BUILT ON KNOWLEDGE
TOBIN

Bord na Móna

Derryadd Wind Farm

Non-Technical Summary (NTS)

May 2025

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1. INTRODUCTION

Bord na Móna Powergen Limited, intend to apply to An Bord Pleanála for planning permission to construct Derryadd wind farm development and all associated infrastructure including the Turbine Delivery Route. The proposed wind farm site will be known as Derryadd Wind Farm which will comprise of 22 no. wind turbines with a top of foundation to blade tip height of 190 m. The proposed blade rotor diameter will be 165 m with a corresponding hub height of 107.5 m, and all corresponding ancillary infrastructure foundation located within the Mountdillon Bog Group in County Longford.

The closest settlements to the proposed wind farm are Derraghan village and Lanesborough town located approximately 200 m and 500 m west, respectively (See Figure 1.1: Site Location Map). Other nearby settlements to the proposed wind farm include Keenagh 1.6 km east and Killashee 700m northeast, while the main urban centre in the region, Longford Town, is located 9 km to the northeast from its nearest point. The proposed wind farm will have an estimated output of 132 megawatts.

For the purposes of this EIAR, the proposed Derryadd Wind Farm and all associated infrastructure, including the works required along the Turbine Delivery Route (TDR), will be included as part of the assessment and hereafter referred to as the 'proposed development'. When referring specifically to lands required for the wind farm and supporting infrastructure (excluding the TDR), reference will be made to the 'proposed wind farm site'. Refer to Appendix 1-2 for the planning drawings.

The extent of the overall proposed development is shown in Figure 1-1. The proposed wind farm site boundary encompasses an area of approximately 1,900 hectares and measures approximately 12.1 km in length from north to south and approximately 3.8 km from east to west at its widest point.

1.1 PLANNING APPLICATION HISTORY

The site of the proposed wind farm was subject to a previous planning application for a 24 turbine Wind Farm (also known as Derryadd Wind Farm) which was submitted to An Bord Pleanála (ABP) in January 2019 (Planning Ref. No. 303592-19). A decision to grant planning permission was given in June 2020, and was subsequently quashed, following a judicial review process. This planning application is a new application. Therefore, the proposed development has gone through a complete redesign and a full suite of studies and surveys have been carried out to inform the design.

8°13'0"W 8°2'0"W 7°51'0"W

772000

760000

N

County Roscommon

Doughill Forest

Termonbarry

Cloondara

Longford

Royal Canal

Cloontuskert

Stonepark

Killashee

Lanesborough

Moydow

Roscommon

Derryhaun

Keenagh

Newtowncashel

Athleague

Rahara

St. John's Wood

Inchmore

Tubberclare

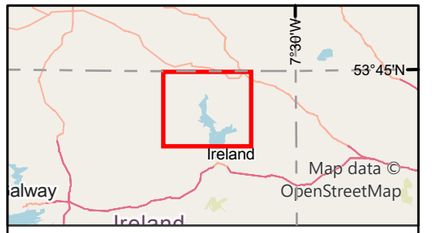
Lough Funshinagh

Lough Croan

Lough Ree

R368 R371 R194 L1002 N5 N4 L1170 L1151 R3 L1112 L5179 N61 N63 L1162 L1148 R397 L1123 L1138 R398 R392 L1163 L1167 N60 L1809 L1810 L1159 L1160 L1136 L1812 L1816 L1817 L1815 L1813 L1158 L1153 L1141 L1132 L1139 L1135 L1137 L1128 L1134 L1133 N55 R362 R357 L2007 L2004 L2011 L2012 L2008 L2013 L2014 L2017 R366 N61

Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri



Legend

Proposed Development Site Boundary(Including Oversail Requirements in Roscommon Town)

0 2.5 5
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	11/03/2025	First issue	S.P	I.H

Client: Bord na Móna

Project: Derryadd Wind Farm

Title: Figure 1.1 Location of Proposed Development

Scale @ A3: 1:100,000

Prepared by:	Checked by:	Date:
S.Pezzetta	I.Heanue	March 2025

TOBIN
Tel: +353-(0)1-8030406
Email: info@tobin.ie
www.tobin.ie

Map Ref: 11399-001-P.APP.BO-OSM-TOB-A

Draft: A

1.2 The Applicant

The applicant for the proposed development is Bord na Móna Powergen Limited, a publicly owned commercial semi-state company. Bord na Móna was originally established in 1946 to develop and manage some of Ireland's extensive peat resources on an industrial scale, in accordance with government policy at the time.

Bord na Móna's lands extend to approximately 80,000 hectares in total and are located mainly in the Irish midlands. Bord na Móna Powergen Ltd. currently manage and operate a portfolio of thermal and renewable assets that supply energy to the National Grid including Edenderry Power Plant, a biomass generating unit, Cushaling peaking plant, the Drehid landfill gas facility, Bellacorick Wind Farm and Oweninny Wind Farm (Phase 1 and Phase 2) in County Mayo, Mountlucas Wind Farm in County Offaly, Sliabh Bawn in County Roscommon and Bruckana Wind Farm, situated on the borders of counties Tipperary, Kilkenny and Laois, Derrinlough Wind Farm in County Offaly, Timahoe North Solar Farm in County Kildare and Cloncreen Wind Farm, in County Offaly .

1.3 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 minimised where possible. The findings and outcome of the EIA 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, interested parties and the local community. Further details on the consultation process are provided below.

This document is Volume 1 of the EIAR. It is a Non- Technical Summary (NTS), which gives a brief description of the proposed development and the assessment of the relevant environmental matters in non-technical language.

The additional Volumes contain information as described below:

Volume 2: The Main EIAR – Contains detailed information relating to the proposed development and the findings of the EIA. Volume 2 also contains drawings, figures and maps.

Volume 3: Appendices: This Volume contains information, drawings and data that has been used in the EIA and is referred to in Volume 2.

Volume 4: Photomontages: This Volume contains imagery that has been used as part of the Landscape and Visual Impact Assessment contained in Volume 2: 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 EIA and presented in the main EIAR, Volume 2.

1.4 THE NEED FOR THE PROPOSED DEVELOPMENT

The development of wind energy as an after use for cutaway peatlands is specifically identified in the Bord na Móna, '*Strategic Framework for The Future Use of Peatlands' (May 2011),* see Appendix 1-3 of the EIAR.

When considering the need for this wind farm development, and wind energy as an energy source in general, it is important to place its development in an international, national, regional and local policy context from the perspectives of environment, energy and planning. Chapter 5 (Planning and Development Policy Context) of the EIAR, outlines the legislative mechanisms and requirements from a global to local level in detail, which have been formulated to support the generation of energy from renewable sources, reduce the dependency on fossil fuels and increase security of energy supply.

In Chapter 5, section 5.6 of the EIAR, the national policy that drives the need for the type of development is set out. Of particular relevance is the Energy White Paper – Ireland's Transition to a Low Carbon Energy Future, as well as the targets outlined by the Climate Action Plan 2024. Ireland faces significant challenges to meet its EU targets for renewable energy by 2030 and its commitment to transition to a low carbon economy by 2050.

A key target of the Climate Action Plan 2024 is the strategic increase in the share of electricity demand generated from renewable sources to 80% by 2030. A key element of this ambition is a target of 9GW of installed onshore wind energy by 2030.

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 Longford area will also be positive by bringing employment to the area during the construction works. Further information on the local economic impacts of the proposed development are discussed in Chapter 6 (Population and Human Health). A 2021 report[1] by KPMG for Wind Energy Ireland titled *'Accelerating onshore renewable energy in Ireland'* estimated that jobs in the wind industry in Ireland could grow to over 7,000 by 2030. A 2021 report[2] by Baringa titled '*A zero-carbon electricity plan for Ireland'* 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.

The proposed development is critical to helping Ireland address these challenges as well as addressing the country's over-dependence on imported fossil fuels.

[1] https://assets.kpmg.com/content/dam/kpmg/ie/pdf/2024/01/ie-act-now-onshore-renewable-energy-ireland-3.pdf
[2] https://windenergyireland.com/images/files/20210629-baringa-endgame-final-version.pdf

The assessment in Chapter 5 of this EIAR (Policy, Planning and Development Context) demonstrates that the proposed development is consistent with the current energy and planning policy context, which seeks to increase the share of electricity generation from renewable sources and locate wind energy developments in suitable locations, thereby minimising any environmental impacts.

2. BACKGROUND TO THE PROPOSED DEVELOPMENT

The proposed wind farm site (i.e. Derryaroge, Derryadd and Lough Bannow Bogs) is owned by Bord na Móna Energy Ltd. and comprises predominantly cutaway bog, with areas of bog woodland and smaller areas of cutover bog and remnant bog existing around the margins.

Since its establishment, Bord na Móna has acquired and developed approximately 80,000 hectares of bogland nationally which, in turn, supported a range of communities across the midlands and the west of Ireland. Approximately 11,778 hectares of Bord na Móna owned bogland forms the Mountdillon Bog Group, of which the proposed wind farm site comprises approximately 1,900 hectares. These bogs were historically used for the extraction of sod, and later milled peat to supply the nearby ESB Lanesborough and later Lough Ree power stations.

The entirety of the Mountdillon Bog Group, which includes the proposed wind farm site, is licensed by the Environmental Protection Agency (EPA) under an Integrated Pollution Control (IPC) Licence (Reg. No. P0504-01), under Part IV of the EPA Act 1992. Peat extraction activities ceased in 2019 and since then an ongoing programme of decommissioning works has been carried out in compliance with Condition 10 of the P0504-01 IPC Licence. Condition 10 of the IPC licence instructs the Applicant to produce draft peatland rehabilitation plans for each bog of the Mountdillon Bog Group, within which the proposed wind farm site is located, upon cessation of peat extraction. These draft plans will be agreed by the EPA prior to implementation.

An application for Leave to Apply for Substitute Consent for historic peat extraction activities and all ancillary works has been submitted to An Bord Pleanála immediately preceding this proposed development application.

Since 2018 Bord na Móna has been actively pursuing a *Brown to Green* strategy, transitioning away from peat extraction and focusing on delivering low carbon energy, security of energy supply and climate solutions.

Lanesboro Power Station was decommissioned in 2004, and replaced by Lough Ree Power Station, which was commissioned in 2004 by the ESB. Peat extraction on the proposed wind farm site ceased in 2019 and the nearby Lough Ree Power Station was subsequently closed at the end of 2020. In January 2021 Bord na Móna announced that it had ceased all peat extraction nationally and was wholly focused on climate energy solutions.

The Brown to Green strategy launched by Bord na Móna aligns the company with National and EU Decarbonisation policies. It aims to accelerate the development of renewable energy assets to support national climate and energy policy targets as well as accelerating investment in higher-value recycling and resource recovery business.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 SCOPING AND CONSULTATION

As part of the EIA process, Bord na Móna and TOBIN met with An Bord Pleanála and with Longford County Council, to discuss the scope of the application for planning permission. An EIAR Scoping Document was circulated in September 2022 and October 2024 to all statutory and non-statutory bodies, who were invited to respond with any comments or observations that will be considered as part of the assessment process and in the preparation of the EIAR.

Consultation was continual and an ongoing process and all comments, observations or concerns raised by consultees are addressed in the EIAR.

3.2 THE PROPOSED DEVELOPMENT

The proposed wind farm site is located across three bogs (Derryaroge, Derryadd and Lough Bannow) within the Mountdillon Bog Group in Co. Longford. The overall area of the proposed wind farm site is approximately 1900 hectares (ha) spread across the 3 no. bogs. There are minor works as part of the proposed development which will take place outside of the proposed wind farm site along the turbine delivery route (TDR).

The proposed development comprises of the construction of 22 no. wind turbines and ancillary works including works along the TDR. The turbines will have a blade tip height of 190 m above the top of the foundation level and will be accessible from internal access routes within the Bord na Móna site.

The proposed development will comprise of the following:

- 22 no. wind turbines with a blade tip height of 190 m, blade rotor diameter of 165 m, hub height of 107.5 m and the associated infrastructure including tower sections, nacelle, hub, and rotor blades and all associated foundations and hard-standing areas in respect of each turbine;
- New internal site access roads, approximately 27,500 m in length including passing bays and associated drainage;
- 2 no. permanent Meteorological Masts, both of which will be 120 m in height, and associated hardstanding areas for both masts, as well as the decommissioning and removal of an existing 100 m Meteorological Mast on site in Lough Bannow Bog;
- 4 no. Borrow pits in Derryadd Bog; All works associated with the opening, gravel and spoil extraction, and decommissioning of the borrow pits;
- 4 no. temporary construction compounds, including material storage, site welfare facilities, and site offices;
- 4 no. temporary security cabins at the main construction site entrances as well as at a number of access points around the proposed wind farm site;
- 1 no. 110 kV electrical substation compound in Derryaroge Bog. The substation will consist of 2 no. control buildings, a 36 m high telecommunications tower, associated electrical plant and equipment, ground water well, wastewater holding tank and welfare facilities.
- All associated underground electrical and communications cabling connecting the turbines and masts to the proposed electrical substation, including road crossing at N63 and associated grid connection via a 110 kV loop-in connection to the existing

Lanesborough-Richmond 110 kV overhead line which traverses the proposed wind farm site;
- 1 no. 16 MW battery storage facility;
- 2 no. Peat Deposition Areas, one to the north of the proposed substation compound in Derryaroge Bog and one in Derryadd Bog;
- New site access entrances, temporary improvements and modifications to existing public road infrastructure to facilitate delivery of abnormal loads including locations on N6 Eastbound Slip Road, N6/N61 Roundabout at Athlone, N61/N63 Roundabout at Roscommon, N63 Roscommon Arts Centre Roundabout and N61/N63 Roundabout, Northeast of Roscommon.
- Hinge 3 No. permanent lighting fixtures in Folio RN40465F in Roscommon town to facilitate the delivery of abnormal loads (i.e. turbine blades);
- Approximately 7,500 m of dedicated amenity access tracks to provide linkages between the proposed wind farm site roads, royal canal greenway (to the east), the Corlea Visitor Centre amenity areas (to the south) and the Midlands Trail Networks project (to the north);
- 3 no. permanent amenity carparks, one of which is situated in Derryaroge Bog (19 no. car parking spaces in total) and two carparks in Derryadd Bog (19 no. car parking spaces in each carpark);
- All associated site work and ancillary works including new drainage and updating existing drainage, access road, earthworks, site reinstatement and erosion control, which will be aligned with the existing and future site rehabilitation plans; and,
- A 10-year planning permission is being sought with a 30-year operational life from the date of commissioning of the entire wind farm.

All elements of the proposed development as listed above and any works required on public roads to accommodate turbine delivery, have been considered and are addressed as part of this EIAR.

3.3 Outline of Construction

3.3.1 Construction Schedule

Approximately 100-120 persons will be employed during the peak construction period, and it is estimated that the construction phase will take approximately 24 - 30 months from starting onsite to completion of turbine commissioning. It is assumed that some staff will arrive to the site by LVs (10 staff) and the remaining via mini bus with approximately 15 persons per vehicle to limit traffic movements. All vegetation clearance that is required during construction works will commence outside the breeding bird season, which runs from the 1st of March to the 31st of August.

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 08:00hrs and 20:00hrs weekdays and between 08:00hrs and 13:00hrs on Saturdays. However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e. concrete pours) or to accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours. Any such out of hours working will be agreed in advance with the local Planning Authority.

A start date of January 2027 has been selected as an arbitrary start date for construction activities.

The construction phase can be broken down into three main phases:

- Civil engineering works: approximately 18 months;
- Electrical works: approximately 18 months (will commence shortly after the civil works and will then run in parallel); and,
- Turbine erection and commissioning: approximately 9 months.

3.3.2 Construction Methodologies

The construction methodologies for the following elements of the proposed development are described in detail in Chapter 3 (Description of the Proposed Development) of the EIAR. A short summary is provided below.

Temporary compounds, hardstands, material storage areas and site offices

At the start of construction, four temporary compound areas will be built for site offices, staff welfare, storage, and parking, with accommodations likely consisting of porta-cabins on a granular platform, and ground investigations informing the necessary excavation and fill, primarily sourced from onsite borrow pits.

Turbine foundations

The foundations for wind turbines at the proposed wind farm site will primarily be piled, with some gravity foundations, using various piling types and configurations, reinforced concrete bases, and appropriate drainage and safety measures.

Site roads and crane pads areas

Internal site access roads and crane hard standings will be constructed to each turbine base using excavated material and stone from borrow pits or local quarries, with surplus peat managed according to the Peat and Spoil Management Plan.

Borrow pits

Extraction from borrow pits will follow a standard sequence involving GPR scans, fencing, mobilisation of equipment, installation of interceptor drains, excavation and storage of peat and spoil, material processing, construction of access roads, groundwater control, and safe slope construction, with extracted materials used for site infrastructure.

Substation and grid connection

The electricity substation, comprising TSO and IPP substations, will be constructed with marked areas, excavated foundations, reinforced concrete, block work walls, roof trusses, electrical equipment, a telecommunications mast, perimeter fencing, and battery storage units, connecting the wind farm to the national grid via a 110 kV underground cable.

The proposed grid connection will include 460 m of 110 kV underground cable crossing under the N63 National Road, using trenching and horizontal directional drilling methods, with

minimal disruption to traffic and public, and detailed site investigations ensuring proper installation.

The substation and grid connection construction methodology are also provided in Appendix 3-3.

Decommissioning of existing meteorological mast

The decommissioning of the existing 100 m high meteorological mast will involve mobilising equipment, removing instruments, transferring and cutting guy ropes, excavating anchors, dismantling the mast, and transporting components off-site over three days.

Groundwater well

The groundwater well near the substation will be constructed using a drilling rig, with careful positioning, plumbing, and levelling, followed by open hole drilling, casing installation, flushing, and directing water to a tank in the control building.

3.3.3 Environmental Management during Construction

The requirement for a Construction and Environmental Management Plan (CEMP) to be prepared in advance of any construction works commencing on any wind farm site and submitted for agreement to the Planning Authority is now well-established.

A CEMP has been prepared for the proposed development and is included in Appendix 3-2 (Volume III). The CEMP will be updated prior to the commencement of the construction of the wind farm, to ensure that all mitigation measures, conditions and / or alterations to the EIAR and application documents that may emerge during the course of the planning process are included. Following the update, the CEMP will be submitted to the Planning Authority for written approval.

All of the mitigation measures specified in the EIAR, NIS, CEMP and any other documents enclosed in the planning submission will be implemented, and the construction contractor will be responsible for actioning and communicating the requirements with all staff on-site. The implementation of the mitigation measures will be overseen by the supervising Ecological Clerk of Works (ECoW), ecologists, archaeologists and/or geotechnical engineers, as appropriate.

4. CONSIDERATION OF REASONABLE ALTERNATIVES

Chapter 4 Reasonable Alternatives of the EIAR contains a description of the reasonable alternatives that were studied which are relevant to the proposed development and its specific characteristics and provides an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment.

Under the "Do-Nothing" scenario, the proposed development would not go ahead, the development of wind turbines would not be pursued, and all lands associated with the proposed development would remain in their current uses (predominantly cutaway bog). The prospect of creating sustainable energy would be lost at this site. The nation's ability to produce sustainable energy and reduce greenhouse gas emissions to meet EU targets and targets set out in the Climate Action Plan (2024) would be reduced.

Bord na Móna conducted a technical review of potential candidate sites for wind energy projects nationally across its entire landbank. This exercise reviewed a list of potential project sites, with a typical target capacity of between 50 MW and 150 MW and with the best potential to deliver successful future windfarm projects. As part of this site selection process, known constraints were applied across the entire land bank to determine areas suitable for potential wind farm development. This involved desk-based studies and on-site surveys of the landbank. The constraints applied were derived from various industry and regulatory guidelines (such as IWEA Best Practice Guidance 2012 and the "*Wind Energy Development Guidelines for Planning Authorities (2006)*" and the latest "*Revised Draft Wind Energy Guidelines*" released in 2019), available Geographical Information Systems (GIS) datasets and on-site surveys (carried out as part of the peat extraction activity), and included the following:

- Planning Policy Context;
- Proximity to Sensitive Receptors;
- Peat Depths;
- Consistent suitable wind speeds;
- Proximity to the national electricity grid;
- Proximity to Designated sites; and
- On-site Environmental Sensitivities.

The site layout design stage considered the size, number and positioning of turbines and layout of associated site infrastructure i.e. internal site access roads/ amenity access tracks, temporary construction compounds, substations, etc. Alternatives considered for each of these elements are documented in Chapter 4 (Consideration of Reasonable Alternatives) of the EIAR.

The siting and design of the proposed wind farm site has evolved through the consideration of alternatives 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. All reasonable alternatives were assessed as part of this consideration, including alternatives in respect of the proposed development as a whole, and alternatives relating to specific aspects of the design of the proposed development.

A number of alternatives uses for cutaway peatlands, have been examined by Bord na Mona over the years. These include Horticulture, Grassland/Cereals/Berries and Forestry however trials of these alternatives were found to have poor performance in terms of growth potential and uneconomical.

Bord na Mona also examined a number of alternative sources of energy for the proposed development site which included solar and landfill gas production however these options were considered not feasible.

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.

5. POPULATION AND HUMAN HEALTH

The assessment of population and human health is provided within Chapter 6 (Population and Human Health) of the EIAR. The assessment has focused on the potential effects on population trends, property and residential amenity, employment and economy, tourism, land-use, human health (environmental and wind turbine health effects), and health and safety.

The proposed wind farm site is located in the local authority area of Longford County Council and fall within the EDs of Mountdavis, Cashel East, Killashee, Kilcommock, and Rathcline. Of these, the majority of the proposed wind farm site lies within the ED of Mountdavis (northern and middle sections of the site) and Cashel East (southern section of the site). Killashee, Kilcommock, and Rathcline EDs surround the proposed wind farm site, and fall within the proposed wind farm site boundary at certain points. All five EDs identified have been included in defining the existing population (as of Census 2022) in the vicinity of the proposed wind farm site.

Latest Census results for 2022 show a rise in population in Longford of 5%. However, during the 11-year period between 2011 to 2022, the population nationally increased by approximately 11% and the population of County Longford increased by approximately 19%, while the population of the five ED's surrounding the proposed wind farm site increased by approximately 14%. This illustrates that over the 11-year period the population of the local area has increased along with county and national rates.

Lanesborough is the nearest town, located approximately 500 m west of the proposed wind farm site boundary on the N63. Further amenities and services are available in the larger towns of Longford, Roscommon and Athlone. Longford Town (approximately 9 km northeast) is the closest large town, defined as a 'Key Town' in the Longford CDP settlement hierarchy, which are described as "Large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to act as growth drivers to complement the Regional Growth Centres".

The landscape within and surrounding the proposed wind farm site is a mixture of land uses including forestry, agricultural land and cutaway peatland (CORINE, 2018, source: EPA Maps, 2024). The landscape is predominately flat. There are a number of scattered individual domestic dwellings, small residential clusters, and farm buildings present in the landscape surrounding the proposed wind farm site, along with some linear settlement on the N63 and local roads. The locations of properties and buildings (referred to as property receptors) in the vicinity of the proposed wind farm site have been identified using address data from the GeoDirectory database which is used to populate Eircodes. The validity of the GeoDirectory data has been confirmed by way of publicly available mapping, aerial imagery, street-level imagery and a ground truthing survey (September 2024). Approximately 981 property receptors have been identified within 2 km of the proposed development. No properties are located within 760 m of a turbine (which is the minimum set back distance (i.e. greater than four times tip height).

5.1 OVERALL EFFECTS

During the construction phase, materials such as quarried products and concrete supplies, plant, and equipment can be sourced locally which will support the local economy. Direct and indirect

employment opportunities will be created in the region through employment of operatives, as well as jobs associated with off-site quarrying activity and concrete batching and delivery. Furthermore, there is potential for increased employment in the local service and hospitality industries (including, shops, cafés, restaurants, and accommodation) driven by use of the facilities by construction phase personnel.

Based on the proposed development capacity of approximately 132 MW, this equates to between approximately direct and indirect 198 jobs across a number of different sectors. The study (IWEA, 2009) estimated that 68% of the Irish jobs created are in the construction industry. It is therefore estimated that between 100 and 120 persons will be directly employed during the peak construction period.

The proposed development will have a slight positive residual effect on the local population through an influx of construction workers in the short-term. This influx 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 development. This will have a moderate short term positive effect on the local economic activity.

It is considered likely that there will be a short-term, not significant, negative residual effect on tourism and recreation amenity during the construction phase following the communication of guidance and information to the public on alternative available transport routes. 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 residual effects are predicted on residential amenity and property values and neutral imperceptible effects on the local population and land use.

In terms of operation, the proposed wind farm 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, slight to moderate residual effect for the country which will benefit the local population and communities. In terms of population, during the operational phase of the proposed wind farm, residual effects are anticipated 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 proposed development 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. Furthermore, the proposed amenity tracks and amenity car parks will provide the community with a facility for outdoor activity and recreation. These aspects of the proposed development 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, as well as facilitating outdoor activity and recreation.

Based on the literature reviewed, 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 development (i.e., air, dust, and noise) are predicted to be 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 proposed development 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 associated with operational phase of the proposed development.

In terms of decommissioning, the wind turbines proposed as part of the proposed development are expected to have a lifespan of 30-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 above ground infrastructure on site may be decommissioned fully, with the exception of the electricity substation and the internal roads. The activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit to a lesser extent and duration than during the construction phase. It is anticipated that residual effects on population and human health associated with decommissioning works will be no greater than those identified for the construction phase.

6. BIODIVERSITY

The Biodiversity Chapter assesses the likely significant effects (both alone and cumulatively with other projects) that the proposed development (i.e. the proposed wind farm and associated supporting infrastructure, including all works required along the proposed turbine delivery route [TDR]) may have on terrestrial and aquatic flora, habitats, and fauna. A series of field surveys were carried out at the proposed wind farm site and at locations where modifications or upgrade works are required for the proposed TDR. The surveys included assessments of flora and habitats, aquatic ecology, Bats, Badgers, Otters, Whorl Snails, and the Marsh Fritillary butterfly. In all cases the field surveys adhered to standardised survey methodologies. The Biodiversity Chapter also sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

6.1 OVERALL EFFECTS

Multidisciplinary walkover surveys were undertaken at the proposed wind farm site in August 2022, with follow-up surveys completed in July 2023. These surveys covered approximately 1,900 hectares, and all habitats were classified in accordance with *Fossitt (2000) – A Guide to Habitats in Ireland*. There are 29 habitats typologies were identified, with approximately 90% of the area surveyed being occupied by five habitats (PB4, Cutover bog; WN7, Bog woodland; FL8, Other artificial lakes and ponds (classification given to settlement ponds and flooded drainage ditches); PB1, Raised bog; and WD4, Conifer plantation). Of the 29 habitats 17were valuated as being important resources for biodiversity:

- Bog woodland (WN7; 426.75ha);
- Other artificial lakes and ponds (FL8; 77.22ha);
- Reed and large sedge swamps (FS1; 33.75ha);
- Scrub (WS1; 33.56ha);
- Raised bog (PB1; 30.19ha);
- Immature woodland (WS2; 16.13ha);
- Poor fen and flush (PF2; 4.90ha);
- Wet grassland (GS4; 4.71ha;
- Transition mire and quaking bog (PF3; 7.87ha);
- Dry humid acid grassland (GS3; 3.12ha);
- (Mixed) broadleaved woodland (WD1; 2.01ha);
- Wet willow-alder-ash woodland (WN6; 1.17ha);
- Dry meadows and grassy verges (GS2; 0.59ha);
- Depositing/ lowland rivers (FW2; 931m);
- Drainage ditches (FW4; ~1,230Km);
- Hedgerows (WL1; 521m);
- Treelines (WL2; 1,596m).

Within the Derryaroge bog, there is a mineral island (an area of ground that is primarily composed of mineral soil, as opposed to the surrounding peaty soil typical of the bog) measuring approximately 11.5ha. Within this mineral island eleven habitats were identified, including two habitats listed in Annex I of the Habitats Directive , namely - Alkaline fens [7230]; and the priority habitat Petrifying springs with tufa formation (*Cratoneurion*) [7220]. Of the eleven habitat typologies were valuated as being important biodiversity resources:

- Other artificial lakes and ponds (FL8; 0.02ha)
- Dry calcareous and neutral grassland (GS1; 0.13ha)
- Scrub (WS1; 3.2ha)
- Wet grassland (GS4; 1.51ha)
- Oak-ash-hazel woodland (WN2; 0.58)
- Cutover Bog (PB4; 0.13ha)
- Immature woodland (WS2; 0.01ha)
- Rich fen and flush (PF1; 1.07ha) (Alkaline fens [7230])
- Calcareous springs (FP1; 0.16ha) (Petrifying springs with tufa formation (*Cratoneurion*)* [7220])

The proposed wind farm infrastructure, and additional mitigation measures for the protection of bats, will represent the loss of an area of approximately 272ha, and a linear extent of approximately 1,181m, of the habitat at the proposed wind farm site of high valuation, representing a significant effect with regards to the loss of 0.28ha of Oak-ash-hazel woodland (WN2), 354m of Hedgerows (WL1), and 808m of Treelines (WL2). The proposed replanting of 3.23ha of WN2 habitat at the Lough Bannow bog which comprise part of the mitigation measures will create an effective positive effect to biodiversity. With the proposed enhancement measures of planting of 1,337m of linear habitats (WL1 and WL2), also at Lough Bannow bog, would also represent a net gain to local biodiversity. Further enhancement measures include the maintenance of an area of approximately 100ha for the creation of grassland habitat, a habitat that is anticipated to become a rare occurrence at the site, and likely to favour protected species (e.g. Marsh Fritillary, *Euphydryas aurinia*).

The proposed wind farm site drains into four WFD river water bodies (Ballynakill_010, Lough Bannow Stream_010, Ledwithstown_010, and Shannon (Upper)_100). Twelve sampling sites have been distributed along these WFD river water bodies, where aquatic ecology surveys returned a water quality classification (Q-value) ranging from Q2-3 (Poor) to Q3-4 (Moderate), with overall poor fisheries and hydromorphological value. The assessment of effects on aquatic ecology identified likely significant effects to aquatic ecological from contamination during the construction phase of the proposed wind farm. Mitigation measures are proposed (e.g. storage of contaminants; regulation of refuelling operations), which will reduce both the significance and likelihood for these effects.

Nine bat species were recorded during the suite of bat surveys carried out at the proposed wind farm site between the Autumn 2021 and Summer 2022, including Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus*

leisleri), Natterer's Bat (*Myotis nattereri*), Daubenton's Bat (*Myotis daubentoniid*), Brown Long-eared Bat (*Plecotus auritus*), Whiskered Bat (*Myotis mystacinus*), *Myotis* species and Nathusius' Pipistrelle (*Pipistrellus nathusii*). No bat roosts were recorded onsite. Although no significant effects on bats were appraised as likely during the construction phase of the proposed wind farm, Leisler's Bat, Common Pipistrelle, Soprano Pipistrelle are considered to be High Risk species in relation to operating turbines. There is potential significant effects due to collision during the operation phase of the proposed wind farm on these species. Therefore, it is proposed to implement regular vegetation clearance 92.76m around the turbines to reduce the favourability of these zones for foraging and commuting bats (mitigated with planting alternative areas, as mentioned above), as well as operating nine turbines (Turbine 3, 8, 10, 11, 15, 16, 17, 19, and 22) at a cut-in speed of 5.5m/s, during the period between 30 minutes before sunset until 30 minutes after sunrise with specified weather conditions and during the active bat season (April to October) when air temperatures are 10°C or more at the nacelle height. A 3-year post-construction carcass search survey is also proposed to confirm the adequacy of the cut-in speed and vegetation clearance regularity.

Three species of Whorl Snail were present at the proposed wind farm site: Common Whorl Snail (*Vertigo pygmaea*), Striated Whorl Snail (*V. substriata*), and Marsh Whorl Snail (*V. antivertigo*). However, no likely significant effects are anticipated to these protected species.

Although Marsh Fritillary webs and larvae were recorded at the proposed wind farm site, along with their larval food plant, Devil's-bit Scabious, *Succisa pratensis*. However, the locations where Marsh Fritillary webs and larvae were recorded are separated from the proposed infrastructure by a minimum 50m. This separation distance suggests that the construction phase of the wind farm is unlikely to result in direct habitat loss for this Annex II species under the EU Habitats Directive.".

Secondary evidence (e.g. tracks, droppings etc.) indicated the presence of non-volant mammal species, like Badger (*Meles meles*) and Otter (*Lutra lutra*) at the proposed wind farm site. During the construction phase potential significant effects to Badger include direct mortality and the loss of habitat. Additionally, disturbance and displacement effects on Badger are likely, but these are assessed as having slight significance and will be short-term in duration, potentially extending up to 150 metres beyond the construction zone. In the case of Otter, the construction phase could lead to direct mortality, which is assessed as significant. Pollution impacts, particularly through hydrological pathways, are also considered to have potential significant effects on the species. Habitat loss in vegetated aquatic habitats is assessed as slight in significance.

Two European sites were identified as potentially significantly affected by the Construction Phase of the proposed development, Lough Ree SAC (Site code: 000440) and Lough Ree SPA (Site code: 004064), which are appraised in the Natura Impact Statement (NIS) report, submitted alongside the EIAR, as part of the planning application documentation. The findings concluded that the proposed with the implementation of mitigation measures there will be no significant negative effects on the European sites.

The proposed development is also connected with four Nationally important sites (Lough Bawn pNHA [Site code: 001819]; Lough Bannow pNHA [Site code: 000449]; Lough Ree pNHA [Site

code: 000440]; and Derry Lough pNHA [Site code: 001444]. The impact assessment concludes that the proposed development is unlikely to give rise to significant effects on these Nationally important sites.

A comprehensive Construction Environmental Management Plan (CEMP) will be in place to guide environmental protection efforts during the construction phase. This plan outlines procedures and protocols to manage environmental risks, ensuring that mitigation measures are effectively implemented and monitored throughout the project's lifecycle. An Ecological Clerk of Works (ECoW) will oversee implementation of mitigation measures designed avoid or minimise effect on biodiversity. Mitigation measures include the management of machinery and vehicle movement on-site, undertaking pre-construction surveys to identify risks to species, and implementing water quality protection measures.

The Biodiversity Impact Assessment concludes that, with the complete implementation of mitigation measures, no significant effects are anticipated from the proposed development during the construction, operation, and decommissioning phases.

7. ORNITHOLOGY

The Ornithology Chapter evaluates the potential significant effects of the proposed development 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 seven seasons, between the breeding season of 2021 and the breeding season 2024. 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 OVERALL EFFECTS

A total of 64 bird target species were recorded during the field study over the study period, with 30 being classified as Key Avian Receptors (KARs) for this assessment, following Percival (2003): Black-headed Gull, Common Buzzard, Common Gull, Common Kestrel, Common Ringed Plover, Common Snipe, Eurasian Curlew, Eurasian Skylark, Eurasian Sparrowhawk, Eurasian Teal, Eurasian Whimbrel, Eurasian Wigeon, Eurasian Woodcock, European Golden Plover, Great Cormorant, Greater White-fronted Goose, Hen Harrier, Lesser Black-backed Gull, Little Egret, Little Grebe, Mallard, Meadow Pipit, Merlin, Mute Swan, Northern Lapwing, Northern Shoveler, Peregrine Falcon, Redwing, White-tailed Eagle, and Whooper Swan. These species recorded during the field study are relevant for this assessment, as per the SNH (2017) criteria.

During the field study, several of these KARs used the proposed wind farm site to breed, with confirmed breeding activity recorded for Mallard, Mute Swan, Northern Lapwing, Common Ringed Plover, Black-headed Gull, Common Gull, Little Grebe, and Meadow Pipit. Common Snipe, Eurasian Woodcock, Common Buzzard, Eurasian Skylark, Little Egret and Common Kestrel were observed at the site showing probable breeding behaviour. Other KARs were confirmed breeding near the site, such as at Lough Ree (Lesser Black-backed Gull, Great Cormorant) and at the Lough Ree Power Station (Peregrine Falcon), while Common Buzzard and Common Kestrel were identified as probable breeding within 500m of the proposed wind farm site.

The proposed wind farm site also attracted the following eight wintering species including Whooper Swan, Greater White-fronted Goose, Eurasian Wigeon, Eurasian Teal, Northern Shoveler, European Golden Plover, Redwing, and Eurasian Curlew. Mallard, Mute Swan, Northern Lapwing, Little Grebe also nested at the proposed wind farm site during the breeding seasons. Little Egret, Lesser Black-backed Gull, Black-headed Gull, Common Gull, Common Snipe, and Eurasian Woodcock were also common occurrences at the site during the non-breeding seasons.

Beyond the sightings associated with the breeding activity of Common Buzzard and Common Kestrel at the site, and Peregrine Falcon nearby, these raptor species were also observed during the breeding and non-breeding seasons at the site, mostly hunting. Other raptor species were

also observed hunting in both seasons, such as Eurasian Sparrowhawk, and Merlin. Two other raptor species were recorded, although rarely, during the field study: Hen Harrier, recorded hunting during the breeding season and the non-breeding season. White-tailed Eagle, recorded incidentally once, during the non-breeding season 2021, near the River Shannon (approximately 2km NW from the site).

Eurasian Whimbrel was recorded flying over the site, but also using the site for foraging, commuting and roosting. However, no evidence of long-term residency was recorded for this species.

Ornithological effects from habitat loss on KARs during the construction of the proposed wind farm infrastructure has been assessed. This assessment revealed that seven KARs would likely be affected moderately by this habitat loss (Eurasian Teal, European Golden Plover, Little Grebe, Mallard, Northern Lapwing, Northern Shoveler, and Whooper Swan). Also, effects from disturbance/displacement to birds from the construction works during the construction phase, and the presence of operating turbines during the operation phase of the proposed wind farm has been assessed. It concludes that effects of moderate significance can be expected during the breeding season (Northern Lapwing, and Little Grebe), and non-breeding season (Northern Lapwing, Little Grebe, Eurasian Teal, Eurasian Wigeon, and Whooper Swan).

There is potential for direct mortality of birds, and/or destruction of nests during breeding season associated with the works and movement of vehicles and machinery during the construction and decommissioning phases of the proposed wind farm was assessed (including works for the TDR). Although the effect is deemed of slight significance and considered a 'worst-case' scenario. To mitigate any effect, it is proposed that vegetation clearance be restricted, and work interrupted if a nest is found during the breeding season, as a mitigation measure to avoid this effect.

Avian collision risk with turbines was modelled for the operation phase of the proposed development, 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 development. Furthermore, the collision risk with other elements of the proposed development (e.g. meteorological mast) also indicates that no likely significant effects due to collision are to be expected.

The proposed wind farm has been designed in line with industry best practices to minimise impacts on biodiversity. A CEMP will guide environmental protection during construction. A qualified ECoW with ornithological expertise will oversee implementation of mitigation measures. Mandatory seasonal toolbox talks will be held to educate staff on disturbance risks to birds and how to report sensitive observations.

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

During decommissioning 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.

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 NPWS and planning authorities to support ongoing protection and adaptive management.

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

8. LAND, SOILS AND GEOLOGY

An assessment on 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', with consideration of the Peat Stability Risk Assessment carried out for the proposed development. This chapter of the EIAR was prepared by Gavin & Doherty Geosolutions (GDG). GDG is a specialist engineering consultancy with an expertise in geoscience, environmental services and geotechnical engineering.

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

The topography of the site is relatively flat with elevations generally ranging from 34mAOD to 59mAOD. A number of glacial depositions known as drumlins are identified across the proposed wind farm site resulting in local variations in topography. They can be seen in the form of a low oval mound with one steep blunt end, known as the stoss, and another shallow sloping end, known as the lee end. The drumlins generally follow a NNW-SSE alignment. Localised, man-made changes in topography in the form areas of shallow excavation are also present due to the historic peat production on site.

The proposed wind farm site has a total area of approximately 1,900 hectares and is located in an area surrounded by the towns and villages of Lanesborough, Derraghan, Keenagh, and Killashee. The surrounding landscape is a mixture of forestry, agricultural land and cutaway peatland, and is predominately flat. The Royal Canal and Lough Ree are located to the east and west respectively, and the River Shannon passes to the north of the proposed wind farm site, running in a northwest direction.

8.1 Overall Effects

This assessment considered effects on land use, geological heritage sites, contaminated sites/potential for contamination, mineral/aggregate resources, soil compaction and erosion and peat and soil stability in relation to the three phases (construction, operational and decommissioning) of the proposed development.

The disturbance of soil, subsoil and bedrock is an unavoidable effect of the proposed development, but every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum to limit the effect on the geological aspects of the site. The management of geological materials is an important component of controlling dust, and sediment and erosion control.

Due to the nature of the peat and subsoils at the proposed wind farm site, construction of the proposed development will require deep excavations at the turbine locations. Instability of soils will be localised to the extent of excavations for the various infrastructure locations. Identified temporary works will be put in place to successfully mitigate this risk. This is likely to be in the form of a battering back of excavations to a safe angle (as determined by a detailed slope stability assessment by a competent temporary works designer) or temporary granular berm or sheet pile wall. Following a peat stability assessment, the risk of long-term instability is

considered low following mitigation procedures and completion of the construction phase. It should be noted that the excavations will be backfilled to the existing ground level.

Risks are outlined in the Peat Stability Risk Assessment (PSRA) and Construction Environmental Management Plan (CEMP) and any identified risks will be minimised by applying the principles of avoidance, prevention and protection. Slope stability will be addressed in greater detail with site specific measures identified during the detailed design phase. A Peat & Spoil Management Plan (PSMP) has been developed and is included in Appendix 9.2. The PSMP outlines the guidelines and methodologies for the careful management, handling and storage of peat on the site.

Overall, the construction and operation of the proposed development will have a not significant negative long-term effect on the soil and geological environment through the application of identified mitigation measures and appropriate management throughout the life cycle of the proposed development.

9. HYDROLOGY AND HYDROGEOLOGY

An assessment on hydrology and hydrogeology has been undertaken in accordance with the EPA (2022) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports', with consideration of the water management for the proposed development. On a regional scale, the proposed wind farm site and its environs are in the Shannon Upper Catchment. The river waterbody types located within the proposed wind farm site are primarily small, low-lying streams/drainage channels which flow to the River Shannon. The hydrological pathway from the proposed wind farm site also includes one WFD lake water body, Lough Ree, located downstream. The proposed wind farm site is located predominantly within the Upper Shannon Catchment (26C), with a small segment to the south located within the Upper Shannon Catchment (26E) and upstream of the Lough Ree Special Area of Conservation (SAC).

The Proposed Development was drained for peat extraction, with drainage works commencing in the early 1950s. Peat extraction activities ceased at the proposed wind farm site since 2019. The existing drainage ditches within the proposed wind farm site store water and transmit it to main drains and ultimately to the existing silt / settlement ponds which is managed under IPC licence P0504-01 Mountdillon Bog Group.

The proposed temporary works areas on the TDR lie within the Upper Shannon (26C, 26E and 26G) catchments.

9.1 OVERALL EFFECTS

The residual construction effects on the surrounding water quality, hydrology and hydrogeology as a result of the proposed development are considered to be slight to imperceptible and short term in nature [not significant].

The existing on-site drainage system will remain active during the construction and operation phase of the proposed development and will be enhanced by a proposed drainage plan that has been designed for the proposed wind farm site.

Where earthworks are occurring, there is potential to reduce the infiltration capacity of the soils and increase the rate and volume of direct surface runoff. Surface water control measures are incorporated into the design of the proposed development. Surface water runoff from the proposed infrastructure will be managed locally in proposed silt traps, settlement ponds prior to release into the existing IPC bog drainage network. The proposed drainage will provide additional attenuation of surface water. Therefore, no significant change in peak rainfall runoff is anticipated where areas of peat are replaced with foundations, gravel trackways and gravel hardstand areas.

As such, the proposed development will not have significant effects on groundwater bodies or surface water bodies, as required under the Water Framework Directive.

Dewatering will be required intermittently during the 2-year construction period. The anticipated dewatering for borrow pits is < 1 year and 3 months for turbine bases. The mitigation strategies for the borrow pits follow similar procedures as the excavations for turbine and hardstanding areas. Interceptor cut-off drains around the borrow pits will be provided to divert

overland flows and prevent these flows from entering the borrow pits. These flows will discharge diffusely overland, creating a buffer before entering the existing surface water management infrastructure.

The construction timescale of activities within the proposed development will be phased and short-term in duration and, thereafter, the only activities within the proposed wind farm site that will be associated with ongoing maintenance (including the maintenance of drains), monitoring during the operational phase and continued activities associated in accordance with Condition 10 of the EPA IPC Licence (P0504-01).There are no significant residual long-term effects predicted as a result of the operation, construction or decommissioning of the proposed development.

Other preventative measures also include fuel and concrete management and waste management which is incorporated into the overall CEMP (Appendix 3-2 of this EIAR) and Chapter 10 (Hydrology and Hydrogeology) in the EIAR.

In summary, significant effect on water quality, hydrology and hydrogeology are not predicted, during the construction, operation or decommissioning phase. Works will be undertaken in accordance with the mitigation measures outlined in Chapter 10 (Hydrology and Hydrogeology) in the EIAR.

10. AIR QUALITY

The assessment of Air Quality is provided within Chapter 11 (Air Quality) of the EIAR. The assessment has focused on:

- Potential construction dust emissions generated by construction activity impacting nearby sensitive receptors (such as residential properties, schools, hospitals, etc.) during the construction phase of the proposed development;
- Potential air quality impacts from vehicle emissions associated with onsite plant and machinery, and traffic accessing the site during the construction phase of the proposed development;
- Potential air quality impacts from vehicle emissions associated with maintenance activity and use of amenity car parks during the operational phase of the proposed development;
- Potential beneficial, indirect air quality impacts from the generation of renewable electricity and the displacement of fossil fuel electricity and its associated air emissions during the operational phase of the proposed development.

Geographically, the proposed wind farm site is situated within the Midlands Region (Longford, Offaly, Westmeath and Laois). In terms of national air quality monitoring, the proposed development is located within Zone D (Rural Ireland). The assessment of baseline data available for similar representative sites monitored by the EPA in the region and Zone D, through their Air Quality Monitoring Network, indicates that current report levels (i.e., EPA Annual Air Quality Reporting) of the key air quality pollutants monitored, i.e., nitrogen dioxide (NO2), particulate matter less than 10 microns (PM10) and particulate matter less than 2.5 microns (PM2.5), Sulphur Dioxide (SO2), ozone (O3), and carbon monoxide (CO), are generally well below the respective National and European Union (EU) ambient air quality standards and current limit values set for each pollutant, in particular at the rural locations, the data from which is likely to be broadly representative of the typical background concentrations at the proposed wind farm site.

The proposed wind farm site is also situated within the EPA's 'Rural East' Air Quality Index for Health (AQIH) Region. The most recent reporting by the EPA indicates that the current air quality in the vicinity of the proposed development is classified as "Good".

Due to the size, nature and location of the proposed development, increased road traffic emissions resulting from the construction, and operation and maintenance, of the proposed development are expected to have an imperceptible effect on air quality.

10.1 OVERALL EFFECTS

Detailed dust mitigation measures are outlined in Chapter 11 (Air Quality) and also included in the CEMP (see Appendix 3-2 of this EIAR) to ensure that no significant nuisance as a result of construction dust emissions from 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, impacts to air quality at nearby sensitive receptors (such as local properties or sensitive ecology) will not be significant. Therefore, it is anticipated that during the construction phase there will be an imperceptible short-term negative effect on air quality, primarily through dust generation and exhaust emissions, following the application of mitigation measures outlined in Chapter 11 (Air Quality), in the CEMP, (Appendix 3-2 of this EIAR).

In the context of the operational lifetime of 30-years, emissions of a number of pollutants associated with burning fossil fuels including NOX, sulfur oxides (SOX), $PM_{2.5}$ and PM_{10} and secondary pollutants, such as O_3, will be avoided at energy production facilities elsewhere in the country through the generation of renewable energy associated with the proposed development. The avoided emissions, therefore, result in a potentially imperceptible, long-term, positive effect on air quality. During the operational phase, it is anticipated that the site activity (i.e., vehicles for maintenance and amenity use) will have a very localised, long-term, imperceptible, negative effect on air quality through dust generation and exhaust emissions during the operational phase.

The decommissioning phase of the proposed development will likely be similar to the construction phase, albeit at a smaller scale. Therefore a short-term imperceptible negative effect on air quality due to dust and exhaust emissions is anticipated.

11. NOISE AND VIBRATION

This chapter of the EIAR assesses the likely significant environmental noise and vibration effects of the proposed development. The chapter identifies appropriate noise and vibration thresholds and limit values for the various phases and element of the proposed development with reference to best practice guidance documents.

The potential impacts and effects are assessed with reference to the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), and, where required, appropriate mitigation measures will be outlined to ensure effects are at acceptable levels at sensitive receptors and comply with any limit values.

An environmental noise survey has been undertaken to inform the noise impact assessment. Existing baseline and background noise levels at sensitive receptors in the receiving environment have been established.

11.1 OVERALL EFFECTS

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

11.1.1 Construction and Decommissioning Phase

The assessment of construction and decommissioning noise and vibration has been conducted in accordance with best practice guidance contained in BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise and BS 5228-2:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Vibration.

The assessment of potential effects has demonstrated that the proposed development is expected to comply with the identified threshold for the construction and decommissioning phases of the proposed development and therefore there are no significant effects anticipated, and no specific mitigation measures are required.

The associated construction and decommissioning phase noise and vibration emissions from the proposed development are not expected to cause any significant effects at sensitive receptors.

11.1.2 Operational Phase

The relevant guidance regarding environmental noise for wind energy developments is the 'Wind Energy Development Guidelines for Planning Authorities 2006' (WEDG), with further details on the assessment methodology provided in 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' published by the Institute of Acoustics (IOAGPG).

Typical background noise levels for day and night periods at various wind speeds have been derived from the background noise survey that has in accordance with best practice guidance contained in IOAGPG. Prevailing background noise levels are primarily attributable to local road traffic noise and other agricultural and anthropogenic sources in the area. The results of

the background noise survey have been used to derive appropriate operational turbine noise criteria for the proposed development in line with the guidance contained in the WEDG.

Based on detailed information on the site layout, the turbine noise emissions, and turbine hub height for the proposed development, a series of turbine noise prediction models have been prepared for review. All predictions conducted in accordance with the guidance contained in ISO 9613 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation. The predicted turbine noise levels have been assessed at all NSL's in accordance with the IOAGPG recommendations. The findings of the assessment have confirmed that the predicted operational turbine noise levels from the proposed development will be within best practice noise criteria curves recommended in WEDG. Therefore, no specific mitigation measures are required, and it is not considered that the proposed development will have any significant effects.

The assessment has found that noise from the operation of proposed fixed plant items, namely, the substation and the battery storage facility are expected to be within the proposed criterion for fixed machinal plant which has been taken from best practice guidance in Environmental Protection Agency (EPA) document, Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities 2016 (NG4).

The associated operational phase noise and vibration emissions from the proposed development are not expected to cause any significant effects at sensitive receptors.

11.1.3 Summary

The potential noise and vibration effects on the surrounding environment from the proposed development are not expected to cause any significant effects at sensitive receptors during the construction, and operational and decommissioning phases.

12. LANDSCAPE AND VISUAL

Chapter 13 (Landscape and Visual Impact Assessment) describes the landscape context of the proposed development and assesses the likely landscape and visual effects of the proposed development on the receiving environment.

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

While the Wind Energy Development Guidelines (2006 and 2019 Draft Revised) would require a 20 km radius study area for this proposed development, the previous application used a 30 km radius in line with a number of midlands wind farm assessments at that time. For consistency, a 30 km radius study area has been used again for the currently proposed development.

12.1 OVERALL EFFECTS – LANDSCAPE

There will be physical effects on the land cover of the site as a result of the proposed development, but these will be relatively minor in the context of the cutaway peatland context and the high proportion of existing access tracks that will be utilised during construction and operational phases.

In terms of effects on landscape character, which is the main landscape effect consideration in this instance, there is not considered to be any significant negative effects. Although higher sensitivity sections of the River Shannon and the Royal Canal are contained within the central portion of the study area, they do not have a strong influence on the overall landscape character beyond their immediate corridors. For the vast majority of the central portion of the study area the defining landscape character relates to agricultural farming and cutaway peatland with the Lanesborough Power Station standing as an iconic testament to the productive values associated with the surrounding landscape.

Throughout the wider study area, agricultural farmland remains the predominant land use with a generally lesser proportion of peatland. Within that wider context the proposed development will be one of a range of rural land uses and will not significantly influence or alter landscape character even in the context of higher sensitivity landscape features, when diluted by distances in excess of 5 km.

12.2 OVERALL EFFECTS – VISUAL

Visual effects are assessed at 54 no. visual receptor locations throughout the study area, which are classified in terms of receptor type including; designated scenic views; key views; local community views; centres of population; major routes, and; tourism, heritage and amenity features.

Receptor sensitivity is considered to range widely across the study area between Very High at DR24 – 'Hill of Uisneach' and Low for several of the 'major route' receptors where visual amenity is strongly influenced by the busy road corridor. Hill of Uisneach' is ca. 27 km to the southeast of the proposed wind farm site.

The majority of visual impact magnitude judgements are in the mid to low range due to a combination of high levels of screening, the dispersed layout of the proposed wind farm site and the robust rural landscape context in view. However, there are a small proportion of views within close proximity to turbines where mid to high order visual effect magnitude is considered to occur. At these locations, the nearest turbines invariably have a dominant visual presence within the scene and the intensity or lateral extent of turbines is also likely to be considerable. There are several viewpoint locations where the turbines have a highly dominant or dominant visual presence that is moderated aesthetically by a clear and legible view of the proposed turbines running away from the viewer with a strong sense of perspective. This scenario most notably occurs at MR5 and MR7 on regional roads between turbine clusters and AH3 from the Corlea Trackway visitors centre just to the southeast of the proposed development. In many ways these particular views epitomise the nature of the receiving environment and its assimilation potential for the proposed development.

There are not considered to be any significant negative effects, but two of the higher order effects (Substantial-moderate) occur at viewpoint LC1 from a local graveyard and amenity area to the north of the site and viewpoint AH3/AH3A at Corlea Trackway visitors centre. At LC1, this level of significance occurs as a result of the development having a mid to high level of visual presence in the view (Dominant / Co-dominant) and with turbines appearing intermittently at different scales above and between sections of intervening vegetation. At AH3 the visual presence of the proposed development is deemed to be Dominant, but the turbines are also seen with a high degree of legibility and within a vast cutaway peatland context that can absorb the proposed wind farm site in terms of scale and extent. At five of the representative viewpoints, the significance of effect is judged to be Moderate with the remainder deemed to experience Moderate-slight significance or lower.

12.3 Overall Effects – Cumulative

There are presently two existing and one contracted wind farms within the study area, so wind energy development is considered to be a familiar, but not strongly characteristic or defining feature of the landscape within the study area. The proposed development will most commonly be viewed in isolation from within the lowland context of the study area, but from occasional elevated vantage points, which also tend to be designated as scenic views, the proposal will be commonly seen in conjunction with the Slieve Bawn Wind Farm (20 turbines) approximately 8 km to the northwest. Aside from the physical separation between these wind farms, they occupy different landscape contexts with Sliabh Bawn on an upland ridge and the proposed development on flat cutaway peatland. This contextual separation tends to accentuate the physical distance between them and there is little sense of wind energy proliferation within the study area.

Overall, it is considered that the proposal will contribute to wind energy development becoming a more characteristic feature of this midland's context, but it is not considered to contribute to a significant cumulative effect.

13. ARCHAEOLOGY AND CULTURAL HERITAGE

Chapter 14 of the EIAR provides an assessment of the potential effects of the proposed development on the Archaeology and Cultural Heritage resource. It assesses the likely significant effects of the proposed development on the archaeological, architectural and cultural heritage environment. The layout of the proposed development was designed with consideration of the known cultural heritage, ensuring minimum impact on known above ground archaeological / architectural / cultural heritage features. The proposed development will involve ground disturbance in all elements of the proposal.

13.1 OVERALL EFFECTS

The assessment was based on desktop research, field survey and assisted by the results of the Landscape and Visual Impact Assessment. Where potential effects have been identified appropriate mitigation measures have been proposed in order to minimise any such effects.

As parts of the bog are overgrown preventing a full assessment, the following measures will be implemented at Pre-Construction/Post-Consent Advance Works Phase;

- Archaeological monitoring of the clearance of overgrown drains.
- Archaeological pre-development testing in the areas of the turbine hardstands, compounds, substations, battery storage and at the proposed site entrances and exit points to the proposed wind farm site;
- Archaeological monitoring of tree felling.
- Archaeological excavation under licence to resolution of feature identified during ground investigations in 2021 along the amenity road that exits Lough Bannow Bog in the NE.
- Archaeological monitoring of all excavations associated with the infrastructure of the proposed wind farm.

These works will require monitoring by a suitably qualified archaeologist working under licence as issued by the minister (DHLGH) under section 26 of the National Monuments Acts (1994-2014). In the event of archaeological features, finds and/or deposits been encountered during the course of the monitoring and/or testing, the relevant authorities should be notified immediately. Preservation by record (through archaeological excavation) will only occur if it is established that preservation in situ cannot be achieved, and such excavations are agreed with National Monuments Service.

All ground disturbance associated with the construction of the proposed development will be monitored by a suitably qualified archaeologist working under licence as issued by the minister (DHLGH) under section 26 of the National Monuments Acts (1994-2014).

The assessment recorded that the proposed development will have no direct impact on any cultural heritage assets.

Direct Effects on recorded monuments

There are a total of 333 no. recorded monuments within 500 m of the proposed wind farm site (5 of which are located outside the proposed wind farm site boundary). As these monuments are no longer extant, the proposed development will have no effect. The proposed development will have a neutral imperceptible (direct) effect on the 5 no. recorded monuments located within 500 m of the proposed wind farm site and a neutral not significant (direct) effect on the 21 no. recorded monuments located within 10 m of the proposed TDR.

Direct Effects on NIAH and RPS

There are no recorded NIAH within the proposed wind farm site boundary. There are a total 26 no. features registered in the NIAH of which 12 are recorded protected structures located within 2 km of the proposed wind farm site, 17 features registered in the NIAH of which 7 are recorded protected structures and 2 recorded Protected structures within 10 m of the proposed TDR, and none of these will be directly effected by the proposed development.

Indirect Effects on Cultural Heritage

Numerous Recorded Monuments, RPS and NIAH structures are recorded within 2 km of the proposed wind farm site have some screening surrounding therefore the proposed wind farm site will have a neutral long-term imperceptible effect of no significance on setting.

An assessment of potential cumulative effects was also undertaken taking into consideration other extant planning applications and operational and proposed wind farms within 20 km. While some potential cumulative visual effects to the wider setting of cultural heritage assets is possible when considered with the operational and proposed wind farms, no cumulative effects to the immediate setting of cultural heritage assets will occur.

14. TRAFFIC AND TRANSPORT

This chapter assesses the potential effect of the proposed development on the surrounding road network and its capacity as a result of traffic generated by the proposed development includes AILs required to deliver turbine components and LV and HV movements associated with construction material deliveries.

The proposed wind farm site is proposed to be accessed via 4 no. site accesses. The proposed site accesses are as follows:

- New proposed main site access (Site Access A) to the southern part of Derryadd Bog, off the R392
- New proposed site crossing (site Access B) from the South of Derryadd Bog to the northern part of Lough Bannow Bog, off the R398;
- Proposed new temporary site crossing (Site Access C) from the northern part of Derryadd Bog (Machine pass from Mountdillon Works yard) to Derryaroge Bog, required for large component transport across the N63 into Derryaroge as well as access into Derryaroge for HV's off the N63;and,
- Existing Mountdillon Access will be utilised by Light Vehicles (LVs) and Heavy Vehicles (HVs). A staggered junction will be constructed in the operational phase in line with TII guidelines (Between Mountdillon Access and Site Access C).

The main site access A will be the main construction access to the site and will facilitate both materials delivery (stone, steel and concrete) as well as large oversize components such as turbine blades, tower sections and substation components.

During the operation phase, Site Access A will remain. Site Access B will be gated and used as necessary. Site access C will form a staggered junction in line with TII guidelines between the Existing Mountdillon Access and Site Access C into Derryaroge.

The proposed TDR was investigated and assessed, with sections along the route identified for accommodation works to facilitate delivery of the turbine components.

Based on the nature of the proposed development, various construction materials will be delivered to the site over the construction programme. The materials will be delivered by standard heavy vehicles (HVs) including rigid lorries and articulated lorries. Other vehicles that will attend the site include standard construction machinery, i.e. crane, excavator, stone crusher, concrete trucks, tipper trucks.

A Road Safety Audit (RSA) has been undertaken and the recommendations have been incorporated into the design of the proposed development.

14.1 Overall Effects

The impact of transporting the AILs to the site, will be moderate and temporary in nature. Routes from Athlone to Roscommon, from Roscommon to Lanesborough, and from Lanesborough to the proposed wind farm site have been assessed in this report and are viable routes for the transport of the AILs based on the swept path analysis. The transport of the AILs by convoy will be mitigated by traffic management measures and carried out during off-peak (i.e. night -time) hours.

The residual impact of transporting the AILs to the site, will be not significant and temporary in nature. Routes from Athlone to Roscommon, from Roscommon to Lanesborough, and from Lanesborough to the proposed wind farm site have been assessed in this report and are viable routes for the transport of the AILs based on the swept path analysis.

The potential traffic effects on the road network are considered in relation to peak construction traffic and average construction traffic. In accordance with TTA guidelines, only the traffic associated with the construction phase at the identified haul route junctions required a Junction Modelling assessment. Due to the operational phase being sub-threshold, this phase was not assessed in accordance with the TTA Guidance Document. The decommissioning phase is at a date in the future outside the available parameters to forecasting traffic data, however, considering that the traffic volume will be less than the construction phase, the impact will be the same or less than the construction phase.

The TTA assessment of the Junctions indicated the following potential effects: peak generated construction traffic will have a not significant effect over a temporary duration (i.e., 3 months), and average construction traffic will have a not significant effect over a short-term duration (i.e., 21 months). To minimise the impact of the proposed development during the construction phase a TMP has been prepared. On average the potential for effects on traffic will be not significant and of a short-term duration.

During the construction phase mitigation measures would be implemented, as set out in the TMP, to manage and reduce temporary traffic and transport impacts during the construction phase.

The operational phase of the proposed development will be imperceptible over the long-term duration. The decommissioning phase will have a lower impact than the construction phase and will be slight and of a temporary duration.

There will be no significant residual effects with the adoption of the mitigation measures presented in the Chapter.

15. MATERIAL ASSETS

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

The nearest significant aviation installations to the proposed wind farm site are Ireland West International Airport (61 km from proposed wind farm site) the privately-owned Aerodrome at Abbeyshrule (14 km from proposed wind farm site) and the Irish Aviation Authority (IAA) Radar Station at Dublin Airport (107 km from proposed wind farm site). The Irish Air Corps (IAC) also have a low-level flying route along the N4 national primary road (4.2 km from proposed wind farm site).

The Telecommunications assessment found that there are nineteen existing radio links in the vicinity of the proposed wind farm site.

While there are some overhead electricity lines within the EIAR study area it is also possible that there might be some underground electricity cables discovered during the proposed works, particularly near public roads and houses or farmyards (such as along the proposed grid connection route and proposed areas of works on the TDR). Damaging an underground electricity cable may have the potential to cause serious harm or death (see Section 19 – Major Accidents and Natural Disasters). All proposed works being carried out on overhead or underground electricity cables will be done in consultation with ESB/EirGrid, as required, and will comply with their guidance and best practice. It is assumed that there are likely to be underground water pipes along public roads (particularly for the proposed areas of works on the TDR) as well as occasionally within agricultural land.

There was no gas network pipes found to be in the area surrounding the proposed wind farm site. There was a gas pipe found to be located adjacent to one of the proposed temporary works areas for the TDR on the N6/N61 roundabout in Roscommon, near Athlone Town.

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

15.1 OVERALL EFFECTS

The findings of the aviation assessment indicate that there will be no significant effect to aviation as a result of the proposed development. However, should the development proceed, the final turbine layout should be submitted to the IAA so that the turbines can be included in their Aeronautical Electronic Obstacle Data Sets. It would also be a requirement that turbines are fitted with Aeronautical Obstacle Warning Lights in accordance with civil and military aviation industry standards.

The proposed wind farm site layout has been designed to avoid any effects to telecommunications links in the area, therefore, there will be no potential for effects during the majority of the construction phase.

Network analysis (2D and 3D) indicate that none of the proposed turbines would impact the operation of these radio links. As the radio links would not be impacted, no mitigation measures are required for telecommunications.

In relation to other material assets, the assessment indicates that there will be no significant effect to other material assets (water and electricity supply, waste services) in the study area due to the proposed development.

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 rotor diameter for the turbines proposed is 165 m, therefore all sensitive receptors within 1.65 km of the proposed turbine locations have been included in the shadow flicker assessment (10 times the rotor diameter).

16.1 OVERALL EFFECTS

There are no potential effects relating to shadow flicker during the construction phase of the proposed development as shadow flicker can only occur when the turbine blades are installed and rotating.

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 the commissioning phase, there is potential for some shadow flicker to be experienced as the shadow flicker management software is installed and refined. However, the commissioning team will ensure that the maximum daily limit of 30 minutes per day is not exceeded during this temporary commissioning period.

No significant effects are anticipated during the operational phase, post-mitigation. Where daily shadow flicker exceedances have been predicted at buildings by the modelling software, a site visit will be undertaken firstly to determine the level of occurrence, existing screening and window orientation. The shadow flicker prediction data will be used to select dates on which a shadow flicker event could be observed at one or multiple affected properties and the following process will be followed.

- Recording the weather conditions at the time of the site visit, including wind speeds and direction (i.e. blue sky, intermittent clouds, overcast, moderate breeze, light breeze, still etc.);
- Recording the house number, time and duration of site visit and the observation point GPS coordinates;
- Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation; and
- In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded.

The shadow flicker modelling predicts worst-case 'bare earth' conditions without vegetation (including forestry), buildings or other obstacles. In reality, existing screening in the form of buildings, vegetation and local topographic variations will have an influence on the level of shadow flicker that will actually be experienced by the identified shadow flicker receptors. When these additional screening features are taken into account, the actual effect in terms of incidence and duration may be significantly reduced or even eliminated.

There are no potential 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.

17. CLIMATE

The assessment of Climate is contained within Chapter 18 of this EIAR. The climate assessment has focussed on:

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

Existing Environment

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA state that Ireland had total GHG emissions of 60.6 Mt CO_2e (Mega tonnes carbon dioxide equivalent) in 2023. This is 2.27 Mt CO_2e higher than Ireland's annual target for emissions in 2023. EPA projections indicate that Ireland has used 63.9% of the 295 Mt CO_2e Carbon Budget for the five-year period 2021-2025. Further reduction measures are required in order to stay within the budget requirements.

Impact Assessment

The potential impacts on climate have been assessed in two distinct ways; a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA). The GHGA quantifies the GHG emissions from a project over its lifetime and compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude. The CCRA considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

Greenhouse Gas Assessment

The impact of the construction, operation and decommissioning of the proposed development on Ireland's total national greenhouse gas emission has been compared to Ireland's 2023 total greenhouse gas emissions and the relevant 2030 carbon budgets.

Construction Phase

The GHG emissions associated with the construction of the proposed development 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 development are predicted to be a small fraction of Ireland's Industry and Transport sector 2030 emissions ceilings of 4 Mt CO2e and 6 Mt CO2e, respectively. The proposed development will incorporate some mitigation measures which will aim to reduce climate impacts during construction.

Operational Phase

Once operational, the proposed development will generate approx. 0.4 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 development a net positive contributor in terms of GHG emissions. Additionally, it will support Ireland in meeting its Climate Action Plan 2024 (CAP24) 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.

Climate Change Risk Assessment

A CCRA was conducted to consider the vulnerability of the proposed development to climate change, as per the TII 2022 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 development 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 development.

Cumulative Impact

The GHG impact of the proposed development has been considered in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, and how it affects Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

The cumulative impact of all wind farms across Ireland will significantly contribute to meeting the CAP24 targets. The proposed wind farm development will also play a key role in helping Ireland achieve the National Climate Objective of Net Zero by 2050 and assist in phasing out the use of coal and peat in electricity generation by 2030.

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

Mitigation

Construction Phase

A number of best practice mitigation measures are proposed for the construction phase of the proposed development to ensure that impacts to climate are minimised. These mitigation measures include a demolition and construction program, determine material reuse and waste recycling opportunities and identifying and implementing lower carbon material choices and quantities during detailed design.

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).

17.1 Overall 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"*. CAP24 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 development has been designed to maximize its contribution to renewable electricity generation, significantly reducing climate impacts during operation. By producing clean energy, the development will directly support Ireland's transition to a low-carbon economy and help mitigate climate change.

The effect of the proposed development 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 development as a result of climate change. The residual effect of climate change on the proposed development is considered direct, long-term, negative and imperceptible, which is overall not significant in EIA terms.

18. MAJOR ACCIDENTS AND NATURAL DISASTERS

Chapter 19 Major Accidents and Natural Disasters in the EIAR assessed the potential significant adverse impacts of the proposed development on the environment deriving from its vulnerability to Major Accidents and/or Natural Disasters, as well as the potential of the proposed development itself to cause potential Major Accidents and/or Natural Disasters during the construction, operation and decommissioning phases.

The 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 (DoEHLG 2010) and the Major Accidents and Disasters in EIA: A Primer guidance (IEMA, 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 development.

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 development during the construction, operation and decommissioning phases.

The potential risks include:

- Striking strategic infrastructure resulting in damage, disruption to services and injuries (electrical shock, gas explosion etc).
- Contamination of groundwater or surface water. This is associated with construction and/or operational maintenance works.

- Major traffic accidents resulting from construction phase traffic, temporary construction traffic management measures or associated with the delivery of Abnormal indivisible loads (AIL) along the turbine delivery route.
- Landslide / Movement of peat within the site during construction.
- Flooding of the site during construction works, resulting in trench collapses.
- Collision risk resulting in damage to infrastructure and/or injuries.
- Incident at Seveso site involving the release of dangerous substances.
- Collapse / damage of structures/infrastructure.
- Collapse / damage of turbine structures / infrastructure at substation.
- Fire at wind turbines, Substation and BESS during construction / operation phase resulting in damage to infrastructure and/or injuries.
- Ice falling from wind turbine blades.
- Contamination of soils and groundwater. This is associated with construction methodology for horizontal directional drilling.

The proposed development 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.

Examining the risks and the associated mitigation measures, all risks were considered as being below the threshold of significance set for this assessment (Green Zone or 'Low' risk event), and found to be managed to an acceptable level, therefore no further assessment is required.

19. INTERACTIONS 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 20 Interaction of the Foregoing.

A matrix is presented in Chapter 20 that outlines the different environmental factors which have potential to interact as a result of the proposed development. 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. However, the most common potential interactions occur between the environmental factors of population and human health, land, soils and geology, hydrology and hydrogeology, landscape and visual, noise, air quality, climate, and biodiversity.

Review of the potential effects associated with interaction of environmental factors during the construction, operational and decommissioning phases has determined that significant amplification of effects is not anticipated, and additional interactions further to those described in this chapter are not predicted.

The proposed development 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, through the use of the community benefit fund to support local initiatives, and provision of amenity access tracks and carparks.

Overall, the assessment of the interactions described has found they are not predicted give rise to significant effects.