limited potential for screening (i.e. proposed wind turbines well above ground), most of the receptors considered in this chapter are therefore likely to have clear line of sight to the proposed turbines.

There are no existing wind turbines located within 10 rotor diameters of the properties considered in this assessment. The nearest wind farm to the Proposed Wind Farm is Cushina Wind Farm (Pre-Application) located approximately 4.3 km northwest of the Proposed Wind Farm.

Operational wind turbine developments include Cloncreen Wind Farm approximately 10.6 km to the north, Mount Lucas Wind Farm approximately 11.1 km to the north. Nearby permitted developments include Cushaling Wind Farm approximately 12 km to the north-east, Moanvane Wind Farm approximately 18.6 km to the west and Yellow River Wind Farm approximately 19 km to the north; all three developments are currently under construction.

13.2 Potential Impacts

Total theoretical maximum levels exceed 30 hours per year at 11 receptors. When considering the cloud corrected scenario accounting for typical sunshine hours, no receptors would exceed 30 hours per year.

Potential daily shadow flicker has been assessed based on the theoretical maximum levels, as the correction for annual average sunshine hours applied to the yearly levels cannot be applied on a daily basis. The data used to derive the correction is based upon monthly averages, which cannot be applied to daily levels with sufficient accuracy. Periods of cloudy weather are more likely to reduce the number of days shadow flicker can occur, rather than reduce the length of individual shadow flicker occurrences. As such, the assessment of daily impacts considers the maximum theoretical amount of shadow flicker only and is inherently conservative.

13.3 Mitigation Measures

Shadow flicker control modules, consisting of light sensors and specialised software, will be installed on the turbines to ensure that mitigation is implemented to reduce shadow flicker occurrence at any receptor. The calculated theoretical shadow flicker periods can be input into the turbine control software and when the correct on-site conditions are met (i.e. the light intensity is sufficient) during operation, then individual turbines would cease operation until the on-site conditions are no longer present, or the theoretical period has passed.

Dara Energy Ltd are willing to provide protection from shadow flicker by committing to shutting down turbines for all instances where shadow flicker effects may occur in theory at residential dwellings within 10 rotor diameters of the turbines, this procedure is defined as "zero shadow flicker" mitigation. The "zero shadow flicker" mitigation strategy will reduce to near zero hours a year any shadow flicker that could potentially occur at the residential dwellings, however, it should be noted that when the conditions for shut down due to shadow flicker are met, there may be a short period of time before complete shutdown occurs as the turbines gradually come to a stop. This will depend on the reaction time of the shadow flicker control modules and the particular turbine type, as well as a gradual reduction in rpm i.e., the blades will not come to a sudden stop.

13.4 Residual Impacts

The results of the shadow flicker assessment predict that the Proposed Wind Farm has the potential to introduce shadow flicker at up to 47 receptors surrounding the site. The implementation of a scheme of mitigation to cease operation of the turbines during periods of potential shadow flicker events will ensure that the potential for shadow flicker effects to occur is minimised through the implementation of a "zero shadow flicker" strategy for all relevant receptors within 10 rotor diameters of a turbine.

It is therefore considered that the Proposed Wind Farm complies with the shadow flicker policy as set out in the Wind Energy Development Guidelines 2006.

13.5 Conclusion

A shadow flicker assessment has been undertaken to identify all sensitive receptors within the 10-rotor diameter study area, and to assess potential shadow flicker effects at the 52 receptors identified within the calculated area theoretically susceptible to shadow flicker.

Predictions of Shadow Flicker occurrence were made using the software WindPro for a theoretical maximum scenario and a more realistic scenario accounting for the percentage of sunlight hours.

The guideline threshold of 30 hours per year is exceeded at 11 receptors when considering a theoretical maximum scenario, however when a cloud-corrected scenario was considered, no receptors exceed the 30 hours per year threshold. A separate criterion of daily occurrence was assessed, and it was found that at 17 receptors the maximum predicted theoretical daily levels shadow flicker may exceed the threshold of 30 minutes per day. It should be noted that this is the maximum level that may be experienced daily, and in reality, typical levels will be lower. Mitigation measures are therefore recommended.

A "zero shadow flicker" strategy will be implemented using turbine control software to cease turbine operation during periods when shadow flicker is predicted to occur. If this mitigation strategy is adopted, then minimal (near zero hours a year) shadow flicker would occur at any relevant receptors with habitable rooms and windows within 10 rotor diameters of the wind farm.

No cumulative impacts with other proposed or operational wind farms in the area are predicted to occur on any receptors in the study area.

As such, no significant shadow flicker impact is predicted at nearby receptors following implementation of mitigation measures such as a shadow flicker control system.

14. TRAFFIC AND TRANSPORTATION

14.1 Existing Environment

The study area for the traffic and transportation study includes the main wind farm site along with the surrounding road network leading to and from the main wind farm site. The site entrances and roads associated with the turbine delivery route and haul routes are assessed.

The nearest motorway to the site is the **M7** which is a primary east-west motorway connecting Dublin to Limerick. The M7 is located approximately 6.80 km to the southeast (straight line distance) of the site.

The **M6**, approximately 25km northwest (straight line distance) of the site, is utilised for the Turbine Delivery Route (TDR) which departs at Junction 5 of the M6 motorway. In addition, one of the haul routes is located on approximately 16km of the M6 before turning south towards the site on the N52.

The nearest national primary road is the **N7**, which is located approximately 31km to the east (straight line distance) of the site. The N7 forms part of the route from Dublin to Limerick where it merges into the M7 near Naas.

The closest national secondary road to the site is the **N80**, located approximately 16.45km to the west of the site (straight line distance). The N80 connects Portlaoise to Tullow in Co. Carlow. The **N52**, located at the northern end of N80 at Tullow, forms part of the TDR and haul routes.

The nearest regional road is the **R419** where the main site entrance is located. The R419 runs from the town of Portarlington in County Laois, heading northeast to Rathangan in County Kildare. The R419 forms approximately 1.10 km of the TDR and haulage routes.

The TDR utilises a large section of the **R400** regional road which connects Mullingar in County Westmeath to Cushina in County Offaly, crossing the M6 motorway. The R400 forms approximately 14.8 km of the TDR, 3.9km of haul route 1 and 25.6km of haul route 2.

The GCR travels along short sections of the R424 and R420 regional roads where the R424 (approx. 1.62 km of the GCR) merges into the R420 (approx. 1.86km of the GCR) before turning into the Bracklone 110kV substation.

The GCR also proposes the use of the L70481, L71764, L7050, L7051 and L7176, L71761 local roads.

14.2 Potential Effects

The likely traffic that will be generated by each phase of the Proposed Development (construction, operation and decommissioning) is estimated to identify potential disruptions to existing road users and is based on a 24-month construction programme and a 35-year operational life.

Site access points are assessed for suitability in the context of both TII and Local Authority requirements for both geometric design and visibility.

The construction activities associated with the Proposed Development will lead to additional construction related traffic on the existing public road network over the duration of the construction works. Without appropriate mitigation measures, the proposed work has the potential to lead to a negative impact on the existing road network.

The traffic impact associated with the grid connection cable works will fall into two main categories, the construction traffic related impacts and the road/lane closure related impacts. The use of heavy goods vehicles, light goods vehicles and the transport of materials will be involved with the grid connection works. The grid connection construction works will require temporary road/lane closures along the proposed route with traffic management measures such as stop/go systems.

All road works will be subject to a road opening license, but it is anticipated that the cable installation along local roads will be advanced using a combination of rolling lane closures and temporary road closures where the existing road width is insufficient to accommodate an open lane for traffic to pass the works area.

The delivery of turbine components including blades, tower sections and nacelles is a specialist transport operation owing to the oversized loads involved. The blades are the longest component and have been considered for the purpose of this assessment.

Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company. Turbine deliveries will also be escorted by An Garda Siochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimized.

As further described in Chapter 14: *Traffic and Transportation*, accommodation works are required along the turbine delivery route such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and temporary local road widening through the laying of compacted aggregate to verges. Prior to mitigation measures, this could include a negative impact on the existing road network such as delay and disruption to road users, road safety issues, inappropriate parking of construction vehicles, soiling of the public road and existing public road infrastructure damage.

A small number of full-time wind farm personnel are expected to be present during the operational phase of the project.

Unforeseen or unplanned events such as emergency turbine repair works could potentially require the mobilisation of construction plant and personnel to site or grid connection route. The replacement of a large turbine component such as a blade will require a crane and the re-installation of some turbine delivery route temporary accommodation works. In such an event, it is considered that negative or adverse effects on the receiving environment will be temporary in duration and non-significant following appropriate mitigation measures.

The potential impacts associated with the decommissioning phase will be significantly less than the construction phase due to the considerably lower number of vehicular movements.

14.3 Mitigation Measures

A number of mitigation measures will be employed during construction to reduce, minimise or eliminate the potential effects created by the Proposed Development. These measures include a detailed Traffic Management Plan (TMP) which will be agreed with the roads authority and An Garda Siochána prior to commencing construction.

Mitigation measures proposed for the grid connection works include:

- **Road Opening:** The road works associated with cable trenching works will be completed in line with the requirements of a road opening license as agreed with the local authority.
- **Route Proofing:** In advance of the cabling works an assessment will be carried out to define the precise alignment of the cable route within the corridor which has been assessed. This will include slit trenching with the aim of minimising the construction impacts and avoiding existing services in the road.
- **Road Cleanliness:** Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. Road sweeping vehicles will be used, when necessary, to ensure that the public road network remains clean.
- **Temporary Trench Reinstatement:** Trenches on public roads, once backfilled, will be temporarily reinstated to the satisfaction of the roads authority.
- **Surface Overlay after Trench Reinstatement:** Following temporary reinstatement of trenches on public roads, sections of the public roads will receive a full surface overlay. Details will be agreed with the roads authority. At a minimum they will be reinstated to their pre-works condition or better and to the satisfaction of the roads authority.

The turbine delivery route has been assessed using a detailed appraisal of potential routes and the identification of the most appropriate route including the accommodation requirements along the route to mitigate the impact of the turbine delivery. The impact of the deliveries on traffic is mitigated by delivering components during off-peak or night-time deliveries. Mitigation measures proposed for the turbine delivery route include:

- **Programme of Deliveries:** A programme of deliveries will be submitted to the roads authority in advance of deliveries of turbine components to the site. The programme will include details of the dates and times of each component delivery along with the route to be taken. Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company.
- **Unloaded Trial Run:** Vehicles with similar dimensions of the abnormal load vehicles will complete an unloaded run of the route to ensure all temporary accommodation works are suitable for the loaded convoy.
- **Garda Escort:** Turbine deliveries will be escorted by An Garda Siochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimised.
- **Reinstatement:** Any area affected by the works to facilitate turbine delivery will be fully reinstated to its original condition.
- **Consultation:** Consultation with the local residents and Laois County Council, Kildare County Council, and Offaly County Council will be carried out in advance to manage turbine component deliveries.

During the operational phase of the Proposed Development, site entrances are to be maintained continually to ensure visibility conditions at these entrances have not deteriorated. Hedgerow maintenance will be required periodically to ensure continued visibility at site entrances.

Once the decommissioning phase commences, traffic impact associated with the decommissioning phase will be significantly less than the construction phase. Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no impacts are envisaged upon decommissioning of the Proposed Development and no mitigation is required. All decommissioning works are to be carried out in accordance with a decommissioning plan to be agreed with the planning authority in advance of the decommissioning works. Traffic management measures identified will be included in the decommissioning plan for the Proposed Development.

15. ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

Chapter 15 of the EIAR presents a cultural heritage impact assessment for the Derrynadarragh Wind Farm (hereafter 'the Site'), as well as the associated grid connection and turbine delivery route. The cultural heritage resource encompasses tangible assets, such as archaeological sites and architecture heritage structures, and non-tangible assets, including historical associations, folklore, tradition, place names.

Mitigation measures to reduce or eliminate effects on the cultural heritage resource are prescribed as necessary. The assessment also considers the cumulative impacts associated with other nearby developments.

A scoping report for the Proposed Development was issued to the National Monuments Service, Department of Housing, Local Government and Heritage via the Development Applications Unit (DAU ref. G Pre00395/2024). The archaeological observations/recommendations received in response from the Department on 07/02/25 note that the applicant is required to engage the services of a suitably qualified archaeologist to carry out an Archaeological Impact Assessment of the development site which should:

a) examine the known and predicted archaeological environment
b) examine the proposed development
c) evaluate the proposed development in terms of the impact (direct and indirect) of the proposed works on existing or predicted archaeology
d) propose a strategy to mitigate any adverse effects of the development on the archaeological heritage.

The Department's response also states the following:

> *The archaeologist should carry out any relevant documentary research and inspect the site. Field survey, topographical survey or geophysical survey should be undertaken as the initial phase of assessment, as appropriate. Based on the results of the initial investigations test excavation may be appropriate. Following further consultation with the Department test trenches may also be excavated at locations chosen by the archaeologist (informed by the results of the previous methods of non-intrusive assessment) to target the results of the topographical and/or geophysical analysis.*
>
> *A Visual Impact Assessment of the impact of the proposed development on adjacent archaeological material shall be carried out. Views to and from adjacent archaeological monuments shall be assessed in light of the proposed development and views of the monuments from all adjacent roads and approach roads assessed in relation to the proposed works.*

The cultural heritage baseline was established through desktop studies and field-walking inspections which were carried out to identify and assess any cultural heritage constraints which may be subject to effects arising from the Proposed Development. This included a desktop review of all recorded archaeological sites, protected structures and structures listed in the National Inventory of Architectural Heritage (NIAH) within a primary study area that encompassed the lands within the Site as well as lands extending for 2km in all directions from its location. A review of the wider landscape extending for 10km from the Site was also carried out to assess potential visual effects on cultural heritage constraints that may have potential visual sensitivities that extend beyond their immediate settings. These included National Monuments in State Care, archaeological sites subject to Preservation Orders and monuments with potential ritual visual alignments across the wider landscape such as stone circles, stone rows and megalithic tombs. In addition, a review of the cultural heritage baseline was also carried out for lands extending for 100m from the locations of the grid connection route and localised works areas required to facilitate the delivery of turbines to the Site. The significance of effects on cultural heritage constraints within these reviewed areas was assessed by establishing the relevant constraint's value/sensitivity in combination with the magnitude of any potential impacts arising from the Proposed Development.

There are no recorded archaeological sites located within the Site, and no potential previously unrecorded features of cultural heritage significance were noted during the desktop studies and site inspections carried out as part of this assessment. There are fifteen recorded archaeological sites located within the 2km of the Site and the Archaeological Survey of Ireland record that none of these retain surviving surface remains. The nearest archaeological site to a proposed development area within the Site comprises a levelled enclosure (KD021-009) located 130m to the south. There are three extant buildings listed in the current County Offaly Record of Protected Structures located within 2km of the Site and two of these are also included in the NIAH, which assigns them a regional rating. None of buildings these are located within 850m of any proposed development areas within the Site.

There are no National Monuments in State Care located within 10km of the Site. There are three archaeological sites within the 10km area subject to Preservation Orders under the National Monuments Act 1930 (as amended). These comprise two early medieval ringforts (PO 16/1956 and PO 10/1970), located at distances of 6.7km and 7.9km from the Site, and the recorded site of a levelled burial ground (PO 5/2000) located c.3km from the Site. The landscape extending for 10km in all directions from the Site does not contain any recorded archaeological monuments with potential ritual visual alignments such as megalithic tombs, stone circles, stone rows and standing stone pairs.

There are three designated architectural heritage structures located within the 100m wide corridor centred on the public roads that the grid connection route follows, and these comprise three road bridges listed in the County Laois Record of Protected Structures. These include two road bridges on public roads that the route follows, and these are Baylough Bridge (RPS 827) and Bergin's Bridge (RPS 826). The proposed crossing methodology at the location of these bridges will comprise horizontal directional drilling which will not require any interventions to these structures. The third protected structure comprises Wheelahan's Bridge (RPS 547) which is located c.50m to the south of the grid connection route. There are no recorded archaeological sites located within the 100m corridor centred on the grid connection route. The turbine delivery route will require ground works within two green field areas. There are no recorded cultural heritage constraints within these areas, and no potential unrecorded constraints were noted during desktop reviews and site inspections of these locations.

Based on the baseline conditions summarised above, no likely significant construction, operational, decommissioning or cumulative effects on the known cultural heritage resource will arise as a result of the Proposed Development. The potential exists for the presence of unrecorded, sub-surface archaeological sites/features in green field areas within the Proposed Development and a programme of archaeological test trenching at proposed development locations will be carried out by a suitably qualified archaeologist in advance of the construction phase. Archaeological monitoring of construction phase ground works will be carried out within any areas not suitable for advance test trenching, e.g. forested areas. These site investigations will be carried out under licence by the National Monuments Service, Department of Housing, Local Government and Heritage. In the event that any sub-surface archaeological features are identified, they will be recorded by the appointed archaeologist and will then be securely cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation in situ (by avoidance) or preservation by record (archaeological excavation). Following the successful implementation of these mitigation measures, no likely significant residual effects on the cultural heritage resource will arise as a result of the Proposed Development.

15.1 Existing Environment

There are fifteen recorded archaeological sites located within the 2km study area around the Site. The archaeological sites within the study area that are located within third-party properties were not accessible during the compilation of this assessment. A review of available Archaeological Survey of Ireland (ASI) inventory descriptions, which are available for review on the NMS Historic Environment Viewer[15], was therefore carried out in combination with reviews of historic Ordnance Survey maps as well as aerial/satellite images of their locations as published by Tailte Éireann, Google Earth and Bing Maps. This review revealed that the ASI have recorded that all of the archaeological sites within the 2km study area are levelled, and none retain visible surface traces. None of the recorded archaeological sites within the 2km study area are designated as National Monuments in State Care or are subject to Preservation Orders, but all are protected under the National Monuments Act 1930 (as amended).

There are no National Monuments in State Care located within 10km of the Proposed Development and the nearest example comprises Dunamase Castle (National Monument no. 615) which is located c.18km to the south-southwest of the Site. There are three archaeological sites located within 10km of the Site which are subject to Preservation Orders under the National Monuments Act 1930 (as amended). These comprise two early medieval ringforts and a burial ground of potential medieval date. None of these archaeological sites are located within 3km of the Site and they do not comprise monument types that possess ritual alignments that extend across the wider landscape.

The location of the Proposed Development was inspected by the specialist in January 2025 in clear weather conditions that allowed good landscape visibility. In general, the topography within the Site is relatively level with localised areas of natural undulation and current land use comprises a combination of areas of reclaimed pasture farmland and cutaway bogland. Details on the existing environment at the locations of Proposed Development areas are presented in Table 15-10 in Chapter 15, Volume II of the EIAR. This table includes the distances of turbines and other infrastructure within the Site to the nearest cultural heritage constraints and also collates summaries of development locations as shown on modern aerial/satellite images and the 1st edition 6-inch (1839) and 25-inch edition (1912) OS maps.

15.2 Potential Impacts

There are no recorded archaeological sites located on the footprint of, or directly adjacent to, any of the proposed construction areas within the Site and no potential unrecorded archaeological sites were identified within these areas during the desktop study and field inspections carried out as part of this assessment. Given these factors, no direct impacts on the known archaeological resource are predicted during the construction phase.

There are no recorded archaeological sites located on the direct footprint of the grid connection route and, therefore, no predicted direct effects on the known archaeological resource are predicted during the construction phase.

There are fifteen recorded archaeological sites located within the 2km study area around the Site and the Archaeological Survey of Ireland record that none of these sites retain visible surface remains (Table 15-5). All of these sites are located within private lands which are not accessible to the public and have no tourist or amenity attributes. None are National Monuments in State Care, are subject to Preservation Orders or are monument types that have potential visual attributes associated with ritual practices such as alignments across the landscape towards astronomical events, e.g., stone circles, stone rows or megalithic tombs, that could be potentially impinged upon by wind turbines.

No direct or indirect effects on known elements of the cultural heritage resource are predicted during the decommissioning phase as there are no recorded cultural heritage constraints located within the footprint or immediate environs of the various elements of the Proposed Development that will be subject to decommissioning.

15.3 Mitigation Measures

A process of 'mitigation by avoidance', as informed by constraints assessment and consultation, was undertaken by the EIA team during the design of the wind farm layout and selection of grid connection (refer to Chapter 3 - Site Selection and Alternatives for further detail) with the objective of avoiding / minimising the potential for significant effects on known cultural heritage constraints.

There are a number of obligatory processes to be undertaken as part of applications to the National Monuments Service for archaeological and test trenching and monitoring licences which will allow for monitoring of the successful implementation of the archaeological mitigation measures. These include the submission of application forms and method statements detailing the proposed strategies for all site investigations, including the processes to be enacted in the event of the discovery of any archaeological remains. A report will be compiled on all archaeological site investigations following their completion in order to comply with the National Monuments Service licensing requirements. The report will clearly present the results of all archaeological works in written, drawn and photographic formats and copies will be submitted to the National Monuments Service, the Planning Authority and the National Museum of Ireland.

The following mitigation measures are proposed:

- All groundworks associated with turbine bases, access tracks, internal cabling, drainage, hardstanding areas and the substation will be subject to archaeological monitoring under licence from the National Monuments Service DHLGH.
- In the event that archaeological material is discovered during construction, works will cease in the affected area and the relevant statutory authorities will be notified immediately.
- Any required mitigation, such as preservation in situ or excavation, will be agreed with the National Monuments Service.
- A baseline condition survey will be carried out for Johnstown Bridge (RPS B04-25) along the turbine delivery route which will be monitored during construction phase.
- The construction team will be made aware of cultural heritage constraints to ensure that no accidental impacts occur.
- All works will be carried out in accordance with national heritage legislation and in consultation with the relevant authorities.

15.4 Residual Impacts

The archaeological mitigation measures presented in Section 15.10 entail programmes of pre-construction test trenching and construction phase monitoring which will be carried out by a suitably qualified archaeologist. The implementation of these measures will provide for either the preservation in situ by avoidance of any currently unknown, sub-surface archaeological remains identified during these site investigations or the proper and adequate recording of such remains by a full archaeological excavation carried out under licence by the National Monuments Service. Preservation in situ shall allow for a negligible magnitude of effect resulting in a potential not significant/imperceptible significance of effect in the context of residual effect on the unrecorded archaeological resource. Preservation by record shall allow for a high magnitude of effect, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which shall be publicly disseminated. This shall result in a potential slight to moderate range of significance of direct effects in the context of residual effects on the unrecorded archaeological resource.

No adverse direct residual impacts on the cultural heritage resource are predicted to arise as a result of decommissioning.

15.5 Conclusion

With the implementation of the recommended mitigation measures, the Derrynadarragh Wind Farm is not predicted to result in any significant adverse effects on known cultural heritage assets. Any residual impacts will be localised and primarily visual in nature, and the potential for unknown subsurface features will be managed through appropriate archaeological practices.

16. LANDSCAPE AND VISUAL IMPACT

This chapter examines the potential effects of the proposed Derrynadarragh Wind Farm, associated grid connection and turbine delivery route on the landscape and visual amenity of the receiving environment. Where significant effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment will consider the potential effects during the construction, operational, and decommissioning phases.

Landscape Impact Assessment (LIA) relates to assessing effects of a development on the landscape as a resource in its own right and is concerned with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. **Visual Impact Assessment (VIA)** relates to assessing effects of a development on specific views and on the general visual amenity experienced by people. **Cumulative landscape and visual impact assessment** is concerned with additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.

16.1.1 Study Area

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (DOEHLG) (2006/2019 revision) (WEDG) specify different radii for examining the zone of theoretical visibility of proposed wind farm projects (ZTV). In the case of this project, the blade tips are proposed to be 186/187m high and therefore the minimum ZTV radius recommended is 20km from the outermost turbines of the scheme. There are not considered to be any sites of national or international importance between 20 – 25km of the outermost turbines of the Proposed Development and thus, the radius of the Study Area will remain at 20km.

16.2 Existing Environment

The landscape baseline represents the existing landscape context and is the scenario against which any changes to the landscape brought about by the Proposed Development will be assessed. This also includes reference to any relevant landscape character appraisals and the current landscape policy context (both are generally contained within County Development Plans). The Proposed Development is contained partially in the Kildare County Development Plan (2023-2029) and partially within the Offaly County Development Plan (2021-2027). A large portion of the southwest extents of the Study Area falls within County Laois, and the Laois CDP (2021-2027) will therefore be assessed.

The landform of the Study Area is predominantly flat to gently undulating, characteristic of its wider midlands setting. Elevation within the Central Study Area is relatively uniform, generally ranging between 60 m and 80 m AOD. Due to the flat and often boggy nature of the study area, much of which encompasses peatland, watercourses are generally minor and dispersed consisting of a dendritic pattern of meandering streams and artificial drains.

A number of watercourses are present within the Central Study Area. The River Cushina, a tributary of the River Barrow, flows through the wind farm site, marking the boundary between Counties Offaly and Kildare. To the east, the River Figile flows broadly north to south, approximately 570 m from the nearest proposed turbine. The River Barrow is the most extensive watercourse within the Study Area, located approximately 2.7 km south of the nearest turbine. It flows west to east across the southern part of the Study Area, before turning north-eastward.

In the Wider Study Area, the landform becomes more varied, with a number of localised elevated features rising above 100 m AOD. These include Geashill (107 m AOD) to the west; two modest hills near Daingean to the northwest (116 m and 119 m AOD); and a hill with a ringfort at Ballykilleen (106 m AOD). Further south, Garryvacum Hill (123 m AOD) and the elevated woodland and trails of Moore Abbey (122 m AOD) provide further topographic variety. A series of hills are also located along the eastern and north-eastern side of the Study Area, including the Hill of Allen, Boston Hill, Grange Hill, Dunmurry Hill and Red Hill. Other notable landforms within the Wider Study Area include the Bog of Allen to the north

Land cover within the Central Study Area comprises a mosaic of cutaway peatland interspersed with areas of marginal farmland, reverting scrub, and forestry concentrated around the peatland fringes. These areas are interspersed with more intensively managed agricultural land, generally located on better-drained soils. Field sizes within this farmland vary from small to large, reflecting differing levels of land use intensity.

16.3 Policy Environment

16.3.1 Department of Environment, Heritage and Local Government Wind Energy Development Guidelines (2006) *and draft revised 2019 Wind Energy Development Guidelines*

The Wind Energy Development Guidelines (2006/2019 revision) provide guidance on wind farm siting and design criteria for a number of different landscape types. The receiving landscape of the proposed wind farm development is consistent with both the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape types from the Wind Energy Development Guidelines.

The most relevant recommendations for the 'Flat Peatland' Landscape Type are set out below:

'Flat Peatland':

Location - *"can be placed almost anywhere in these landscapes from an aesthetic point of view. They are probably best located away from roadsides allowing a reasonable sense of separation. However, the possibility of driving through a wind energy development closely straddling a road could prove an exciting experience."*

Spatial extent - *"The vast scale of this landscape type allows for a correspondingly large spatial extent for wind energy developments."*

Spacing - *"Regular spacing is generally preferred, especially in areas of mechanically harvested peat ridges."*

Layout - *"In open expanses, a wind energy development layout with depth, preferably comprising a grid, is more appropriate than a simple linear layout. However, where a wind energy development is located close to feature such as a river, road or escarpment, a linear or staggered linear layout would also be appropriate."*

Height - *"Aesthetically, tall turbines would be most appropriate. In any case, in terms of viability they are likely to be necessary given the relatively low wind speeds available. An even profile would be preferred."*

Cumulative - "*The openness of vista across these landscapes will result in a clear visibility of other wind energy developments in the area. Given that the wind energy developments are likely to be extensive and high, it is important that they are not perceived to crowd and dominate the flat landscape. More than one wind energy development might be acceptable in the distant background provided it was only faintly visible under normal atmospheric conditions."*

The most relevant recommendations for the 'Hilly and Flat Farmland' Landscape Type are set out below:

'Hilly and Flat Farmland':

Location - *"ridges and plateaux is preferred, not only to maximise exposure, but also to ensure a reasonable distance from dwellings. Sufficient distance should be maintained from farmsteads, houses and centres of population in order to ensure that wind energy developments do not visually dominate them. Elevated locations are also more likely to achieve optimum aesthetic effect. Turbines perceived as being in close proximity to, or overlapping other landscape elements, such as buildings, roads and power or telegraph poles and lines may result in visual clutter and confusion. While in practice this can be tolerated, in highly sensitive landscapes every attempt should be made to avoid it."*

Spatial extent - *"This can be expected to be quite limited in response to the scale of fields and such topographic features as hills and knolls. Sufficient distance from buildings, most likely to be critical at lower elevations, must be established in order to avoid dominance by the wind energy development."*

Spacing - *"The optimum spacing pattern is likely to be regular, responding to the underlying pattern field pattern. The fields comprising the site might provide the structure for spacing of turbines. However, this may not always be the case and a balance will have to be struck between adequate spacing to achieve operability and a correspondence to field pattern."*

Layout - *"The optimum layout is linear, and staggered linear on ridges (which are elongated) and hilltops (which are peaked), but a clustered layout would also be appropriate on a hilltop. Where a wind energy development is functionally possible on a flat landscape a grid layout would be aesthetically acceptable."*

Height - *"Turbines should relate in terms of scale to landscape elements and will therefore tend not to be tall. However, an exception to this would be where they are on a high ridge or hilltop of relatively large scale. The more undulating the topography the greater the acceptability of an uneven profile, provided it does not result in significant visual confusion and conflict."*

Cumulative - *"It is important that wind energy development is never perceived to visually dominate. However, given that these landscapes comprise hedgerows and often hills, and that views across the landscape will likely be intermittent and partially obscured, visibility of two or more wind energy developments is usually acceptable."*

Given the hybrid landscape context it is considered that the proposed development is in general accordance the Wind Energy Development Guidance for both relevant landscape types, or alternatively, does not contradict any of the relevant guidance.

16.3.2 Kildare County Development Plan (2023-2029)

The four southernmost turbines are contained within County Kildare. The Kildare CDP incorporates a landscape character assessment (completed in 2004) which is included within the current CDP. The Proposed Development falls within the 'Southern Lowlands' LCA which occupies the majority of the southeast portion of the Study Area. The only other LCA which fall within the Central Study Area is the 'River Barrow' LCA, approximately 2.8km south of the nearest turbine.

16.3.3 Offaly County Development Plan (2021-2027)

Five of the proposed turbines are located within County Offaly. The Offaly County Development Plan does not include a specific Landscape Character Assessment. Instead, Volume I, Chapter 4: *Biodiversity and Landscape* provides Landscape Sensitivity Areas, which utilise three sensitivity categories: *High*, *Moderate*, and *Low*.

In terms of the Proposed Development, four of the five proposed turbines within County Offaly are contained within a 'Low' landscape sensitivity area, whilst the remaining one turbine falls on the edge between 'Low' landscape sensitivity area and a 'Moderate' landscape sensitivity area. 'Low' landscape sensitivity is the most common classification across the Study Area, although numerous areas of 'Moderate' landscape sensitivity are present, typically associated with exploited peatlands.

These 'Landscape Sensitivity Areas' are described within the CDP as follows:

Low sensitivity areas are; *"robust landscapes which are tolerant to change, such as the county's main urban and farming areas, which have the ability to accommodate development."*

Moderate sensitivity areas can; *"accommodate development pressure but with limitations in the scale and magnitude. In this category of sensitivity, elements of the landscape can accept some changes while others are more vulnerable to change."*

16.3.4 Laois County Development Plan (2021-2027)

County Laois is located approximately 1.1 km south of the Proposed Development and is therefore considered relevant when assessing landscape and visual-related policies in the Laois CDP. The Laois CDP 2021–2027 includes a Landscape Character Assessment, which identifies the different Landscape Character Types (LCTs) within the county. The nearest LCT to the Proposed Development is the 'Lowland Agricultural Areas', located just over 1.1 km to the south at its closest point (refer Figure 12.11). Other LCTs within the Study Area include: 'Urban Fringe Areas', 'Peatland', and 'Mountain, Hills and Upland Areas'.

In terms of LCT sensitivity 'Urban Fringe Areas' and 'Lowland Agricultural Areas' are both designated a 'Low' sensitivity. 'Peatland' and 'Mountain, Hills and Upland Areas' are assessed as having 'High' sensitivity.

'Low' landscape sensitivity is described within the Laois CDP as; *"Areas With the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area."*

16.4 Landscape Impact Assessment

There will be physical impacts on the land cover of the site as a result of this development, but these will be relatively minor in the context of the already modified cutaway peatland, conifer plantations and pastoral farmland. Furthermore, a high proportion of the existing track network from these land uses will be utilised in the construction and operational phases of the development.

The principal landscape impact will be the change in character of the immediate area due to the introduction of large-scale structures with moving components. These will be a prominent and defining landscape feature within the local landscape as would be the case for a commercial scale wind farm placed into almost any landscape context. Nonetheless, this is a broad landscape context of large cutaway bogs, conifer plantations and marginal peatland fringes where field sizes tend to be large. In this respect, the proposed wind farm will be well assimilated in terms of scale and function within the flat terrain and broad land cover patterns of the central study area. The proposed wind farm will be a new and defining feature of the landscape character in the central study area, but it is not considered to be an incongruous feature within this robust and productive landscape setting.

Overall, it is not considered that the proposed wind farm will give rise to significant landscape impacts. Instead, the significance of landscape impacts is considered to be Moderate-slight within the immediate context of the site (nearest 2-3km). Thereafter, significance will reduce to Slight and Imperceptible at increasing distances as the development becomes a progressively smaller component of the wider rural landscape fabric.

16.5 Visual Effects

The study area generally presents as a typical rural landscape of rolling farmland, forestry and peatland with most of the population outside of population centres involved in aspects of the rural economy or supporting services.

The more elevated hills within the wider study area such as the Chair of Kildare hills and Croghan Hill are typically identified by the presence of scenic routes and view designations relating to expansive views over the agricultural lowlands. It is important to note that while these routes and views generate a degree of scenic amenity, many of them present with a longstanding sense of human intervention on the landscape and are influenced by an array of productive, anthropogenic land uses such as agricultural farmland, major route corridors, cutaway peatland, plantation forestry wind energy development and urban settlements. While many of these viewpoints also represent other receptors, their primary significance in this assessment lies in their scenic designation as outlined in the relevant CDP. Visual receptor sensitivity is generally deemed to be High-medium for these scenic designations on balance their broad extent weighed against the productive / settled rural and coastal character of the afforded views.

Aside from elevated views, the study area contains waterway corridors of the Grand Canal and the canalised River Barrow, which also host waterside towpaths that are well used for recreation and amenity purposes. Designated scenic views occur from many of the canal bridges but visibility and visual amenity is largely contained within the tightly vegetated canal corridors. In some locations more open visibility is afforded from elevated sections of the canals where riparian vegetation is light. The sensitivity of canal views tends to be High-medium where a scenic designations apply.

Views of the working agricultural landscape are generally pleasant in terms of the rolling pastoral aesthetic and ‘green’, settled working character. The network of hedgerows and vegetation or scrubby peatland fringes contributes to some sense of naturalness and, combined with the gently undulating topography, generates a sense of localised containment in many locations. Overall, the sensitivity of visual receptors within the more typical working landscape context tends to range between Medium and Medium-low, with those of a Medium sensitivity representing more open expansive views across the wider landscape.

Key differentials in terms of visual receptor sensitivity relate to the occupation of the visual receptor and whether views of the surrounding landscape are an inherent part of the experience. Static residential receptors are considered generally more susceptible to changes in views over those where views are experienced transiently by those travelling through the landscape, particularly on major transport routes where road infrastructure and traffic volume draw from visual amenity.

16.6 Mitigation Measures

Given the nature of commercial wind energy developments, it is not generally feasible to screen them from view using on-site measures as would be the primary form of mitigation for many other types of development. Instead, landscape and visual mitigation for wind farms must be incorporated into the early-stage site selection and design phases, which are integral to the proposed wind farm as assessed (embedded mitigation).

In this instance the three main forms of landscape and visual mitigation employed are:

- Avoidance in design - the siting of the proposed turbines was selected due to the robustness of the receiving landscape and to minimise the impacts of key receptors.
- Consolidation of the turbine layout
- The buffering of residential receptors - The minimum distance of any turbine from the nearest residential receptor is 748m.

16.7 Conclusion

On the basis of the assessment, cumulative effects in relation to other existing, permitted and proposed wind farms are considered to be **Not Significant**.

Based on the landscape, visual and cumulative assessment contained herein, it is considered that there will not be any significant landscape effects, visual effects or cumulative effects arising from the proposed Derrynadarragh Wind Farm.

17. MATERIAL ASSETS, TELECOMMUNICATIONS AND AVIATION

This Chapter describes Material Assets and Utility Infrastructure, Telecommunications and Broadcasting and Aviation that might potentially be affected by the Proposed Development. The potential effects of the Proposed Development at Derrynadarragh are initially considered without mitigation and the residual effects post mitigation are described. The assessment considers the potential effects during all phases of the development: construction, operation and decommissioning. This chapter assesses:

- Material Assets - Utility Infrastructure (Gas, Water, Electricity Cables etc.);
- Telecommunications & Broadcasting;
- Aviation.

17.1 Material Assets and Utilities

Consultations were carried out with telecommunication and broadcasting stakeholders including authorities with associated telecommunication infrastructure, wireless broadcasters, cellular network providers, broadband suppliers and wireless internet service providers (WISP). The Imagine Broadband Network and Three Ireland responded that they both have microwave links in the vicinity of the site that may be affected by the Proposed Development.

There are no Gas Networks Ireland (GNI) gas transmission line or Uisce Éireann mains water line utility identified within the Site boundary.

Uisce Éireann require developers to engage in pre-planning consultation with them where there is a potential for proposed infrastructure to be constructed close to their assets. An onsite electricity substation will be constructed within the Proposed Development site to provide a connection point between the wind farm and the national grid via an underground cable grid connection to the existing 110kV Bracklone substation. There are no interactions between the grid connection cable and Uisce Eireann assets so no pre-planning consultation or *'Building-over or Near an Irish Water Asset*' application to the Uisce Éireann's Diversions Team is required.

Accommodation works for the delivery of turbine components from Galway Port to Proposed Development site will be brief to temporary non-significant negative effects on dwellings and commercial/industrial activities within the catchment of the services.

Turbine delivery works could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed. Pre-planning discussion on the TDR have taken place with Kildare, Offaly and Laois County Council's Roads Departments, with any potential impact on road infrastructure is detailed in Chapter 14: Traffic & Transportation. A Traffic Management Plan (TMP) will be in place for the duration of the works.

Once the Derrynadarragh Wind Farm is operational, the potential for negative effects on Material Assets and Utility Infrastructure is minimal. Maintenance of access tracks and infrastructure may require small amounts of imported fill, however, the impact of this is likely to be slight/imperceptible.

No impact on existing water or gas utility infrastructure is expected at the wind farm site during the operational phase.

The direct effect of electricity generated by the proposed development will give rise to a reduction in the quantity of fossil fuels required for electricity generation across the State. This will give rise to a long-term slight positive impact on renewable energy resource and will contribute to reducing Ireland's dependency on imported fuel resources.

17.2 Telecommunications

Consultations were also carried out with telecommunication and broadcasting stakeholders including authorities with associated telecommunication infrastructure, wireless broadcasters, cellular network providers, broadband suppliers and wireless internet service providers (WISP). The Imagine Broadband Network and Three Ireland responded that they both have microwave links in the vicinity of the site that may be affected by the Proposed Development.

The potential for electromagnetic interference from wind turbines occurs only during the commissioning and operational phase of the Proposed Development. There are no potential electromagnetic interference effects associated with the construction phase or decommissioning phase of the Proposed Development on telecommunications and broadcasting in the area.

There are no potential construction related effects for electromagnetic interference and broadcasting interests in the area associated with the Site or the TDR.

As identified and assessed in Chapter 14: Traffic and Transportation, a Traffic Management Plan will be agreed with Kildare County Council in advance of any works on the TDR from Galway Port to the site in Derrynadarragh. The schedule of turbine component deliveries will be determined by the turbine supplier; however, it is reasonable to assume that several convoys will be required to deliver all of the turbine components to site over the course of the turbine installation works.

As a result of the introduction of wind turbines to a landscape, there is potential for negative impact to domestic broadcasting receivers due to signal scattering or signal delay. Consultation regarding the potential for electromagnetic interference from the Proposed Development was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. As described in Section 17.5.2 of Chapter 17, Volume II of the EIAR, Imagine Broadband Network and Three Ireland responded to consultation detailing that they both have microwave links in the vicinity of the site that may be affected by the Proposed Development.

Imagine Broadband has two microwave radio links that run along the south of the site. The nearest turbine to the links is Turbine 3. There is clearance distance of over 70m between the Fresnel Zone (F1) of the radio links and the blade tip of the nearest turbine (T3). At this distance there would be no impact on either of the Imagine Broadband radio links.

Mitigation for potential impact of the Proposed Development on Three Ireland's microwave link is detailed in Section 17.7.2 of Chapter 17, Volume II of the EIAR.

Three Ireland has a PTP microwave radio link from Clonyquin to Rathangan that runs along the north of the site. The nearest turbine to the links is Turbine 2. There is a clearance distance of 25.5 m between the Fresnel Zone (F1) of the radio link and the blade-tip if the nearest turbine (T02).

Page 22 of Appendix 17.1, Volume III of this EIAR, AI Bridges conclude that,

> "To further assess the potential impacts, the radio link has been modelled in 3D and the Clearance Distances between the Fresnel Zone (F1) and the blade-tip of the T02 has been calculated. ……The 3D model indicates that there is a clearance distance of 25.5 m between the Fresnel Zone (F1) of the radio link and the blade-tip if the nearest turbine (T02). At this distance there would be no impact to the Three Ireland radio link."

Mitigation for potential impact of the Proposed Development on Three Ireland's microwave link is detailed in Section 17.7.2, of Chapter 17, Volume II of the EIAR.

In February 2025, Irish Rail (IR) were contacted to determine if they had any concerns in relation to the proposed wind farm at Derrynadarragh, on the Offaly-Kildare border. In the respond received from Irish Rail, it was stated that they operate a GSM-R Train Radio communications system in the vicinity of Derrynadarragh. Irish Rail also requested a 5km Exclusion Zone around their transmitting radio antennas. Ai Bridges Ltd were subsequently commissioned to evaluate the Irish Rail communications network and to assess the possible impacts that the proposed wind farm at Derrynadarragh could have on the Irish Rail radio network. As turbines at the proposed development would be at least 4.5 km from the nearest Irish Rail GSM-R basestation (located at Coolnafearagh), it is highly unlikely that there would be any impacts on the Irish Rail communications network. A software prediction of the service coverage from the Irish Rail basestation has been generated and shows that there would be no impacts from the proposed wind farm

It should also be noted that there are existing wind farms in Ireland with turbines that are located within 5 km of Irish Rail tracks (e.g. Ballymartin, Monaincha, Richfield, Cloontooa, etc.). These wind farms are operational for many years and there are no reports to\from the wind farm operators of any impact to the Irish Rail communications network.

There will be no impacts on any other telecommunications operators.

The remaining findings of the consultation and desk-based study reports prepared by AI Bridges confirms there will be no significant electromagnetic interference effect caused by the Proposed Development.

Effects on the Turbine Delivery Route as a result of turbine delivery is only associated with the construction process. There is potential that overhead lines may require brief disruption in the unlikely event that a turbine component requires replacement - in this case the turbine delivery route is required to be used during the operational phase. The effects on overhead telecommunications services would be similar to those described in Section 17.6.2, of Chapter 17, Volume II of the EIAR. This would result in a brief slight negative impact to telecommunications services along the TDR.

17.3 Aviation

In relation to aviation, consultations were carried out with Irish Aviation Authority, Air Navigation (AirNav) Ireland and the Irish Air Corps, and a copy of AI Bridges' Aviation Review Statement was provided for review – see Appendix 17.3, Volume III.

The Irish Aviation Authority responded 'The proposed wind farm is proximate to the licenced Aerodrome – Clonbullogue Co. Offaly. Please engage directly with the aerodrome licensee, Irish Parachute Club to make them aware of the Derrynadarragh Wind Farm proposal'

As part of the scoping and consultation process for the Proposed Development, the Draft DoEHLG 2019 Guidelines show that construction infrastructure such as cranes required for the installation of turbines, wind turbines or any structure exceeding 90 metres in height can be an obstacle to low flying craft and to aerial navigation. Therefore, turbines and structures over 90m are required to be shown on aviation charts to aid aerial navigation from aviation centres such as airports and local airfields. Additionally, consultation was also conducted with the Irish Aviation Authority (IAA) and the Irish Air Corps (IAC) to ensure the Proposed Development had no impact with assets such as air navigation safety, airports, radar and aircraft guidance systems. In addition, the IAC state they are opposed to any wind farms or tall structures which may impact the following:

- Lands underlying military airspace used for flying activity, including designated Military Operation Areas (MOA);
- Areas wherein military flying occurs at low levels;
- Critical low level routes in support of IAC operational requirements.

The IAC also state that, in an effort to enhance safety in locations where wind farms or masts are permitted, they should be illuminated by high intensity strobe lights, be identifiable hazards relative to additional lighting in the vicinity and remain visible to night vision equipment.

However, no impacts are anticipated following consultation with the Irish Aviation Authority, Air Navigation Ireland, Dublin Airport Authority and Irish Air Corps.

A professional aviation consultant has undertaken an aviation assessment and determined that there will be no significant impact from the proposed turbines on air traffic in the vicinity of the site given the relevant small-scale nature of the project in the context of the overall available airspace and with the implementation of mitigation measures. Therefore, no residual impacts are likely to occur.

18. INTERACTIONS OF THE FOREGOINGS

This Chapter considers the potential for interactions and inter-relationships between one aspect of the environment and another which can result in an impact being either positive or negative, as well as having varying significance. The chapter considers potential significant environmental effects that may occur in terms of the interaction and inter-relationships of Air Quality & Climate, Noise & Vibration, Biodiversity, Ornithology, Soils, Geology and Hydrogeology, Hydrology and Water Quality & FRA, Population and Human Health, Shadow Flicker, Traffic & Transportation, Archaeological, Architectural & Cultural Heritage and Landscape & Visual Impact, as a result of the Proposed Development as described in Chapter 2: Development Description of this EIAR.

Table 18-1, below, provides a matrix detailing the key interactions and inter-relationships between the key environmental aspects of the Proposed Development, including the wind farm, grid connection route and turbine delivery route.

Each individual chapter of the EIAR has had regard to interactions between different potential impacts. For example, *Hydrology and Water Quality & FRA has had regard to potential impacts on Biodiversity; and Land, Soils and Geology* has had regard to potential impacts on both *Biodiversity, Hydrology and Water Quality & FRA and Traffic & Transportation*.

Table 18-1: Matrix of Interaction Between key Environmental Aspects

	Air Quality & Climate	Noise & Vibration	Biodiversity & Ornithology	Soils, Geology and Hydrogeology	Hydrology and Water Quality & FRA	Population and Human Health	Shadow Flicker	Traffic & Transportation	Archaeological, Architectural & Cultural Heritage	Landscape & Visual Impact	Material Assets, Telecommunications and Aviation
Air Quality & Climate											
Noise & Vibration											
Biodiversity & Ornithology											
Soils, Geology and Hydrogeology											
Hydrology and Water Quality & FRA											
Population and Human Health											
Shadow Flicker											
Traffic & Transportation											
Archaeological, Architectural & Cultural Heritage											
Landscape & Visual Impact											
Material Assets, Telecommunications and Aviation											

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