TOBIN

Ballincor Wind Farm

Volume 1

Non-Technical Summary

RWE

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1. INTRODUCTION

TOBIN has prepared this Environmental Impact Assessment Report (EIAR) on behalf of RWE Renewables Ireland Limited (hereafter 'RWE'), who intend to apply to An Coimisiún Pleanála for planning permission to construct the proposed Ballincor Wind Farm in County Offaly and County Tipperary (which along with all of the associated infrastructure and works is hereafter referred to as the proposed project). The proposed wind farm site is situated at the border of County Tipperary and Offaly, 5 km south of Birr and 3.6 km north of Shinrone. The eastern boundary of the site is delineated by the Little Brosna River. The location and extent of the proposed project is presented as Figure 1-1.

The proposed project is expected to have an Export Capacity (EC) of between 61.6 to 77 MegaWatts[1] (MW) with the erection of 11 no. wind turbines. The proposed project comprises a wind farm of 11 no. wind turbines and all associated infrastructure including Battery Energy Storage System (BESS), turbine foundations, hardstanding areas, borrow pits, access tracks, 110kV grid connection and works along the road network for turbine/material delivery.

Design flexibility has been sought from An Coimisiún Pleanála for the turbine ranges used by the project. The 11 No. wind turbines on site will have a maximum blade tip height range from 179.5 m-180 m inclusive, a rotor diameter range from 149 m-163 m inclusive, and a hub height range from 98.5 m-105 m inclusive.

The delivery of turbine components for the wind farm will require facilitating works on the public road network and at private properties along the Turbine Delivery Route (TDR). These works have been assessed within the project Environmental Impact Assessment Report (EIAR) and are included with the planning application.

[1] 1 MW = 1,000,000 Watts which is the base unit of power

Legend

- Proposed Wind Farm Boundary
- Dallow 110kV Substation
- County boundaries
- Proposed Grid Connection Route
- TDR Works Areas

0 1 2
Kilometres

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
A	13/01/2026	First issue	K.K	J.D

Client: RWE

Project:

Ballincor Wind Farm

Title:

Figure 1-1:
Extent of the Proposed Project

Scale @ A3: 1:50,000

Prepared by:	Checked by:	Date:
K.Kale	J.Dillon	January 2026

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Map Ref: 11333-022-S.BO-DF-TOB-A

Draft: A

1.1 The Applicant

The Applicant, RWE Renewables Ireland Limited has been active in Ireland since 2016 and is undertaking long-term investments in onshore wind, offshore wind, and new battery storage projects, potentially amounting to billions of Euros in direct foreign investment in the country.

RWE's objective is to grow organically by developing business from greenfield sites, positioning itself as a long-term energy partner for Ireland during its energy transition to 2030 and beyond. As part of its growth ambitions, RWE is actively seeking new opportunities to further expand its portfolio in Ireland. The renewable energy generated from the Proposed Project would contribute towards Ireland's onshore wind energy target of 9 GW by 2030.

Already with an operational wind farm, two battery storage facilities, an airborne wind test site and both onshore and offshore wind farms in development, RWE's current Irish portfolio is managed by experienced teams in Kilkenny and Dun Laoghaire.

1.2 Structure and Purpose of the Environmental Impact Assessment Report

An Environmental Impact Assessment (EIA) is required to ensure that projects that are likely to have significant effects on the surrounding area and the environment are properly assessed. Any significant effects identified in the assessment must be avoided or minimized where possible. The surveys and assessment findings are presented as a report, known as an Environmental Impact Assessment Report (EIAR).

TOBIN has prepared the EIAR in accordance with relevant and specific environmental legislation, guidance and advise notes. The report has been compiled in consultation with statutory bodies, stakeholders and the local community.

This document is Volume I of the EIAR. It is a Non- Technical Summary (NTS), which gives a brief description of the proposed project and the assessment of the relevant environmental matters in non-technical language.

The additional Volumes contain information as described below:

> Volume II: The Main EIAR – Contains detailed information relating to the proposed project. Volume II also contains drawings, figures and maps.
>
> Volume III: Appendices: This Volume contains information and data that has been used in the EIAR and referred to in Volume II.
>
> Volume IV: Photomontages: This Volume contains imagery that has been used as part of the Landscape and Visual Impact Assessment contained in Volume II: The Main EIAR.

The purpose of this NTS is to provide a concise overview, in non-technical terms, of the issues, impacts and mitigation measures highlighted by the EIAR and presented in the main EIAR, Volume II. A full detailed analysis and assessment are set out in the EIAR Volume II.

This EIAR assesses the entire proposed project which accompanies the planning application as detailed in Section 1. A Natura Impact Statement (NIS) has been produced for the proposed project and submitted as part of the planning application.

1.3 THE NEED FOR THE PROPOSED PROJECT

In terms of setting out the need for the proposed project, and renewable wind energy in general, it is important to place this proposed project in an international and national policy context from the perspectives of environment, energy and planning.

Some of the key national policy targets and objectives are summarised here and are more fully described in Chapter 4 (Policy, Planning and Development Context) of the EIAR and the Planning Statement that accompany the planning application. Some brief statistics and research on renewable energy use are also presented. This all gives context to the current dependency on imported fossil fuels in Ireland and emphasises the need for the proposed project in general and at this particular location.

There are a number of global agreements which Ireland has agreed to and has committed to achieving, including United Nations Framework Convention on Climate Change, the Kyoto Protocol and its amendments, and the Paris Agreement. These (among others) set out a road map to decarbonise the world economies, while within Europe, there have also been a number of additional policies and legislation that Ireland must adhere to, including Europe 2030 Climate and Energy Framework, Renewable Energy Directive (EU) 2023/2413 (RED III), the European Green Deal, and REPowerEU Plan.

From a National perspective, the Government's Climate Action Plan 2025 (CAP25), published on the 15th of April 2025, marks the fourth annual update to Ireland's Climate Action Plan. Building on CAP23 and CAP24, CAP25 aims to expedite the deployment of onshore wind, targeting 9 GW by 2030. CAP25 also re-affirms the previous commitment to increasing the share of renewable electricity to 50% by 2025 and 80% by 2030. The plan emphasises the necessity for rapid and substantial reductions in greenhouse gas emissions to meet the 2015 Paris Agreement and the UN's Sustainable Development Goals. Additionally, it highlights the importance of the revised National Planning Framework (NPF), which supports the development of electricity grid infrastructure by establishing regional renewable electricity capacity targets for 2030.

In Ireland, as of December 2024, there was 4,836 MW of installed capacity in the Republic of Ireland[2], leaving a shortfall of 4,164 MW. In essence, a more than doubling of current wind capacity is needed by 2030. As such, given the timelines required for a wind farm to become permitted and operational, every commercial scale wind farm plays an essential role in achieving Ireland's renewable energy goals.

The Renewable Energy Directive (EU) 2023/2413 (RED III) establishes targets for renewable energy use and supports cooperation between EU counties to accelerate the EU's independence from fossil fuels. RED III requires by the 21st of May 2025, Member States to carry out coordinated spatial mapping for the deployment of renewable energy to identify available land surface, subsurface, sea or in-land water areas that are necessary for the installation of renewable energy plants and their related infrastructure, such as grid and storage facilities, including thermal storage, to meet the national contribution towards the overall Union

[2] https://windenergyireland.com/about-wind/the-basics/facts-stats (Accessed 24th January 2026)

renewable energy target for 2030. Significant delays in permitting to build wind developments continue to hinder Ireland's progress towards meeting its renewable energy share targets[3].

The RePowerEU Plan was launched in May 2022 in response to the war in Ukraine to help phase out the dependency of Russian fossil fuels imports. EU countries have to present to the European Commission by the 1st of March 2026 national diversification plans with detailed measures and milestones for the gradual elimination of direct and indirect imports of Russian gas and oil. At the same time, efforts will continue to accelerate the EU's energy transition and diversify energy supplies to eliminate risks to the security of supply and market stability[4]. The aims of the plan involve a combination of increased renewable energy generation, improved energy efficiency, and diversification of energy sources. The plan also addresses the need to repower existing wind farms to maintain and increase renewable energy capacity.

In this context, the addition of potentially 61.6 MW - 77 MW of installed wind energy capacity from the proposed project will improve Ireland's security of supply and reduce our reliance on energy imports.

Carbon pricing also plays a role in establishing a need for the proposed project. The Government has committed to progressively raise the carbon tax rate to reach EUR 100 per tonne of carbon dioxide by 2030, while using the revenue raised by the carbon tax to prevent fuel poverty, finance climate-related investment and ensure a just transition [5].

It should be noted that there is a considerable economic benefit to the development of wind farms nationally and specifically at this location. In the National context, a Pöyry report published in March 2014 entitled *The Value of Wind Energy to Ireland* stated that the sector could support 22,510 jobs in the construction stage and double the amount of existing jobs in the operational phase by 2030. It also projected an investment of €4.8 billion in the time period from 2020 to 2030. The potential local economic impact in the County Offaly and Tipperary area will also be positive by bringing employment to the area during the construction works. A 2021 report by KPMG for Wind Energy Ireland estimated that jobs in the wind industry in Ireland could grow to over 7,020 by 2030. A 2024 report by Baringa[6] discusses the potential financial costs and savings of the use of renewable electricity for the end customer when compared to a fossil fuel use scenario. The report found that although there were some additional costs in certain areas associated with the use of renewable energy, there were also savings that could be made, and overall, there was a potential to make significant cost savings to the end customer by 2030 when compared to a purely fossil fuel scenario. Furthermore, a recent International Monetary Fund publication[7] revealed that fossil fuel subsidies in 2024 amounted to approximately 6.7 trillion dollars.

[3] https://www.climatecouncil.ie/councilpublications/secretariatfactsheets/FS3%20RED%20III.pdf (Accessed 19th January 2026)
[4] https://commission.europa.eu/topics/energy/repowereu_en (Accessed 19th January 2026)
[5] https://www.oecd.org/climate-action/ipac/practices/a-credible-carbon-tax-trajectory-for-ireland-a39128a3/ (Accessed 19th January 2026)
[6] https://www.windenergyireland.com/images/files/baringaweicuttingcarboncuttingbills2024v20final-cs.pdf (Accessed 24th January 2026)
[7] https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281 (Assessed 24th January 2026)

The proposed project will bring the south eastern region of Ireland closer to achieving carbon neutrality by providing a significant source of renewable electricity that will reduce the need for using fossil fuel-based energy.

The development of renewable energy is a natural step in the evolution of locally generated electricity. Electricity generation has brought significant economic gain to many areas in Ireland over the years. Ireland is now on a path of swift and significant decarbonisation and the energy that we use is changing from fossil fuels to renewables, particularly wind. The potential to extract local, economic and societal gains is a major benefit associated with the development of renewable energy projects.

The proposed project will attract a significant community benefit fund for the local area which will bring significant opportunities for local communities.

2. THE PROPOSED PROJECT

2.1 SITE LOCATION AND BACKGROUND

The proposed wind farm site is situated at the border of County Tipperary and Offaly, 5 km south of Birr and 3.6 km north of Shinrone. The eastern boundary of the site is delineated by the Little Brosna River. The wind farm site comprises agricultural lands, cutover peatland and forestry. The N52 road is one km from the north of the proposed wind farm site, and the N62 is located 2 km to the east. Construction access to the proposed wind farm site will be provided via the local road L1071 and regional road R492. The R492 will be used for heavy vehicles during the construction phase. The L1071 will be the operational entrance.

The proposed wind farm site elevations range from 45 to 65 metres above ordnance datum[8] (OD). The surrounding landscape is predominantly low-lying, except for Knockshigowna Hill to the southwest. To the east of the Little Brosna River lies the Sharavogue Bog Special Area of Conservation (SAC), which is characterized by peatland habitats.

The proposed grid connection route (GCR) is 12.23 km from the northern end of the proposed wind farm site and runs north to the Dallow 110kV substation.

The TDR will begin at Foynes Port, Co. Limerick, and the route will run along the N69, M7 and N62 to Sharavogue. Several temporary works will be required along the TDR which range from hedgerow trimming/clearing to facilitate oversail of turbine blades to the temporary placement of hardcore to allow the oversize vehicles to pass.

2.2 SCOPING AND CONSULTATION

For this project, scoping and consultation was carried out with:

- An Coimisiún Pleanála;
- Statutory & non-statutory consultees;
- Telecommunications providers; and
- Public.

An EIA Scoping Report was prepared and submitted to relevant statutory and non-statutory bodies in March and June 2024 (either by email or post) for review and comment, with subsequent follow ups. The EIA Scoping Report was accompanied by a cover email introducing the proposed project and inviting comments or observations within a period of six weeks from the date of the email.

A copy of the Scoping Report is provided in EIAR Appendix 1-2. Scoping responses received from consultees are provided in EIAR Appendix 1-3. These responses have been reviewed and considered by the project team in compiling this EIAR. Where relevant, information provided has been included in environmental assessments for the project, as detailed in the individual EIAR chapters.

[8] ordnance datum is the height above the Irish sea level reference point

2.3 THE PROPOSED PROJECT

Full details on the proposed project are provided in Chapter 2 (Description of the Proposed Project) of the EIAR, a summary of which is provided below. Figure 2-1 presents the layout of the proposed wind farm site.

The proposed project is a renewable energy development and will constitute the provision of:

- Assembly of 11 Wind Turbine Generators (including tower sections, nacelle, hub, rotor blades) with an estimated capacity of 61.6 to 77 MW and a blade tip height between 179.5 and 180 m, rotor diameter between 149 to 163 m, hub height of between 98.5 and 105 m.
- Associated hardstanding and turbine foundations at each turbine location;
- Upgrading of existing access tracks, construction of new founded access roads and floating roads within the proposed wind farm. Total length of internal access roads is 9.7 km, and upgrades of two site entrances on R492 and L1071;
- Erection of 104 m permanent meteorological mast and including lightening pole;
- All associated excavation, earthworks and spoil management, Surface water drainage system and sediment control; Installation of new clear span watercourse or drain crossings on proposed wind farm site; Excavation and restoration of three borrow pits (borrow pit 1 to borrow pit 3) and one peat deposition area;
- Wheel wash, security fencing & hut;
- Four Temporary construction compounds including site office and staff facilities;
- Installation of 33 kV medium voltage electrical and communication cabling underground between the proposed turbines and the proposed on-site substation and associated ancillary works; All electrical plant and infrastructure and grid ancillary services equipment;
- 110 kV electricity on-site substation and switch rooms; including one EirGrid control building containing welfare facilities and storeroom, wastewater and rainwater holding tank;
- One Independent Power Producer (IPP) control building containing HV switch room, site offices, welfare facilities, wastewater holding tank;
- One Battery energy storage system (BESS) control building containing worker welfare facilities and equipment store, wastewater holding tank; 90 BESS container units, inverters, underground water storage tank and associated works;
- Works along the public road and private land for a 12.23 km grid connection to the existing Dallow 110 kV substation including installation of 17 joint bays along the GCR;;
- Upgrading of existing access tracks, construction of new founded access roads and floating roads within the proposed wind farm and a founded road for the GCR at Clondallow, Birr, Co. Offaly;
- Turbine Delivery Accommodation works, road surfacing works, temporary wall/vegetation removal, load bearing surface will be laid to provide a minimum 4.5 m running width and a 5.5 m clearance width for turbine delivery at Sharavogue crossroads, Sharavogue, Co. Offaly.
- All associated infrastructure and services including site works and temporary construction signage,

- Operational stage site signage;
- All related site works and ancillary development including berms, landscaping, and soil excavation;
- Tree felling (7.2 ha) and hedgerow removal (1.1 km) to facilitate construction and operation of the proposed project,
- Biodiversity enhancement including hedgerow replanting (1.3 km), peatland enhancement and tree planting.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire wind farm is being sought for the proposed project and does not include elements of the overall proposed project, such as works on the proposed turbine delivery route (TDR). These works along the proposed TDR to the proposed wind farm site include hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening. For these locations, works associated with road infrastructure have been identified and assessed in the EIAR, however, permission for these works will be sought separately.

A permanent planning permission is being sought for the GCR and substation as these will remain as a permanent part of the national infrastructure, which will be operated by the Transmission System Operator, EirGrid and owned by ESB the Transmission Asset Owner and will remain in place upon decommissioning of the wind farm.

7°55'0"W

N

T1

N62

Met Mast Location

T10

T11

R491

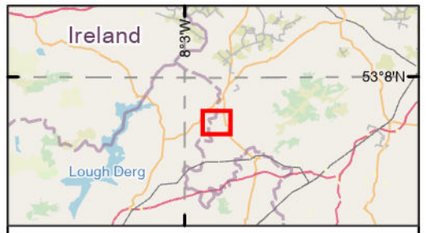
R491

N62

53°1'30"N

606000

695000



Legend

- Proposed Wind Farm Site Boundary
- Proposed Grid Connection Route

Site Layout

- Proposed Turbine locations
- Proposed BESS
- Proposed Construction Compounds
- Proposed Borrow Pit 1
- Proposed Borrow Pit 2
- Proposed Borrow Pit 3
- Deposition Areas
- Turbines Hardstands
- Met Mast Location
- Overrun Area
- Proposed Passing Bay
- Proposed Site Roads
- Proposed Substation Location
- Turbine Foundations
- Turning areas
- Wheelwash

0 500 1,000
Meters

Spatial Reference
Datum: IRENET95
EPSG: 2157

Rev	Date	Description	By	Chkd
A	16/01/2026	Draft issue	K.K	J.D

Client: RWE

Project:

Ballincor Wind Farm

Title:

Figure 2-1:
Proposed Wind Farm Site Layout

Scale @ A3: 1:20,000

Prepared by:	Checked by:	Date:
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Draft: A

2.4 OUTLINE OF CONSTRUCTION

2.4.1 Construction Schedule

It is anticipated that the construction phase will take approximately 24 months from starting onsite to completion of commissioning of the turbines. With the exception of the localised commercial forestry felling, vegetation clearance will commence outside the breeding birds' season, which runs from the 1st of March to the 31st of August. If any minor clearance or trimming is required within those dates, or if the initial vegetation clearance extends past the 1st of March, the works will be preceded by an ecological survey (from a qualified and suitably experienced Ecologist) to ensure there are no sensitivities associated with the action.

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations will be restricted to between 07:00 hrs and 19:00 hrs Monday to Friday (excluding public holidays) and between 07:00 hrs and 14:00 hrs on Saturdays.

However, during the following critical periods longer hours will be required:

- Concrete pours for turbine foundations;
- During turbine installation when the weather is suitable (i.e. light winds);
- Delivery of oversized loads; and
- In the unlikely event of an emergency (this is unlikely - see EIAR Chapter 18 (Major Accidents and Natural Disasters)).

Any such out of hours working will be agreed in advance with Offaly and Tipperary County Council apart from in the case of an emergency and in line with the Schedule of Mitigation Measures of this EIAR (Chapter 20).

The construction phase can be broken down into five main phases as follows (there will be overlap between these):

- 24 months – Civil Engineering Works (including forestry felling and vegetation clearance, drainage, construction of site roads, hardstands, turbine foundations);
- 9 months – Electrical grid connection/substation installation and commissioning;
- 12 months – Site electrical (installing between turbines and substation, pulling cables);
- 4 months – Turbine deliveries and erection;
- 2 months – Commissioning.[9]

2.4.2 Construction Methodologies

EIAR Chapter 2 (Description of the Proposed Project) details construction methodologies for the following elements of the proposed project:

- Turbine hardstand, foundations and erection;
- Wind farm site access tracks;

[9] Commissioning is the final phase of wind farm construction involving a systematic process of testing, inspecting, and verifying that all turbines and associated electrical infrastructure are installed correctly, operate safely, and perform to the required technical specifications before being handed over to the client for commercial operation.

- 110 kV substation and electrical works;
- Proposed GCR
- Borrow Pits
- Permanent meteorological mast
- Forestry felling
- Temporary construction compounds.

The construction methodology associated with the GCR for the proposed project also considers the methods proposed for crossing watercourses.

2.4.3 Environmental Management during Construction

A Construction Environmental Management Plan (CEMP) has been compiled for the proposed project. The CEMP will be updated prior to commencement of the construction works to address the requirements of any relevant planning conditions, including any additional mitigation measures which may be conditioned, and will be submitted to Offaly and Tipperary County Council for written approval. The construction contractor will be responsible for implementing the mitigation measures specified in the EIAR, Natura Impact Statement (NIS) and supporting documents such as the CEMP and for communicating the requirements with all staff on-site. Their implementation of the mitigation measures will be overseen by the Environmental Manager, Ecological Clerk of Works (ECoW), Ecologists, Archaeologists and/or Geotechnical Engineers, as appropriate.

3. CONSIDERATION OF REASONABLE ALTERNATIVES

Chapter 3 (Consideration of Reasonable Alternatives) of the EIAR contains a description of the reasonable alternatives that were studied which are relevant to the proposed project and its specific characteristics and provides an indication of the main reasons for the option chosen, taking into account the effects of the proposed project on the environment.

Under the future baseline scenario, the proposed project would not go ahead, the development of Wind Turbine Generators (WTGs) would not be pursued, and all lands associated with the proposed project would remain in their current uses primarily agriculture, forestry and turbary (turf cutting) plot.

In such a scenario, the prospect of capturing a valuable renewable energy resource would be lost and as a result the opportunity to contribute to meeting Government and EU targets to produce electricity from renewable resources and the reduction of greenhouse gas emissions would also be lost. Furthermore, the chance to generate additional local employment and investment would not occur, the local economy would remain less diverse and continue to rely primarily on agriculture and forestry as its main source of income.

The Applicant continuously examine the lands under their stewardship and otherwise for candidate sites for wind energy development. The process of site screening and project selection is undertaken in house by RWE's team of developers. The development team is made up of planners, engineers, project managers and environmental scientists ensuring that a holistic approach is undertaken during the screening and project selection process. RWE recognises the complexities associated with the development of renewable energy sites and has developed a large database of information that allows the company to identify and screen potential sites.

RWE uses Geographical Information Spatial software (GIS), using a number of criteria and stages to assess the potential for wind energy development across the entire country of Ireland. This exercise utilises a large number of spatial datasets such as ordnance survey land data, house location data, transport, forestry data, existing wind energy and grid infrastructure data and environmental data such as ecological designations. This initial stage in the selection process discounted lands that were not available for development due to technical and/or environmental constraints.

For the assessment of candidate sites, a number of criteria were chosen which not only covered the broad range of considerations for wind farm development but also allowed for direct comparison of the candidate sites to each other to determine their relative suitability for wind farm development. The criteria includes:

- Available wind resource;
- Environmental constraints including low potential for impact on Natura 2000 and Nationally Designated Sites (Special Area of Conservation (SAC), Special Protection Area (SPA), Natural Heritage Area (NHA) and proposed Natural Heritage Area (pNHA) sites[10];

[10] Sites designated and considered important for the habitats and species present. For further information see Protected Sites in Ireland | National Parks & Wildlife Service

- Population density
- Proximity to dwellings;
- Planning Policy;
- Archaeological features;
- Landscape and visual constraints.
- Reasonable access to the national electricity grid;
- Access route availability.

The site layout design stage considered the size, number and positioning of turbines and layout of associated site infrastructure i.e. internal access tracks, temporary construction compounds, substation location, etc. It also considered different grid connection options. Alternatives considered for each of these elements are documented in Chapter 3 (Consideration of Reasonable Alternatives) of the EIAR.

The siting and design of the proposed wind farm site has evolved through the consideration of alternative layouts etc, existing constraints and allowing for stakeholder input into the process. This included initial consideration of the need for renewable energy, the site selection process, the consideration of alternative layouts, scales, and design processes.

Different delivery route options from a number of ports, with a review of the environmental effects was undertaken as part of the EIAR.

Different technologies and construction processes for the project were considered. The construction methods for the proposed project are dependent on a number of factors specific to the site and design, and have been considered in relation to ground conditions, foundation installation and turbine erection. Site-specific information gathered through intrusive site investigation and environmental surveys was taken into consideration when reviewing alternative methodologies for construction. Alternative stream crossing methodologies for the proposed grid connection were considered at the outset, such as trenching with over-pumping, but this was quickly considered to be too risky for water quality in the area and was thus ruled out. Directional drilling will be used instead to avoid disturbance and minimise risks to the watercourses.

In summary, the overriding reason for selecting the chosen option is to maximise the renewable energy production from the site while minimising the environmental impact.

4. POLICY, PLANNING AND DEVELOPMENT CONTEXT

This section summarises sets out the legislative and policy framework relevant to the proposed project, and considers international, European, national, regional, and local objectives for renewable energy and climate action. At the global level, agreements such as the Paris Agreement and the UN Framework Convention on Climate Change (UNFCCC) commit Ireland to reducing greenhouse gas emissions. EU policy, through the Renewable Energy Directive and the European Green Deal, has progressively raised renewable energy targets, now requiring at least 42.5% of energy from renewables by 2030, alongside a 55% reduction in emissions under the Fit for 55 package. These measures reflect the urgency highlighted at COP29, a meeting of the parties to the UNFCCC, which called for accelerated transition from fossil fuels to renewables. There is a specific recognition of the importance of onshore wind farms in achieving these objectives.

Nationally, Ireland's Climate Action Plans (CAP24 and CAP25) set ambitious goals to achieve 80% renewable electricity by 2030, including 9 GW of onshore wind and 8 GW of solar capacity. The revised National Planning Framework (NPF) and National Development Plan (NDP) support these targets by introducing regional renewable energy allocations and prioritising investment in grid infrastructure. The Renewable Electricity Support Scheme (RESS) provides financial incentives to accelerate deployment. Regionally, the Southern Regional Spatial and Economic Strategy (RSES) identifies wind energy as a key technology for delivering clean electricity and supports new energy infrastructure.

The proposed wind farm will contribute to Ireland's renewable energy objectives and directly supports the Climate Action Plan targets of achieving 9 GW of onshore wind capacity and 80% renewable electricity by 2030. Ireland did not meet its 2020 renewable targets and is projected to fall short of its 2030 goal of a 51% emissions reduction. The proposed project will help close this gap by generating clean electricity, reducing reliance on imported fossil fuels, and improving energy security while also offering economic benefits such as job creation, and local investment. The proposed project helps towards delivering the additional 978 MW of onshore wind allocated under the revised National Planning Framework.

At a local level, the proposed project complies with several overarching policies outlined in the Offaly County Development Plan (CDP 2021 - 2027 and Offaly County Wind Energy Strategy. The project encourages renewable energy production in accordance with Offaly County Wind Energy Strategy, has carried out community consultation and seeks to ensure contribution to community benefits via a successful RESS auction. The project adheres to various guidelines for wind energy developments outlined in the Strategy and supports the development and reinforcement of the electricity grid.

The proposed project also aligns with policies within the Tipperary CDP and Tipperary Regional Energy Strategy promoting renewable energy development in accordance with CDP policy by supporting community energy schemes. Additionally, the project supports the sustainable development, maintenance, and upgrading of electricity and gas infrastructure under CDP policy and facilitates additional electricity transmission and distribution grid infrastructure as per CDP policy.

The proposed project creates an opportunity to generate real tangible benefits for the local community who may not have a direct involvement in the project via the community benefit fund which will be set up following a successful RESS auction.

The proposed project will have several significant long-term and short-term benefits for the local economy including job creation, provision of amenity, local authority commercial rate payments and a Community Benefit Scheme. In addition, during construction, additional employment will have been created in the region through the supply of services and materials to the development.

5. POPULATION AND HUMAN HEALTH

This chapter examines the existing environment and addresses the potential impacts on Population and Human Health arising from the proposed project.

The assessment on population and human health primarily considers the proposed wind farm site and the surrounding area. The assessment considers property receptors and residential amenity, as well as current land use and activities, occurring within and in the vicinity of the proposed wind farm site, as this is where any likely effects on population and human health receptors will mainly to occur.

In terms of human health, the assessment also considers available Irish health statistics and surveys, as well as a literature review of research carried out on the potential effects of wind farm developments on human health.

The proposed wind farm site is situated west of the Little Brosna River. The landscape is predominately flat agricultural divided with sections of hedgerow throughout the wider area, with the proposed wind farm site being located on an area of peatland and farmland with a topography of between 45 m and 65 m Ordnance Datum. The surrounding landscape is predominantly low-lying, except for Knockshigowna Hill to the southwest. To the east of the Little Brosna River lies the Sharavogue Bog Special Area of Conservation (SAC), which is characterised by peatland habitats. The topography of the proposed windfarm site comprises mostly cutover bog, wet grassland, mixed broadleaved woodland, coniferous woodland and scrub. The area surrounding the proposed wind farm site features electrical infrastructure. An electricity transmission line travels through the centre of the site, from east to west (see Section 15, Material Assets).

The proposed GCR will run for 12.23 km from the northern end of the proposed wind farm site, beyond Birr, to the Dallow 110kV substation.

Works required along the proposed TDR include the construction of a new offline track at the N62/R492 junction and further temporary works along the proposed TDR which include vegetation trimming, removal of street furniture and placement of hardcore (see Chapter 2 for further details).

In terms of settlements, the proposed wind farm lies between Sharavogue Co. Offaly and Carrig Co. Tipperary approximately 5 km southwest of Birr Co Offaly. Sharavogue and Carrig are located approximately 1 km and 1.2 km respectively from the proposed wind farm site. Birr represents the larger settlement town in the vicinity of the proposed wind farm.

Those most likely to experience effects are those residing in proximity to the proposed wind farm. For this assessment, properties within a 2 km distance have been identified and reviewed through available aerial mapping, GeoDirectory and site surveys.

An examination of the existing population in the study area has been carried out to identify population trends, density and to define the properties/receptors surrounding the proposed wind farm site.

Census results for the 10-year period between 2011 and 2022 show a rise in population nationally of 12%, with Offaly County increasing by 8.4% and Tipperary County by 5.76%. At the ED level, the overall population saw a modest increase of around 6%, despite some EDs

experiencing slight declines between 2011 and 2016. From 2016 to 2022, most EDs showed notable recovery and growth, with Ballincor showing the highest percentage increase (18.6%) over that period.

Population density is a useful indicator of the settlement patterns in the area surrounding the proposed wind farm site. The 2022 census identified that the average population density in Ireland was 73.3 persons/km2, Offaly and Tipperary have lower averages of 41.6 and 39 respectively, most of the smaller local areas fall well below these figures. Birr Urban stands out significantly with a high density of 738 persons/km2, highlighting its role as a population centre. In contrast, surrounding rural areas such as Eglish (8), Clohaskin (13), and Carrig (15) have very low densities, illustrating the sparsely populated nature of the countryside. Birr Rural, with a density of 66, is somewhat more populated but still below the national average. Overall, the data reflects a pattern of concentrated urban population amidst predominantly low-density rural surroundings.

5.1 Assessment of Effects

5.1.1 Construction Phase

The proposed project will have a slight, positive residual effect on the local population through an arrival of construction workers in the short-term (not significant in EIA terms). This arrival is likely to cause a slight increase in local population over a short period of time resulting in a boost to the local economy through use of accommodation and spend in local shops and restaurants. Local suppliers will also receive additional business from the proposed project. This will have a moderate, short term, positive effect on the local economic activity.

It is considered likely that there will be a brief to temporary, not significant, negative residual effect on traffic, tourism and recreation amenity as a result of traffic delays associated with construction works and vehicle movements, and the associated traffic management measures, during the construction phase following the communication of guidance and information to the public on alternative available transport routes / diversions where required.

A short-term, negative and not significant residual effect is likely as a result of construction phase traffic (and associated noise and dust) on residential amenity and sensitive receptors.

Short-term, slight, negative residual effects are predicted on residential amenity and property values and neutral imperceptible effects on the local population and land use.

Overall, no significant effects are predicted during the construction phase.

5.1.2 Operational Phase

The proposed project will provide clean energy from a renewable resource and help to achieve targets in national energy and climate change policies. This is a direct, positive, long-term residual effect for the country which will benefit the local population and communities.

In terms of population, the residual effects are expected to be positive particularly in terms of local economy, employment, tourism and amenity. Following the implementation of the mitigation measures prescribed in the relevant chapters of the EIAR, the operation of the

proposed project is unlikely to have significant negative residual effects on the local or wider population.

The establishment of a Community Benefit Fund will be a long-term positive contribution to the local community in general. This aspect of the proposed project will have a positive long-term effect on the individuals living in the local community, including contributing to a positive effect on individuals physical and psychological health through the development of community led projects and maximising the level of local involvement in terms of influencing how the funds are spent.

Based on the literature reviewed and best practice guidance, there is currently no reliable evidence to link wind turbines to adverse health impacts. Every community will have vulnerable individuals; however, the health status of the community can only be established to certain level (i.e., small area statistics). Individual health status or potential vulnerability of individual receptors cannot be known or assessed. Emission limits and management, such as for noise or dust, allow for the protection of the most vulnerable, and so long as the limits are met, vulnerable individuals and the wider community are protected. Emissions arising from the operational phase of the proposed project (i.e., air, dust, noise and vibration) are predicted to fall below the limits and/or thresholds set, therefore it is anticipated that significant adverse effects on health, even amongst the vulnerable, are unlikely.

Following the implementation of the mitigation measures set out in the relevant chapters of the EIAR, the operation of the proposed project is unlikely to have significant negative residual effects on the human health.

Overall, it is considered likely that there will be a long-term, slight, positive residual effect on the local population and human health as a result of the proposed project.

5.1.3 Decommissioning Phase

The wind turbines proposed as part of the proposed wind farm are expected to have a lifespan of 35-years. Following the end of their lifespan, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully, with the exception of the electricity substation and grid connection. The activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage.

It is anticipated that residual effects on population and human health receptors associated with decommissioning works will be less than those identified for the construction phase, meaning there are no likely significant effects for the decommissioning phase.

5.2 Conclusion

There is currently no credible proof to link wind turbines to adverse health impacts. Emission limits, such as for noise or dust, are set to protect those within a community. Compliance with the limits set out in best practice guidelines (described in the relevant chapters on noise and vibration, air quality, shadow flicker) will ensure that individuals and communities are protected.

Design stage considerations, such as turbine locations, and the mitigation measures outlined in the relevant technical chapters will be put in place to ensure that the emissions and effects from the proposed project are in compliance with the standards to ensure that there will be no significant adverse effects on health, even amongst the most vulnerable.

Following consideration of the residual effects, it is considered that the proposed project will not result in a significant effect on population and human health in the local and regional area. In summary, there are no likely significant effects during the construction, operation or decommissioning phases.

6. BIODIVERSITY

The Biodiversity Impact Assessment for the proposed project was undertaken focusing on terrestrial and aquatic flora, habitats, and fauna within the Zone of Influence (ZoI[11]) of activities associated with the proposed project.

6.1 ASSESSMENT OF EFFECTS

6.1.1 Designated Sites

The proposed project is not located within any European site. It is, however, located to the west of the Sharavogue Bog SAC. Additionally, the Little Brosna River which is situated to the east of the proposed wind farm site, is hydrologically connected downstream to five other European sites (River Shannon Callows SAC, Dovegrove Callows SPA, River Little Brosna Callows SPA, Lough Derg (Shannon) SPA, Middle Shannon Callows SPA). The potential for effects on European designated sites is fully described in the Natura Impact Statement (NIS) that accompanies this application. The findings presented in the NIS conclude that the proposed project will not have an adverse impact on any European Sites, either alone or in combination with other plans or projects.

The potential for effects on other designated sites (Natural Heritage Areas [NHAs], proposed Natural Heritage Areas [pNHAs], National Parks and RAMSAR sites) was also fully assessed within the biodiversity chapters and concluded that the proposed project will not have an adverse impact on any of these sites, either alone or in combination with other plans or projects.

6.1.2 Habitats and Flora

The proposed project site comprises agricultural land, including improved agricultural grassland (GA1), horticultural land (BC2), arable crops (BL1), tilled land (BC3), wet grassland (GS4), dry meadows and grassy verges (GS3), and farm buildings or roadways categorised as buildings and artificial surfaces (BL3).

Peatland habitats also make up a substantial portion of the site, occurring in the form of raised bog (PB1), cutover bog (PB4), dry siliceous heath (HH1), and pockets of dense bracken (HD1) within areas of degraded peatland. Several woodland habitat types are also present, including mixed broadleaved woodland (WD1), conifer plantation (WD4), scrub (WS1), immature woodland (WS2), oak–birch–holly woodland (WN1), riparian woodland (WN5), and bog woodland (WN7). Linear habitats include hedgerows (WL1), treelines (WL2), drainage ditches (FW4), lowland depositing rivers (FW2) and stone walls and other stonework (BL1).

Annex I habitat type Degraded raised bog [7120] and priority Annex I habitat type *Active raised bog [7110] were recorded within the proposed wind farm site. Although a full hydrological or

[11] The '*zone of influence*' (ZoI) for a development is the area over which ecological features may be subject to significant effects due to the proposed project and associated activities. This is likely to extend beyond the proposed project, for example where there are ecological or hydrological links beyond proposed project site boundary. The ZoI will vary for different ecological features depending on their sensitivity to an environmental change (Chartered Institute of Ecology and Environmental Management (CIEEM), 2024).

ecotope[12] assessment was not undertaken, the presence of key peat-forming species, Annex I habitat indicators, and structural features suggests that these habitats are consistent with Annex I definitions. There will be no loss of this habitat as part of the proposed project.

Two high impact Invasive Alien Species (IAS) listed on Part 1 of the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), as amended, and on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024), were recorded within the study area. Parrot's feather (*Myriophyllum aquaticum*) and Himalayan Balsam (*Impatiens glandulifera*). Parrots feather was recorded within the northern section of the proposed wind farm site and Himalayan balsam was recorded 13.5m north of the GCR, along the banks of the Little Brosna River.

The construction, operation and decommissioning of the proposed project has the potential to cause habitat loss and habitat degradation effects. The proposed project will result in permanent and temporary loss of 9.27ha and 2.3km of habitat determined to be ecologically beneficial. The loss of which will result in likely, permanent, negative, moderate to significant effects at a local geographic scale in the absence of mitigation and compensation measures. While habitat degradation via water quality, invasive species spread and dust effects will potentially result in the degradation of surface water dependent habitats and/or plant species, the impact of this will result in likely, permanent, negative, slight to significant effects at a local geographic scale in the absence of mitigation.

6.1.3 Fauna

Badger

Evidence of use of the proposed wind farm site by Badgers was found throughout with signs of Badger recorded during the field study including setts, paw prints, latrines and snuffle holes.

Two main setts were recorded during the field study including one inactive main sett to the north of the proposed wind farm site, 200m from the nearest turbine (T2) and 220m from the proposed BESS, and one inactive main sett was recorded toward the southeast of the site, 95m from the nearest turbine (T8). Also, two inactive subsidiary setts were recorded within the proposed wind farm, one along the eastern boundary and one along the western boundary. Finally, two inactive outlier setts were recorded, one along the northeastern boundary 640m from T8 and the other recorded on the western boundary 267m from T5.

The local Badger population was assessed to be of Local Importance (Higher Value).

Otter

Evidence of the presence of Otter was recorded at four locations during the field study. Evidence included a potential inactive Otter holt within the proposed wind farm site along a drainage ditch, 80m from an access track between T7 and T10. Further evidence outside of the proposed wind farm included Otter prints 300m from T8, Otter spraint 670m from T4 and Otter spraint 300m from T2.

[12] A peatland ecotope is a specific, recurring habitat unit within a peatland defined by its unique combination of hydrology, peat type, and plant community.

The local Otter population was assessed to be of Local Importance (Higher Value).

Bats

During the field study total of eight bat species were confirmed by static detectors. The species recorded include: Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Nathusius Pipistrelle (*Pipistrellus nathusii*), Brown Long-eared Bat (*Plecotus auritus*), Leisler's Bat (*Nyctalus leisleri*), Whiskered Bat (*Myotis mystacinus*), Daubenton's Bat (*Myotis daubentoniid*) and Natterer's Bat (*Myotis nattereri*).

Moderate to high bat activity was recorded at the proposed wind farm site with Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat making up the majority of the registrations (50.5%, 35.1% and 9.5% respectively). Other species including Natterer's Bat, Brown Long-eared Bat, Whiskered Bat/Brant's Bat, Daubenton's Bat, Nathusius' Pipistrelle, and *Myotis* sp., each contributed less than 2% of the records and were not present within all sites or during all seasons.

Within the proposed wind farm site, 18 trees were classified as potential roost features for individual bats and one as potential roost features of a maternity colony. Also, there was 17 structures identified as having roost suitability with three buildings having high roost potential and one classed as having low suitability.

Along the GCR, two Preliminary Roost Feature - Individual (PRF-I) trees were recorded, and four bridges were classed as having low roosting suitability and five were classed as having negligible suitability. Evidence of use of a bridge by Brown Long-eared Bat was recorded at a crossing of an un-named stream, approximately 800m from Riverstown, County Tipperary.

Along the TDR, 27 points of interest were identified where facilitation works are required and 14 points of interest are located where vegetation clearance, trimming, and tree removal will be necessary.

The proposed wind farm site is considered to be of Local Importance (Higher Value) for bats and their roosts.

Other Species

Three reptile/amphibian species were recorded within the proposed wind farm site including Common Frog (*Rana temporaria*), and Common Lizard (*Zootoca vivipara*), these species populations were assessed as being of Local Important (Higher Value).

Marsh Fritillary (*Euphydryas aurinia*), a species of butterfly, was recorded at two locations within the eastern boundary of the proposed wind farm with one location containing six active larval webs and the second containing one active larval web. The population of breeding Marsh Fritillary identified within the proposed wind farm site is assessed to be of Local Importance (Higher Value).

Aquatic species including Atlantic Salmon and European Eel were not recorded within the proposed wind farm site during the aquatic surveys, however both were noted in historical records of the Little Brosna sub catchment and Little Brosna_040 RWB during the desktop study. Atlantic Salmon and European Eel were assessed to be of Local Importance (Higher Value) as both species are listed on Annex II of the Habitats Directive.

Aquatic species recorded within the proposed wind farm site or within the ZoI during TOBIN's aquatic surveys included Brown Trout, Stone Loach, Three-spined Stickleback, Nine-spine Stickleback and Lamprey spp. These species were all assessed as of Local Importance (Higher Value).

6.2 Mitigation Measures

Habitats

Vegetation clearance will be kept to a minimum to prevent unnecessary habitat loss where works are to be carried out, and habitats which are to be retained will be clearly marked. An Invasive Species Management Plan has been provided to prevent the risk of the spread of Third Schedule invasive species throughout the proposed wind farm site. Mitigation measures to prevent the degradation of water quality included in a Surface Water Management Plan (SWMP) will be implemented during the construction and decommissioning phase which will ensure there is no impact on watercourses. Measures are also provided to mitigate soil compaction, ground disturbance and the generation of dust, further safeguarding the retained habitats and native plant species within the proposed wind farm site.

Badger

No active Badger setts will be directly impacted by construction. However, there is potential for currently inactive setts near Turbine 8 to be reoccupied. In line with best practice, inactive or disused setts may be temporarily excluded to prevent reoccupation, with all works supervised by an Ecological Clerk of Works (ECoW) and carried out outside the Badger breeding season (July–November). Exclusion methods include "soft blocking" of sett entrances and, where necessary, the use of one-way gates or temporary fencing. Monitoring with camera traps and other tools ensures Badgers are not trapped or disturbed. Once construction is complete, all exclusion measures will be removed, and the area reinstated with soil and natural vegetation to allow future use by Badgers.

To minimise disturbance, all construction near Badger habitats will occur during daytime hours, with directional and shielded lighting and noise controls applied. Pre-construction surveys will update records of Badger activity, and any new setts discovered within the project area or nearby will be managed using the same careful mitigation approach.

Otter

No direct loss of otter habitats is expected, but indirect impacts from construction on water quality and prey availability will be carefully managed. Measures include retaining vegetated buffer strips along watercourses, installing silt traps and sediment fencing, and controlling fuel storage and refuelling away from water. Spill kits and site-specific response procedures will be in place, and staff will be trained in pollution prevention. Water quality will be monitored throughout construction.

To minimise disturbance, all works within 150 m of watercourses will take place during daytime hours, with directional, shielded lighting and restricted high-noise activities. Pre-construction surveys will record otter activity, and any new holts discovered will be protected with exclusion zones, fencing, and site-specific mitigation. Work near breeding holts will only occur under guidance from the Ecological Clerk of Works and relevant authorities. Inactive holts may be

temporarily blocked to prevent reoccupation, ensuring otters are not harmed and habitats remain viable post-construction.

Bats

Trees, scrub and hedgerows will be retained where possible during the construction phase and all trees to be felled will be inspected by an Ecological Clerk of Works (ECoW).

To reduce the collision risk to bat populations, buffer zones of 100 m will be established and maintained around each turbine. Buffer zones are essentially areas where vegetation (such as hedgerows or trees) is removed as this vegetation might attract bats into the area.

Mitigation measures during the operational phase to reduce the collision risk will include: feathering of the wind turbine blades to prevent the blades from freewheeling during low wind conditions; and raising the cut-in speed (the minimum wind speed at which the turbine starts to operate) by 1.5 m/s at the high-risk turbines. Monitoring will also be undertaken for a minimum of three years from the first year of operation to determine the effectiveness of the curtailment program.

Marsh Fritillary

Pre-construction surveys will identify Marsh Fritillary larval webs within the wind farm site, particularly near the southern entrance compound and Turbine 8. Where possible, habitat will be avoided, and identified larval webs will be protected with temporary fencing. If avoidance is not possible, larval webs will be carefully translocated to nearby suitable GS4 wet grassland habitat containing Devil's-bit scabious, under the supervision of an ECoW, ensuring the larvae remain unharmed. Translocations will take place in April, before caterpillars pupate, following pre-agreed routes to minimise disturbance.

Additional mitigation includes vegetation management within construction areas to discourage Marsh Fritillary from laying eggs in affected zones, retention and management of wider habitat through mowing and controlled cattle grazing, and removal of encroaching scrub outside the bird breeding season. Devil's-bit scabious will also be translocated to enhance the receiving habitat. Exclusion zones will be clearly fenced and signed, preventing access during construction. Post-construction monitoring will continue for up to ten years to assess larval web survival, habitat condition, and effectiveness of mitigation measures. Overall, these measures aim to limit habitat loss to 0.225 ha while enhancing 4.8 ha of surrounding wet grassland for long-term species conservation.

Aquatic Species

All construction activities will implement strict pollution and sediment control measures to protect aquatic habitats and species in rivers and drainage ditches connected to the wind farm site. Sustainable Drainage Systems (SuDS) will be used to manage runoff during construction, operation, and decommissioning, ensuring flow rates do not exceed greenfield levels. Temporary settlement ponds, silt fences, earth bunds, and vegetated buffer strips will be installed to capture sediment and prevent it from entering watercourses. Construction materials, stockpiles, and borrow pits will be located away from water bodies, and excavation will be avoided during heavy rainfall.

Fuel, oils, and other contaminants will be stored in designated bunded areas with clear signage and access limited to trained personnel. Refuelling areas will use drip trays and absorbent mats, and weekly inspections by the ECoW will ensure spill prevention. For horizontal directional drilling, specialist contractors will follow best-practice methods to prevent drilling fluid loss including monitoring fluid properties, using buffer zones, and employing contingency measures. All drilling and construction activities will be continuously monitored, with any issues addressed immediately, ensuring water quality and aquatic habitats are protected throughout the project.

6.3 Residual Effects and Compensation Measures

Following the implementation of the comprehensive mitigation measures outlined in the EIAR, residual effects are largely reduced to not significant or slight in the long term.

For habitats and flora, habitat creation measures, including 4.9 hectares of native woodland and scrub and 1.3 km of hedgerows, will offset habitat losses once fully established, resulting in no significant long-term residual effects. Potential dust impacts on sensitive habitats, including raised bog, cutover bog, dry heath, and oak-birch-holly woodland, will also be reduced to not significant levels through standard control measures.

For fauna, residual effects on species such as Otter, Badger, and Common Frog are not significant following mitigation. For Marsh Fritillary butterfly, effects are reduced from potentially profound and permanent to slight in the long term, supported by habitat management and conservation grazing within retained and enhanced wet grassland areas.

For bats, vegetation clearance around turbines (in accordance with current guidance) will result in a slight residual effect (not significant); however, with the implementation of mitigation measures effects are further reduced to imperceptible (i.e. not significant).

Following the implementation of water protection and drainage measures, residual effects on aquatic ecology are not significant.

7. ORNITHOLOGY

The Ornithology chapter evaluates the potential significant effects of the proposed project on bird species. This assessment considers both the direct effects of the wind farm and supporting infrastructure including works along the proposed TDR, as well as cumulative impacts in combination with other projects. The chapter also outlines the mitigation measures proposed to prevent, minimise, or compensate for any identified significant effects. The assessment is based on bird surveys carried out over nine seasons, between the breeding season of 2020 and the winter bird season 2025/2026. The scope of, and methods used for, the bird surveys were based on Scottish Natural Heritage's (SNH) guidance (SNH, 2017), and included vantage point surveys designed to monitor avian activity over the proposed wind farm site, and other surveys including transect surveys that recorded the distribution and abundance of bird species of interest, within and around the proposed wind farm site.

7.1 ASSESSMENT OF EFFECTS

A total of 98 species were recorded during the breeding and wintering bird surveys conducted within the study areas between 2020 and 2026.

Ornithological effects from habitat degradation during the construction of the proposed wind farm infrastructure has been assessed. This assessment revealed that seven bird species would likely be affected moderately by this habitat degradation (Black-tailed Godwit, Cormorant, Golden Plover, Pintail, Teal, Whooper Swan and Wigeon). Also, effects from disturbance/displacement to birds from the construction works during the construction phase has been assessed. It concludes that effects of moderate significance can be expected on six species (Lapwing, Pintail, Snipe, Teal, Whooper Swan and Wigeon) and significant effects on one species (Golden Plover).

Avian collision risk with turbines was modelled for the operation phase of the proposed project, based on the results from the vantage point surveys during the field study. The collision risk assessment concludes that no likely significant effects can be expected from the proposed project. Furthermore, the collision risk with other elements of the proposed project (e.g. meteorological mast) also indicates that no likely significant effects due to collision are to be expected.

7.2 MITIGATION MEASURES

The proposed wind farm has been designed in line with industry best practices to minimise impacts on biodiversity and water quality impacts, which may indirectly affect bird species.

During the construction phase, a CEMP (which includes pollution, sediment, and erosion control measures) will guide environmental protection. A qualified Ecological Clerk of Work (ECoW) with ornithological expertise will oversee the implementation of these mitigation measures.

Mandatory seasonal toolbox talks will be held to educate staff on disturbance risks to birds and how to report sensitive species observations. Physical exclusion zones and clear signage will also inform site workers of areas to avoid within the site, to mitigate disturbance.

A number of seasonal constraints for construction work will be implemented to further mitigate disturbance and displacements of birds and are as follows:

- Pre-construction surveys will be conducted between the months of April and July, to inform site clearance activities.
- Any removal of scrub vegetation during the construction phase will be undertaken outside the bird breeding season (1 March and to 31 August), however where programme or site constraints (e.g. safety concerns or adverse weather) require works to be undertaken during the breeding season, no vegetation clearance will take place unless a pre-construction nesting bird survey has been carried out by the ECoW.
- Works in proximity to the Little Brosna are further restricted to outside of the wintering period (October to March inclusive) to mitigate the disturbance of sensitive species that utilise this habitat over winter. Should unforeseen circumstances require activity within this period, surveys will be undertaken up to five days before the works, by a suitably qualified ECoW to confirm the absence of Key Ornithology Receptors (KORs) within the affected area. If wintering birds are present in large enough concentrations and assessed to be foraging, resting and/or roosting, such as those identified within the existing environment, works will be postponed or relocated to an alternative area until the birds have vacated.

Mitigation measures during the construction phase also include habitat management of areas located at least 500m from turbines to reduce collision risk. These measures will continue into the operational phase, with a dedicated ECoW overseeing their implementation.

A Bird Monitoring Programme will be implemented to protect local and migratory bird species during the construction and operation of the wind farm. It includes pre-construction surveys to avoid nesting areas and long-term monitoring to track bird activity and collision risks. Methods include flight surveys, breeding and winter bird counts, and carcass detection using trained dogs. Annual reports will be submitted to National Parks and Wildlife Service (NPWS) and planning authorities to support ongoing protection and adaptive management.

During the decommissioning phase, above ground infrastructure will be removed, with works restricted outside the bird breeding season (March 1st to August 31st) to ensure compliance with wildlife legislation. The works area in proximity to the Little Brosna, will again be subject to additional seasonal restriction, decommissioning here will be restricted to outside of the winter bird season (October to March inclusive).

7.3 Residual Effects

The ornithological impact assessment concludes that, with the full implementation of the mitigation measures, no likely significant effects are expected from the proposed project, during the construction, operation and/or decommissioning phases.

8. LAND, SOILS AND GEOLOGY

An assessment of land, soils and geology has been undertaken in accordance with the EPA (2022) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'.

The available desktop information and geotechnical site investigations undertaken for the proposed project have been used to establish the baseline conditions for Land, Soils and Geology, and to inform the impact assessment for the proposed project.

The highest points are found in the west areas, while the areas along the Little Brosna river and to the northwest corner has the lowest elevation. The proposed wind farm study area predominantly consists of agricultural land, cutover peat and mixed forestry. Peat and alluvial sediments is present on the eastern half of the proposed wind farm with till soils located to the west. The site is underlain by a poorly productive aquifer.

The assessment was carried out to understand the existing ground conditions and to identify any likely significant effects the construction, operation, and eventual decommissioning of the project might have.

8.1 ASSESSMENT OF EFFECTS

This assessment considered effects on land use, geological heritage sites, contaminated sites/potential for contamination, mineral/aggregate resources, soil compaction and erosion and soil stability in relation to the three phases (construction, operational and decommissioning) of the proposed project. As part of the project design, oil interceptors at the substation and construction compounds are proposed. A Spoil and Peat Management Plan is provided in EIAR Appendix 8-3.

Three locations within the proposed wind farm site will be used as borrow pits for extracting material. There are no effects anticipated on mineral/aggregate resources along the proposed GCR or proposed TDR.

Construction phase activities of the proposed project will require earthworks, resulting in the removal of vegetation cover, topsoil and mineral subsoil. Incorrect site management of earthworks and excavations could potentially lead to pollution of the land, soils and geology environment, owed to potential leaks and spills from construction phase activities.

Occasionally, during the operational phase, machinery will access the proposed wind farm for maintenance of access tracks, substation/BESS and turbines. The presence of machinery on the proposed wind farm site has the potential to result in minor accidental leaks or spills of fuels/ oils contaminating the soils and subsoils.

The effects associated with decommissioning will be similar to those associated with construction but of reduced magnitude because of limited excavations.

Mitigation measures are proposed to address potential effects on the land, soils and geology environment within the proposed project.

8.2 Mitigation Measures

Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist. The earthworks will not be scheduled to be carried out during severe weather conditions.

Cutover peat located in low lying areas to the eastern section of the proposed wind farm site and will be used to reinstate the borrow pits and for habitat enhancement. The geological hazards based on the peat stability risk assessment are low. No contamination were identified on the proposed project and it is therefore considered as low sensitivity. The primary risks to soils arise from potential hydrocarbon spillage and leakages.

Oil storage will be required at several fixed and mobile locations around the proposed wind farm site. Fuel and oil storage and handling requirements will be as detailed for construction, with fuel and oil storage located within permanent covered bunds.

8.3 Overall/Residual Effects

Overall, it is not envisaged that there will be any likely significant effects in relation to the land, soils and geology environment during construction. This is due to efficient design, along with appropriate material management, such as using onsite borrow pits, which will ensure optimisation of the volume of materials required to be imported to the proposed wind farm site.

All other potential effects on the land, soils and geological environment will be mitigated through good site practice, including in relation to vehicular movements, management of pollutant fluids, sustainable use of soils.

Overall, due the relatively low sensitivity of the land, soils and geological conditions locally, and the implementation of the mitigation measures, residual effects from these aspects will likely be not significant during the construction, operational and decommissioning phases.

There are other existing and planned wind farms and renewable energy projects within 5 km. The assessment found that the wind farms do not overlap physically, and due to the localised effects, no significant cumulative effects are expected from these developments.

9. HYDROLOGY AND HYDROGEOLOGY

The proposed wind farm site is located in the little brosna subcatchment. Within the proposed wind farm site, two primary streams have been identified: the Little brosna to the east, flows northward to Birr, and the Holy Well Clohaskin Stream, flows eastwards through the site to the Little Brisna. No lakes/ponds were identified at the proposed wind farm site.

All streams within the wind farm site are slow flowing lowland streams. The Holy Well Clohaskin Stream is partially channelised (deepened) and straightened in places. All watercourses within the proposed wind farm site are of low gradient.

The GCR follows the local roads from the proposed windfarm and crosses the little Brosna near Birr. Instream works are proposed for a small stream near the Clondallow substation.

Works required for the TDR lie within the Little brosna subcatchment area. No instream works are proposed for the TDR.

Surface water arising at developed areas of the proposed wind farm site will be managed by a dedicated stormwater drainage system designed in accordance with Sustainable Drainage Systems (SuDS) principles, limiting discharge from the proposed wind farm site to greenfield runoff rates.

9.1 ASSESSMENT OF EFFECTS

The construction of the wind farm will involve the removal of vegetation and forestry, and excavation of mineral subsoil and rock primarily from the proposed borrow pits. Exposed and disturbed ground may increase the risk of erosion and subsequent sediment laden surface water runoff. The release of suspended solids is primarily a consequence of the physical disturbance of the ground during the construction phase, if not correctly compacted.

Within the proposed wind farm site, numerous man-made drains are in place to drain the existing forestry and cutover peatland. The merging of the proposed wind farm infrastructure with the existing forestry drainage and natural drainage of the proposed wind farm site, in a manner that avoids water quality and flooding impacts to downstream rivers and streams, is a key component of the proposed wind farm design. EPA data indicates that the water quality of the local rivers is typically 'moderate' status.

The proposed wind farm site is predominantly underlain by a Locally Important Aquifer (LI)-Bedrock which is Moderately Productive only in Local Zones. Dewatering is required to construct the proposed turbine foundations and borrow pits. Borrow pits are proposed to be excavated up to 5 m deep and will therefore locally effect groundwater levels within the proposed wind farm site. Low permeability soils were recorded along the little brosna river.

There are no registered group/public drinking water supplies within 1 km downgradient of the proposed wind farm site.

The proposed wind farm site is not located in an area that is susceptible to flooding from rivers. Drainage attenuation will be applied across the proposed wind farm site to ensure no likely significant effects on downstream flooding will occur as a result of the proposed wind farm project.

9.2 Mitigation Measures

During the construction phase, all works associated with the construction of the proposed project will be undertaken in accordance with the guidance contained within CIRIA Document C741 'Environmental Good Practice on Site' (CIRIA, 2015).

The dewatering operations will be inspected each day when dewatering is taking place to ensure that dewatering treatment controls are working correctly and to evaluate whether there are observable indicators of sediment discharges. Where any issues are encountered, action will be undertaken to correct any problems at the proposed project or with the dewatering controls that may have contributed to the discharges.

All associated tree felling will be undertaken using good working practices as outlined in the Forestry Report (see EIAR Appendix 2-8) and the CEMP (see EIAR Appendix 2-3), the Forestry Harvesting and Environment Guidelines (Forestry Service, 2000) and the Forestry and Water Quality Guidelines (Forestry Service, 2000).

Regular monitoring of groundwater (levels and quality) will take place using existing monitoring boreholes during the construction phase. The existing groundwater well on site will be monitored on site during construction and for a period following cessation of construction activities (to be agreed with the relevant authorities).

Inspections of silt control measures are critical after prolonged or intense rainfall, while maintenance will ensure maximum effectiveness of the proposed mitigation measures. A programme of inspection and maintenance will be designed and dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, and records kept.

9.3 Overall/Residual Effects

The residual effects on the surrounding water quality, hydrology, hydrogeology and existing drainage regime at the proposed wind farm site are considered to be not significant and primarily short term in nature. The existing on-site drainage will remain active during the construction and operation of the proposed wind farm and will be complemented by the drainage plan designed for the proposed project.

The sensitive hydrological features are unlikely to be impacted on by excavations / drains or other any general construction works given the setback distances. Significant long-term effects are not predicted. In summary, significant long-term effect on water quality, hydrology and hydrogeology are not predicted, provided that the works are designed, constructed, maintained, and decommissioned in accordance with the mitigation measures outlined in this chapter in the EIAR.

No significant residual effects were reported for any hydrological or hydrogeological receptors with any of the nearby wind farm/other assessment reviewed. Taking into consideration other plans or projects no cumulative effects are anticipated.

Due to the localised nature of the proposed works, there is no potential for significant, negative cumulative effects in-combination with other local developments on the water environment.

10. AIR QUALITY

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones were defined in Ireland for air quality management and assessment purposes as outlined within the EPA document titled *Air Quality in Ireland 2023* (EPA 2024). In terms of air monitoring, the area of the proposed project is categorised as Zone D, which represents rural Ireland but also includes all towns with a population of less than 15,000.

Continuous monitoring by the EPA is carried out at a number of monitoring stations within Zone D (EPA, 2024), representative of the proposed wind farm site. No exceedances have been recorded at the monitoring sites, representative of the proposed wind farm site, for particulate matter.

10.1 ASSESSMENT OF EFFECTS

10.1.1 Construction Phase

An assessment of the potential dust impacts as a result of the construction phase of the proposed project was carried out based on the UK Institute for Air Quality Management 2024 guidance document 'Guidance on the Assessment of Dust from Demolition and Construction'. This established the sensitivity of the area to impacts from construction dust in terms of dust soiling of property, human health and ecological effects. The surrounding area was assessed as being of low sensitivity to dust soiling and of low sensitivity to dust-related human health effects.

The sensitivity of the area was combined with the dust emission magnitude for the site under three distinct categories: earthworks, construction and trackout (movement of vehicles) in order to determine the mitigation measures necessary to avoid significant dust impacts. It was determined that there is at most a low risk of dust related impacts associated with the proposed project. In the absence of mitigation there is the potential for direct, short-term, negative and slight effects on air quality.

10.1.2 Operational Phase

The generation of electricity due to the installation of the wind farm will lead to indirect net savings in terms of NOX emissions. The minimum supply of 178 GWh of renewable electricity to the national grid will lead to a net saving in terms of NOX emissions which may have been emitted from fossil fuels to produce electricity, and will therefore have a positive impact of on Ireland's obligations under the National Emissions Reduction Directive. This is considered an indirect, long-term, slight, positive effect on air quality.

10.2 MITIGATION MEASURES

Detailed dust mitigation measures, derived from the Institute for Air Quality Management 2024 guidance '*Guidance on the Assessment of Dust from Demolition and Construction'* as well as other relevant dust management guidance, are outlined within Chapter 10 and also in the Construction Environmental Management Plan (CEMP) to ensure that no significant nuisance as a result of construction dust emissions occurs at nearby sensitive receptors.

10.3 Overall/Residual Effects

Detailed dust mitigation measures are outlined in Chapter 10 Air Quality and also included in the CEMP to ensure that no significant nuisance as a result of construction dust emissions from demolition, earthworks, construction and trackout (movement of vehicles) occurs at nearby sensitive receptors. Once these best practice mitigation measures, derived from the Institute for Air Quality Management 2024 guidance 'Guidance on the Assessment of Dust from Demolition and Construction' as well as other relevant dust management guidance, are implemented the impacts to air quality will result in no significant effects at nearby sensitive receptors (such as local residences or sensitive ecology).

There will be beneficial impacts to air quality from the generation of renewable electricity from the proposed project. There will be NOX emission savings which may otherwise have been generated from fossil fuels. The impact to air quality has been assessed as beneficial, long-term, slight and not significant.

11. NOISE AND VIBRATION

This chapter of the EIAR assesses the likely significant environmental noise and vibration effects of the proposed project. The objective of the noise and vibration assessment is to specify appropriate noise and vibration thresholds and limit values, determine the potential impacts and effects with reference to the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), and, if required, specify appropriate mitigation measures to ensure that the impacts on noise-sensitive receptors are within acceptable threshold values and limits.

To inform the noise impact assessment, an environmental noise survey was conducted to establish the existing baseline and background noise levels in the receiving environment. This was achieved through simultaneous wind measurements and noise monitoring over several weeks, capturing noise levels across a representative set of wind speeds and directions.

11.1 ASSESSMENT OF EFFECTS

The potential noise and vibration effects on the surrounding environment have been considered for three stages: the short-term construction phase and decommissioning phases, and the long-term operational phase.

11.1.1 Construction and Decommissioning Phase

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities will generally control construction noise and vibration by restricting the hours during which activities can take place and may consider noise limits at their discretion. The assessment of construction and decommissioning noise and vibration has been conducted in accordance with the following best practice guidance:

- British Standard BS5228 Code of practice for noise and vibration control on construction and open sites;
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Transport Infrastructure Ireland (TII);
- Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (National England (now National Highways)

Subject to good working practices outlined in the CEMP, the assessment has confirmed that noise and vibration from construction and decommissioning activities are predicted to be below the recommended threshold values at all Noise Sensitive Locations (NSLs). The associated construction and decommissioning noise and vibration impacts are not expected to result in any significant effects.

11.1.2 Operational Phase

Wind Turbine Noise

The applicable guidelines for the assessment of noise for wind energy developments are the *Wind Energy Development Guidelines* published by Department of the Environment, Heritage, and Local Government in 2006 (WEDG06). The WEDG06 s are broadly in line with the recommendations set out in *The Assessment and Rating of Noise from Wind Farms*, published by the Department of Trade, and Industry (UK) Energy Technology Support Unit 1996ETSU-R-97. The ETSU-R-97 document has been used to supplement the guidance contained within the WEDG06, where appropriate and necessary.

Background noise levels for day and night periods have been derived from noise survey data undertaken at seven locations in the receiving environment surrounding the proposed project.

The measurement and assessment methodology have been undertaken in accordance with best practice guidance contained within the guidance documents *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*' and its *Supplementary Guidance Notes* published by the Institute of Acoustics (IOA GPG). The results of the background noise survey have been used to derive appropriate operational turbine noise limits for the assessment of the development in line with the guidance contained in the WEDG06.

Based on the proposed site layout and the details of turbine noise emissions, hub height, and tip height for the range of turbine types considered in the assessment, turbine noise levels have been predicted at NSLs across a range of operational wind speeds for the three turbine types considered in the assessment, the Nordex N163, Vestas V150 and Nordex N149. The assessment found that the N163 turbine, which produces the highest noise levels among the options considered, has the potential to marginally exceed the turbine noise criteria at one location.

The findings of the assessment, presented in the EIAR has confirmed that the predicted operational noise levels associated with the proposed project will be within best practice turbine noise criteria at all locations with no significant cumulative effects.

Noise from Fixed Plant

Operational noise from the proposed substation and battery energy storage (BESS) facility has been assessed and found to be within the proposed criteria based on review of the most appropriate guidelines and standards. It is considered that operational noise from fixed plant associated with the proposed project will not result in any significant noise and vibration effects at NSLs.

11.2 MITIGATION MEASURES

11.2.1 Construction and Decommissioning Phase

The assessment has demonstrated that the proposed project is expected to comply with the noise and vibration criteria during the construction and decommissioning phases and therefore no specific mitigation measures are required.

11.2.2 Operational Phase

Wind Turbine Noise

The assessment found that the N163 turbine, which produces the highest noise levels among the options considered, has the potential to marginally exceed the turbine noise criteria at one location. To address the potential exceedances predicted when considering the Nordex N163 turbine mitigation in the form of turbine curtailment through controls embedded within the Turbine has been presented in the noise and vibration chapter. The application of mitigation in the form of turbine curtailment can ensure that residual noise levels associated with the proposed project remain within the best practice noise limits recommended in WEDG06 guidelines.

A commitment has been provided that prior to the commissioning of the wind farm; the developer will submit a Noise Compliance Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for all noise measurements, the frequency of monitoring, procedures for recording results and a protocol for managing complaints.

Noise from Fixed Plant

The assessment of noise from the operation of fixed plant at the substation and battery storage facility is predicted to comply with the proposed noise limits and no specific mitigation measures are required.

11.3 Overall/Residual Effects

11.3.1 Construction and Decommissioning Phase

The potential worst-case effects at the nearest NSLs associated with construction and decommissioning of the proposed project are short term and not significant.

11.3.2 Operational Phase

Wind Turbine Noise

The residual turbine noise levels associated with the proposed project will be within noise limits derived in line with the applicable WED06 Guidelines and it is not considered that a significant effect is associated with the project. The potential worst-case effects at the nearest NSLs associated with operational wind turbine noise from the proposed project are long term and not significant.

Noise from Fixed Plant

The potential worst-case effects at the nearest NSLs from operational noise from the proposed substation and battery energy storage (BESS) facility associated with the proposed projects are long term and not significant.

12. LANDSCAPE AND VISUAL

This chapter describes the landscape context of the proposed project and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

In accordance with relevant guidelines, the study area used for the LVIA is 20 km. Production of the Landscape and Visual Impact Assessment involved baseline work in the form of desktop studies and fieldwork followed by professional evaluation by qualified and experienced Landscape Architects.

12.1 BASELINE CONTEXT

The study area is largely made up of a relatively gentle rolling landscape except in the south and east of the study area. The site area itself is situated in a flat lowland area with some low undulations in the near vicinity. A considerable portion of the Slieve Bloom mountain range falls within the eastern portion of the study area. The Little Brosna river flows along the eastern side of the proposed project, coming as close as 65 m to the nearest turbine. The Camcor river flows west from just outside Kinnitty to where it meets the Little Brosna at Birr, 5.1 km north of the closest turbine. There are considerable areas of peatland scattered throughout the study area, including a sizeable portion of the site area. This limits the agricultural activity within the area. Much of the land outside the bogs is agricultural farmland bound by a network of mixed hedgerow vegetation, used for pasture and tillage. Closer to the urban centres, the land use is more commercial and industrial in nature.

There is much evidence of anthropogenic activity on the landscape surrounding the proposed project. This is particularly evidenced by the widespread agricultural fields, buildings and associated infrastructure. In addition, there is precedent for renewable energy development in the area. Lackagh Wind farm is located 2.7 km southwest of the proposed wind farm. Additionally, quarries at Glasshouse (2.3 km south of Shinrone) and Tullaroe further indicate that this is a working landscape.

The immediate surrounds of the proposed wind farm are quite sparse in terms of dwellings, with houses tending to follow local roadsides. Loughkeen (1 km west) is the nearest crossroad settlement to the site, while Shinrone (3.6 km south) is the closest notable settlement to the proposed project. Birr (5km north) is the largest settlement in the central study area. In terms of transport routes the immediate surrounds of the contains a network of local roads. The R492 borders the south-eastern corner of the proposed wind farm site. The N52 (2 km west) and N62 (2km east) are the nearest national secondary roads. The R491 and R489 regional roads also run through the central study area. In the wider study area, the M7 runs east-west across the southern quadrant (c. 12.4 km south).

12.1.1 Landscape Policy Context

The Wind Energy Development Guidelines (2006) provide guidance on wind farm siting and design criteria for a number of different landscapes types. The site of the proposed project is located within a landscape most consistent with both the “Flat Peatland’ and ‘Hilly and Flat Farmland’ landscape types described in the 2006 Guidelines.

With regard to the current Offaly County Development Plan, the proposed project is situated in a 'Low' sensitivity area in terms of landscape classification, however, the Offaly Wind Energy Strategy classifies this area as 'Not Deemed Suitable' for wind energy development.

In terms of the Tipperary County Development Plan, the site is contained within 'the Plains - Peatlands and Wet Mixed Farmland' Landscape Character Area and within the geographically specific 'Borrisokane Lowlands Landscape Character Type - LCT 7', which is classified as having a 'Moderate' sensitivity. The Tipperary Wind Energy Strategy classifies the site as being within an area deemed 'Unsuitable for Further Development'

Notwithstanding the unfavourable Offaly and Tipperary wind energy strategy zonings, the Landscape and Visual Chapter sets out justification for the proposed wind farm to be considered its own merits and in relation to the landscape and visual effects it is assessed to generate.

Designated scenic views from both the Offaly and Tipperary County Development Plans were considered and those deemed relevant (due to potential for visibility of the proposed project) were selected as viewpoints for the visual impact assessment.

Assessment of Effects Construction, operational and decommissioning effects are assessed separately in relation to both landscape and visual. Cumulative effects with other relevant existing and permitted developments are also considered.

In terms of landscape effects, the proposed wind farm development will result in some physical impacts on the land cover of the site and it will result in a distinct increase in the scale and intensity of built development in this landscape context. However, the proposed wind farm will be well assimilated within its broad and productive landscape context without undue conflicts of scale with underlying land form and land use patterns. Landscape effects are considered to be not significant.

Visual effects are assessed from 27 viewpoint locations within the study area representing visual receptors including designated scenic views; Local Community Views; Centres of Population, Major Routes; and Amenity and Heritage Features. While there are some mid to high range effects recorded from some of the closer Vantage Point (VP) locations to the proposed project, visual effects are ultimately considered to be not significant.

Cumulative Effects are considered in relation to three existing and tow permitted wind farms within the study area with the closest being the existing Lackagh Wind Farm some 2.5 km to the southwest. The majority of cumulative turbines occur within the outer northern portion of the study area and cumulative effects are considered to be not significant.

12.2 Mitigation Measures

The principal Landscape and Visual mitigation measures are embedded in the siting, design and layout of the proposed project that is subject of the assessment in Chapter 12. It is considered that the siting and design of the proposed project respond well to, and are generally consistent with, the guidance provided for the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape types in the WEDGs 2006.

12.3 Overall/Residual Effects

As Landscape and Visual mitigation measures are embedded in the design of the proposed project that is ultimately assessed, residual effects remain unchanged from potential effects.

13. ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

The proposed wind farm site is primarily comprised of forestry, cutover bog and agricultural fields. There is one recorded monument within the proposed wind farm site, which comprises a tower house and associated bawn (AH 97). The site of the recorded monument is located c. 695 m north-northwest of Turbine 1.

There are 109 individual or groups of recorded archaeological sites located within the 5 km study area of the proposed wind farm site, including three redundant records.

There are 70 individual or groups recorded structures of architectural merit present within the study areas of the proposed project. Furthermore, 36 previously unrecorded sites of cultural heritage significance have been identified within the study areas of the proposed project as part of this assessment.

There is one site included on the tentative list for World Heritage Property status located within the 10 km study area, which comprises the Birr Castle Demesne Great Telescope (The Leviathan, 1845, BH2). Science galleries have been established at Birr Castle, which complement the historic nature of the demesne and research in astronomy began again at Birr Castle in 2010, with the construction of the Rosse Solar Terrestrial Observatory, and of a node of the international LOFAR radio telescope in 2017 (I-LOFAR), which are located c. 315m southwest of the Great Telescope, within the original demesne landscape associated with Birr Castle. These features are located c. 4.96 km north-northeast of the proposed wind farm site.

There are two National Monuments located within the 10 km study area of the proposed wind farm site. These comprise Lismacrory Mounds (AH77, Nat Mon No. 348), c. 4.63km to the west and Lackeen Castle (AH28, Nat Mon No. 378), c. 9.23km northwest.

There is one site that possesses a Preservation Order within the 10 km study area of the proposed wind farm site. Ballycurragh Hillfort (AH25, PO No. 23/1976), c. 9.23km northwest. A review of the Excavations Bulletin (1970-2024) has confirmed that no previous archaeological investigations have taken place within the proposed wind farm site or along the GCR or at the proposed TDR work areas.

13.1 ASSESSMENT OF EFFECTS

Construction

The construction of the proposed project will not result in any direct effects on recorded archaeological, architectural and cultural heritage sites.

The proposed wind farm site occupies a landscape characterised by a mixture of pasture, arable and bogland. The general archaeological potential of the landscape is considered high due to the presence of the bogland and the Little Brosna River. Therefore, pre-mitigation, it is possible that ground disturbances associated with the construction phase have the potential to result in direct, negative (permanent) effects on archaeological remains that may survive beneath the current ground level, which do not possess surface expression. Effects, prior to the application of mitigation, have the potential to be moderate to very significant.

Ground disturbances associated with the construction phase will result in a direct, negative (long-term) effect on the demesne landscape associated with Ballincor House (DL29). This well-preserved landscape possesses high sensitivity and the magnitude of effect will be low, which will result in a slight significance of effect.

The construction phase will result in five direct, negative (permanent) effects on townland boundaries that separate Clonfree/Castletown, Castletown/Cronekill, Cronekill/Cloonaheen, Cloonaheen/Ballincor Demesne and Ballincor Demesne/Curralanty. These boundaries possess medium sensitivity but the magnitude of impact will be low, resulting in a slight significance of effect in each instance.

The construction work areas along the proposed TDR will not result in any direct effects on recorded archaeological, architectural and cultural heritage sites.

The intervention for the work areas along the proposed TDR will require the construction of a temporary access road through 140m of greenfield. It is possible that ground disturbances associated with the construction phase have the potential to result in direct, negative (permanent) effects on archaeological remains that may survive beneath the current ground level, which do not possess surface expression. Effects, prior to the application of mitigation, have the potential to be moderate to significant, dependant on the nature, extent and significance of any such remains that may be identified.

The construction work areas along the proposed TDR will result in the removal of a section of demesne wall associated with Sharavogue House (DL12). The wall and overall demesne is of low sensitivity and the magnitude of impact is also low, as only a short section of wall will be removed. The significance of effect is not significant.

The construction of the proposed GCR will not result in any direct effects on recorded archaeological, architectural and cultural heritage sites. The excavation of the trench required for the GCR will be located to the immediate west of AH109 (motte and bailey). Whilst an existing road is located here, it is possible that ground disturbances may result in a direct, negative (permanent) effect on features that may existing beneath the road that are associated with the castle site. Effects, prior to the application of mitigation, have the potential to be moderate to significant, dependant on the nature, extent and significance of any such remains that may be identified.

The construction of the proposed GCR will be confined to the existing road network with the exception of two locations where the GCR will avoid two historic bridges (BH18 and BH68) and cross short sections of greenfield. It is possible that ground disturbances may result in a direct, negative (permanent) effect on features that may existing the current ground level in these area, with no surface expression. Effects, prior to the application of mitigation, have the potential to be moderate to significant, dependant on the nature, extent and significance of any such remains that may be identified.

Operational

All sites of archaeological, architectural and cultural heritage significance identified within the 10 km, 5 km and 2 km study areas of the proposed wind farm site have been assessed in conjunction with the Theoretical Zone of Visibility mapping (Tip Heights) and photomontages produced in Chapter 12. In some instances, there are no predicted effects due to the fact the

proposed turbines will not be visible from certain places in the surrounding landscape, due to the topography.

No significant operational effects are predicted in relation to sites of national or international significance.

Moderate indirect, negative (medium term) effects are predicted in relation AH48 Ringfort, AH97 Tower house and bawn, AH47/BH49 18th/19th century Ballincor House, BH48 Corolanty House, BH50 Farm house and National School, BH24 Castletown House, BH58 Loughkeen House and Church, BH59 Ivy Hall House, BH32 gate lodge, DL29 Ballincor House demesne, DL28 Corolanty House demesne, DL40 Glebe demesne, DL43 Carrig demesne, DL49 Raymount demesne, CH14 Derelict vernacular buildings, CH15 Ruined vernacular house and outbuildings, CH8 Wraymount House and CH13 Rathcahill House.

No impacts are predicted upon the archaeological, architectural or cultural heritage resource as a result of the operation of the proposed GCR.

No impacts are predicted upon the archaeological, architectural or cultural heritage resource as a result of the operation of the proposed works on the proposed TDR.

13.2 Mitigation Measures

Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at the greenfield locations of the proposed wind farm site. This work will be carried out under licence to the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH). Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH.

No mitigation with regards to Ballincor demesne landscape is required as the nature and extent of the landscape is well recorded and understood within the historic mapping record and aerial photographic coverage.

All townland boundary interventions required for the proposed wind farm site will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DoHLGH and will include a full record of the sections of boundaries removed.

The route of the new access road will be subject to archaeological monitoring during construction. This will be carried out under licence to the National Monuments Service of the DoHLGH. If any archaeological remains are identified further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH.

The section of demesne wall associated with Sharavogue House (DL12) will be cleared of vegetation prior to the commencement of construction and a full written and photographic record of the wall will be made. The removal of the wall will be subject to archaeological monitoring as described above. The wall will be reinstated following the completion of works.

The excavation of the GCR trench, where it passes to the west of AH109 will be subject to archaeological monitoring during construction. This will be carried out under licence to the

National Monuments Service of the DoHLGH. If any archaeological remains are identified further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH.

The excavation of the GCR launch/reception pits for the directional drilling at BH 18 and BH68, will be subject to archaeological monitoring during construction. This will be carried out under licence to the National Monuments Service of the DoHLGH. If any archaeological remains are identified further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH.

As detailed in Appendix 13-3, potential indirect effects have been identified upon the archaeological, architectural and cultural heritage resource within the study area of the proposed project, although none are deemed to be significant negative or higher. Due to the constructed form of the proposed turbines, it is not possible to mitigate indirect effects on the setting of archaeological, architectural or cultural heritage sites.

13.3 Overall/Residual Effects

Following the implementation of the above construction mitigation measures, there will be no significant residual effects on the previously unrecorded archaeological resource. This is due to the fact that any archaeological remains that are encountered during the course of monitoring or test trenching will be subject to preservation by record or preservation in-situ. Residual effects will remain with regards to the setting of archaeological, architectural and cultural heritage sites, due to the fact that the effect on the setting of the sites cannot be mitigated, but these effects will not be significant or permanent.

14. TRAFFIC AND TRANSPORT

This chapter assesses the likely significant effects of the proposed project on the surrounding road network and its capacity. Regional access to the proposed wind farm site is via national roads such as the N62 and N52, with local access into the proposed wind farm site from the R492 regional road and the L1071 local road. The proposed wind farm site is located approximately 5 km south of Birr, spanning parts of County Offaly and County Tipperary across approximately 355 ha of agricultural land, forestry, and peatland.

14.1 ASSESSMENT OF EFFECTS

The construction phase represents the critical period for any potential traffic impacts, with the majority of materials delivered using maximum length articulated lorries or smaller vehicles. Traffic surveys undertaken confirmed that local roads carry very low volumes of traffic, with the N62/R492 junction handling around 685 to 747 vehicles during peak hours and the R492 proposed wind farm site access seeing approximately 124 to 132 vehicles daily. Construction is expected to take approximately 24 months. During the peak construction period between July and September 2027, up to 27 heavy vehicles and 120 staff vehicles are anticipated daily, while average construction periods will see around 15 heavy vehicles and 76 staff vehicles. Concrete pours for turbine foundations will occur over ten separate days, though other deliveries will be restricted on these days to manage traffic levels.

The transport of abnormal indivisible loads (such as the turbine blades and tower components) for the works on the proposed TDR requires particular consideration due to the size of components involved. Turbine blades up to 81 metres in length will be delivered from Foynes Port via the N69, N18, M7 motorway, R435, R445, and N62 before reaching the site via the R492. A detailed assessment of this route identified locations requiring temporary accommodation works, including the installation of temporary hardstanding areas at tight corners, making road signs demountable for temporary removal, trimming back vegetation, and temporarily removing some lighting columns. These advanced works will be completed before deliveries commence, with all areas restored to their original condition once the final turbine is delivered. Turbine deliveries will take place at night under Garda escort and traffic management to minimise disruption to other road users.

The GCR extends approximately 12.23 km from the proposed site substation to the existing Dallow substation, with most of this route following public roads. Construction will involve trenching along roadsides progressing at approximately 250 metres per week, with temporary lane closures or short road closures managed through local diversions agreed with the local authorities. Roads will be reinstated each day in accordance with national guidelines, and all works will comply with required road opening licences.

The traffic effects on the road network are considered in relation to peak construction traffic and average construction traffic. The junction assessments indicated that peak construction traffic will have a moderate negative effect over a temporary duration of three months, while average construction traffic will have a slight negative effect over a short-term duration of twenty-one months. The transport of abnormal loads will have a moderate temporary effect managed through night-time delivery and traffic controls. To minimise these effects, a Traffic Management Plan (available as Appendix 2-2 of the EIAR) has been prepared incorporating

measures such as restricting heavy vehicle movements during school hours, using on-site stone from borrow pits to reduce imported materials, installing a wheel wash to keep roads clean, providing advance notice to local residents, and undertaking pre-construction and post-construction road condition surveys.

The operational phase of the proposed project will result in low traffic volumes, with a maximum of 6 light vehicle movements per day (i.e., 3 arrivals and 3 departures) for routine maintenance, resulting in an imperceptible long-term effect on the road network. When the project is eventually decommissioned, a decommissioning plan will be prepared implementing similar mitigation measures to the construction phase. Turbine blades will be cut into more manageable sizes for removal, and the expected traffic volumes will be significantly lower than during construction, resulting in a slight temporary effect. Overall, with the implementation of the proposed mitigation measures, the residual effects on the road network will be not significant.

15. MATERIAL ASSETS

This chapter of the EIAR deals with aviation and telecommunications in addition to utility infrastructure (electricity, gas, and water), and waste services.

The nearest airfield to the proposed project is Birr Airfield, located approximately 4 km northwest of the proposed wind farm site. There are no other small airfields or air strips within 10 km of the proposed wind farm site. The proposed wind farm site is located approximately 75 km northeast of Shannon Airport.

Three telecom operators with networks near the wind farm were identified.

Eir Network

- Eir_L1 PTP microwave radio link from Knockshe to Ballyegan
- Eir_L2 PTP microwave radio link from Knockshe to Coolderry

Enet Network

- Enet_L1 PTP microwave radio link from VDF Nealstown to Carrig N.S.

Three Ireland Network

- 3IRL_L1 PTP microwave radio link from Birr to Knockshe

I-LOFAR is a low-frequency radio telescope array located within the grounds of Birr Castle, County Offaly. It forms part of the wider European LOFAR network, spanning over 2,000 km from Ireland to Poland, and is used for detecting extremely weak cosmic radio signals. Due to the sensitive nature of its equipment, I-LOFAR operates in a radio-quiet zone and has requested restrictions on nearby developments that could generate electromagnetic interference. I-LOFAR request that there is a 5 km exclusion zone surrounding the I-LOFAR. The proposed wind farm is at the edge of this buffer (circa 4.96 km from I-LOFAR to closest turbine distance while the substation and all other turbines are >5 km).

There are a range of utilities surrounding the proposed wind farm site, proposed GCR and proposed works areas along the TDR.

To the east of the proposed wind farm site, and at the permanent works area along the TDR at Sharavogue there are a number of 20 kV and 230 V Overhead Lines (OHLs) accompanied by poles[13].

To the north of the proposed wind farm site, beyond Birr, there are number of lines that connect to the Dallow 110 kV substation. A 110 kV OHL runs to the east of the proposed wind farm site. The proposed GCR traverses the 110 kV OHL along the R439. A 220 kV OHL runs to the west of the proposed wind farm site.

Uisce Éireann responded some general EIAR considerations were included for consideration. Uisce Éireann noted in correspondence that the proposed GCR may interact with underground network infrastructure within the public roads. The design of the GCR avoided this infrastructure.

[13] https://openinframap.org/#9.9/53.0351/-7.9562/A,B,I,L,O,P,T,W

Data was reviewed in relation to gas networks infrastructure, including information obtained from the Gas Networks Ireland (GNI) 'dial before you dig service'. No gas network infrastructure was identified within or immediately surrounding the proposed wind farm site, proposed GCR or proposed TDR works area.

The EIAR chapter identified waste facilities in the vicinity of the proposed wind farm site.

15.1 Assessment of Effects

15.1.1 Construction Phase

There will be no residual effect on telecommunications following the implementation of mitigation and communication with telecommunications operators during the construction phase. Furthermore, an agreement with the telecommunications provider will be signed by the Applicant.

No likely significant effect related to aviation is anticipated during the construction phase and no specific mitigation measures are proposed, other than the embedded mitigation by design.

It is noted that in the event of a grant of planning consent:

- The turbines would be required to be included in the IAA Electronic Air Navigation Obstacle Dataset; and
- Lighting of the proposed wind turbines in the interest of aviation safe-guarding, as the proposed project would be considered as an en-route obstacle, will be required.

As such, no residual effect is predicted in relation to aviation.

No likely significant effect related to utilities is anticipated during the construction phase. Should any existing underground services be encountered during construction, particularly along the proposed GCR, or at the locations of the proposed TDR works areas, the standard measures/practices discussed (see Chapter 15) in relation to underground services will be undertaken to reduce any unanticipated effects to unlikely, brief, negative, not significant effects.

A short-term, imperceptible, neutral, residual effect is predicted with regard to waste services, with this being permanent with regard to any waste generated which requires disposal at landfill.

15.1.2 Operational Phase

Following the implementation of mitigation measures discussed in Chapter 15, no significant residual effect on telecommunications is anticipated during the operational phase.

In the event that a link/cable/end user had their service interrupted, there may be a temporary, not significant, negative effect until it is resolved, however, it will be the Applicant's responsibility to fix any such issue as soon as possible.

Turbines can interfere with microwave communications link systems, as they can cause electro-magnetic interference and/or reflect and physically block microwave link signals. There is a potential impact to the signal of an Eir link passing through the proposed wind farm site. The telecommunications assessment (see EIAR Appendix 15-1) identified three potential mitigation

measures to offset the potential impact of T11 on the Eir radio link (Eir_L2) from Knockshe to Coolderry.

Option 1 – Relay via existing Eir Mast-Site

Option 2 – Relay Mast located within the proposed wind farm site

Option 3 - Re-route service to Coolderry via an alternative Eir Mast-site

As the proposed project progresses further consultations with Eir will be undertaken to discuss and agree on the technical details of the chosen proposed mitigation measure solution.

The Applicant would agree to cover the costs associated with the implementable and viable mitigation measure.

As mentioned, the Applicant will sign an agreement with 2RN prior to commencement of construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed project. This is standard industry practice and will eliminate any likely significant effects in this regard.

No significant residual effects related to aviation are anticipated.

No significant residual effects related to utilities or natural resources are anticipated. A long-term, imperceptible, neutral residual effect is predicted with regard to waste services related to any waste generated during the operation and maintenance of the proposed project. This effect would be permanent for any portion of the waste generated that goes to landfill.

15.1.3 Decommissioning Phase

No significant residual effects are anticipated during the decommissioning phase and no specific mitigation measures are proposed.

15.2 Conclusion

Following consultation with material asset stakeholders (i.e., aviation, telecommunication and service operators), and a review of other material assets present in the local and wider area (i.e., water, electricity supply, gas, waste services, mineral/aggregates/quarry sites etc.), a number of potential areas of effects were identified and assessed. With the application of the embedded mitigation measures, it is not anticipated that the proposed project will result in significant effects in relation to the material assets described at any stage (i.e., construction, operational and decommissioning phases).

As the proposed project progresses further consultations with Eir will be undertaken to discuss and agree on the technical details of the chosen proposed mitigation measure solution to offset any potential effect on this link from T11.

No significant residual effects are predicted in relation to aviation, telecommunications and other material assets (i.e., utilities, waste and natural resources).

16. SHADOW FLICKER

Wind turbines can cast long shadows when the sun is low in the sky. 'Shadow flicker' is an effect that occurs when the rotating blades of a wind turbine cast a moving shadow over a building. The effect is experienced indoors where a moving shadow passes over a window in a nearby property and results in a rapid change or flicker in the incoming sunlight.

The proposed rotor diameter for this wind farm is between 149 – 163 m, so on the basis of the largest 163 m rotor diameter, all sensitive receptors within 1.63 km of the proposed turbine locations have been included in the shadow flicker assessment.

In order to ensure the full extent of the moving shadow which would be created by the proposed turbine range is considered in the assessment, three scenarios have been modelled to consider the extent of the proposed range of turbine dimensions:

- Scenario 1: N163 (98.5m hub height, 180m tip height, 163m rotor diameter)
- Scenario 2: N149 (105m hub height, 179.5m tip height, 149m rotor diameter)
- Scenario 3: V150 (105m hub height, 180m tip height, 150m rotor diameter)

16.1 Assessment of Effects

There are no potential significant effects relating to shadow flicker as the Applicant has committed to 'near zero' shadow flicker.

Near zero shadow flicker refers to the brief period that may occur while the turbine rotor comes to a safe stop. This duration is typically between 1 and 2 minutes, depending on the reaction time of the shadow flicker control system and the specific turbine model proposed. This residual effect is considered negligible, as the rotor would stop within a short timeframe. However, in the interest of transparency, the EIAR describes this residual effect as near zero shadow flicker, acknowledging that it is not possible to eliminate the effect entirely.

At the very end of the construction phase there may be a short time where there is a potential for shadow flicker to occur. This would be in the stage of testing and commissioning of the turbines. During this stage there would be a potential for a slight momentary effect on any receptor. During commissioning, the turbine blades and shadow flicker management software will be installed and tested. Some shadow flicker may be experienced while the software is being refined but the effects will be negligible given the short-term nature of commissioning and the early implementation of shadow flicker control systems, any such effects are expected to be negligible and temporary.

There are no significant effects relating to shadow flicker during the decommissioning phase of the proposed project as shadow flicker can only occur when the turbine blades are installed and rotating. Turbines would not be rotating during this phase.

16.2 Mitigation Measures

The Applicant is committed to minimising any adverse effects from the proposed project on the local community. The implementation of mitigation measures to screen shadow flicker effects from sensitive receptors and/or implement wind turbine control measures in accordance with a

defined Turbine Shutdown Scheme will ensure that any residual shadow flicker effects from the proposed project will be almost entirely eliminated at any shadow flicker receptors. This will be the case irrespective of which turbine dimensions are selected within the turbine range. As noted previously, the immediate shutdown of a turbine(s) is subject to the technical capabilities of turbine technology where a controlled and safe slow-down of blade rotation is required, lasting between 1 and 2 minutes at most. This would have an imperceptible long-term effect.

16.3 OVERALL/RESIDUAL EFFECTS

Given the commitment to near-zero shadow flicker, the contribution from the proposed project is considered negligible and would not result in any perceptible impact and no likely significant effects.

17. CLIMATE

The climate assessment has focussed on:

- The potential greenhouse gas (GHG) emissions during the construction and operational phases of the proposed project.
- The offsetting of GHG emissions through renewable electricity generation, which will contribute to reducing Ireland's reliance on fossil fuels.
- The vulnerability of the project to climate change, including considerations for increased rainfall and other projected climate impacts.
- The long-term benefits of the proposed project in helping Ireland achieve its Climate Action Plan targets and the National Climate Objective of Net Zero by 2050.

17.1 ASSESSMENT OF EFFECTS

17.1.1 Greenhouse Gas Assessment

The impact of the construction, operation and decommissioning of the proposed project on Ireland's total national greenhouse gas emission has been compared to Ireland's 2024 total greenhouse gas emissions and the relevant 2030 carbon budgets.

Construction Phase

The GHG emissions associated with the construction of the proposed project were calculated using the online Transport Infrastructure Ireland (TII) Carbon Assessment Tool and by reviewing the wind turbine life cycle assessments. GHG emissions associated with the proposed project are predicted to be a small fraction of Ireland's Industry and Transport sector 2030 emissions ceilings of 4 Mt CO_2e and 6 Mt CO_2e, respectively. The proposed project will incorporate some mitigation measures which will aim to reduce climate impacts during construction.

Operational Phase

Once operational, the proposed project will generate approx. 0.3 GWh of renewable electricity annually for export to the national grid. This renewable electricity generation will offset the greenhouse gas (GHG) emissions from the construction phase, making the proposed project a net positive contributor in terms of GHG emissions. Additionally, it will support Ireland in meeting its Climate Action Plan 2025 (CAP25) targets. The proposed wind farm will also contribute to achieving the National Climate Objective of Net Zero by 2050, while aiding the phased elimination of coal and peat in electricity generation by 2030.

Impacts to climate are deemed direct, long-term, positive and slight, which is considered not significant with regard to the construction and operational phase.

17.1.2 Climate Change Risk Assessment

A CCRA was conducted to consider the vulnerability of the proposed project to climate change, as per the Transport Infrastructure Ireland PE-ENV-01104 guidance. This involves an analysis of the sensitivity and exposure of the development to future climate hazards which together provide a measure of vulnerability. The hazards assessed included flooding (coastal, pluvial,

fluvial); extreme heat; extreme cold; drought; extreme wind; lightning, hail, fog, wildfire and landslides. The proposed project is predicted to have at most low vulnerabilities to the various climate hazards and therefore climate change risk is considered direct, long-term, negative and imperceptible, which is considered overall not significant with regard to the construction and operational phase.

Overall, no significant impacts to climate are predicted during the construction or operational phases of the proposed project.

17.2 Mitigation Measures

17.2.1 Construction Phase

A number of best practice mitigation measures are proposed for the construction phase of the proposed project to ensure that impacts to climate are minimised. These mitigation measures include a construction program, determining material reuse and waste recycling opportunities (in line with CAP25) and identifying and implementing lower carbon material choices and quantities during detailed design.

17.2.2 Operational Phase

During the operational phase, emissions will be minimal. The primary focus will be on renewable electricity generation, which will contribute significantly to reducing Ireland's reliance on fossil fuels. To address future climate change risks, the design includes mitigation measures such as adequate drainage systems to manage a 20% increase in rainfall, consistent with the 'Medium Risk' RCP4.5 scenario (2021-2050).

17.3 Overall/Residual Effects

TII state that the crux of assessing significance is "not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050". CAP25 targets include up to 80% of the national grid being generated from renewable sources, including 9 GW onshore wind by 2030, and phasing out and end the use of coal and peat in electricity generation by 2030. The proposed project has been designed to maximize its contribution to renewable electricity generation, significantly reducing climate impacts during operation. By producing clean energy, the proposed project will directly support Ireland's transition to a low-carbon economy and help mitigate climate change.

The effect of the proposed project in relation to GHG emissions is therefore considered direct, long-term, positive and slight, which is overall not significant in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed project as a result of climate change. The residual effect of climate change on the proposed project is considered direct, long-term, negative and imperceptible, which is overall not significant in EIA terms.

18. MAJOR ACCIDENTS AND NATURAL DISASTERS

18.1 ASSESSMENT OF EFFECTS

Chapter 18 (Major Accidents and Natural Disasters) in the EIAR assessed the any likely significant effects of the proposed project on the environment deriving from its vulnerability to Major Accidents and/or Natural Disasters, as well as the potential of the proposed project itself to cause potential Major Accidents and/or Natural Disasters during the construction, operation and decommissioning phases.

The Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment (IEMA)) (2020) provide the following definitions for a major accident and disaster.

> Major Accidents are *"Events that threaten the immediate or delayed serious environmental affects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g., train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events."*
>
> A Disaster *"May be a natural hazard (e.g., earthquake) or a man-made/external hazard (e.g., act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident."*

The assessment of Major Accidents and/or Natural Disasters includes three stages as described in A Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage and Local Government (DoEHLG) 2010) and the Major Accidents and Disasters in EIA: A Primer guidance (ISEP, September 2020):

> Stage 1: Screening/Identification – identifying potential unplanned risk events that the proposed project may be vulnerable to or that may occur as a result of the proposed project.
>
> Stage 2: Classification – Following the initial identification and screening process, major accidents and/or natural disasters were evaluated with regard to the likelihood of occurrence and the potential impact; and
>
> Stage 3: Assessment - This stage provides a greater understanding of the likelihood and consequence of events that have been carried forward into the EIA and defines a post mitigation risk score.

The list of risks considered within the chapter were developed through the identification of reasonably foreseeable risks in consultation with relevant contributors to this EIAR. The identification of risks focused on non-standard but plausible incidents that could occur at or as a result of the proposed project during the construction, operation and maintenance and decommissioning phases.

The potential risks include:

- Striking strategic infrastructure resulting in damage, disruption to services and / or fatalities / injuries;

- Contamination of ground or surface water. This is associated with construction works;
- Major traffic accidents resulting from construction phase traffic or temporary construction traffic management measures;
- Movement of peat within the site / Landslide;
- Flooding of site during construction, operational and decommissioning stage;
- Collision risk resulting in damage to infrastructure and/or injuries;
- Incident at nearby Seveso site involving release of dangerous substances;
- Collapse / damage of structures/infrastructure;
- Risks related to climate change such as increased frequency and strength of storms, heightened flood risk, risk of extreme temperatures;
- Collapse / damage of turbine structures / infrastructure at substation;
- Fire at wind turbines, BESS or substation resulting in damage to infrastructure and/or injuries; and
- Ice falling from wind turbine blades.

The proposed project has been designed and built-in accordance with the best practice measures set out in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design. No likely significant effects arise in terms of major accidents or disasters.

18.2 MITIGATION

It was found that following the screening and assessment phases and with all mitigation measures implemented that there are no significant residual effects from the proposed project in relation to the risk of major accidents and/or natural disasters.

19. INTERACTION OF THE FOREGOING

With any development there is the potential for interaction between effects of the different environmental aspects. As part of the requirements of the EIAR, the interaction of the effects on the surrounding environment has been addressed in Chapter 19 (Interaction of the Foregoing).

A table is presented in Chapter 19 (Interaction of the Foregoing) that outlines the different environmental aspects which have potential to interact as a result of the proposed project. Interactions have been clearly identified in the early stages of the project and where the potential exists for interaction between environmental impacts, the EIAR specialists have taken the interactions into account when making their assessment. Potential interactions (both positive and negative) have been considered for the construction, operation and decommissioning phases of each of the different environmental aspects.

All environmental factors are interrelated to some extent. Having assessed the interaction of effects during the construction, operational and decommissioning phases it has been determined that there are no additional interactions further to those described in the chapter. The detailed assessment of the interactions has found they do not give rise to any significant effects.

The proposed project will have some positive effects on an international, national, regional and local level, particularly in terms of helping to achieve renewable energy targets and domestic energy security and through the use of the community benefit scheme to support local initiatives. It is important to note that many of the effects (such as Landscape & Visual) are almost entirely reversible upon decommissioning of the proposed project.

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