

Ballyfeeny Green Energy Project



Non-Technical Summary NTS

Volume I

Ballyfeeny Green Energy Project

September 2025

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CLIENT REF	GRE0005-3		
DEVELOPMENT ADDRESS	BALLYFEENY, CO. ROSCOMMON		
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REV 00	15/09/2025	JB, EOB	DM, JM

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Acronyms

Term	Meaning
NTS	Non-Technical Summary
EIAR	Environmental Impact Assessment Report
WTG	Wind Turbine Generator
GCR	Grid Connection Route
EIA	Environmental Impact Assessment
MEC	Maximum Export Capacity
MG	Megawatts
EU	European Union
CAP25	Climate Action Plan 2025
ha	Hectares
CDR	Construction Delivery Route
TDR	Transport Delivery Route
SPA	Swept Path Analysis
TMP	Traffic Management Plan
kV	KiloVolt
ESBN	Electrical Supply Board Network
MV	Medium Voltage
ECP	Enduring Connection Policy
HDD	Horizontal Directional Drilling
CEMP	Construction and Environmental Management Plan
TMP	Traffic Management Plan
O&M	Operational and Maintenance
RED	Renewable Energy Directive
IPCC	Intergovernmental Panel on Climate Change
UNFCCC	United Nations Framework Convention on Climate Change
WEDG 2006	Wind Energy Development Guidelines 2006
Draft WEDG 2019	Draft Wind Energy Development Guidelines 2019
IWEA	Irish Wind Energy Association
RESS	Renewable Electricity Support Scheme
CDP	County Development Plan
EMF	Electromagnetic Fields
EDs	Electoral Divisions
EPA	Environmental Protection Agency
SWMP	Surface Water Management Plan
CAFE	Clean Air For Europe
NOx	Nitrogen Oxide
NO2	Nitrogen Dioxide
SO2	Sulphur Dioxide
PM	Particulate Matter
GHG	Greenhouse Gases
HGV	Heavy Goods Vehicle
CO2	Carbon Dioxide
DMP	Decommissioning Management Plan
dB	Decibel
NSL	Noise Sensitive Locations
LVIA	Landscape and Visual Impact Assessment
ZTV	Zone of Theoretic Visibility
VP	Viewpoint
KV	Key Views

SR/SV	Scenic Routes / Scenic Views
LCV	Local Community Views
CP	Centres of Population
MR	Major Routes
SE1	Site Entrance 1
SE2	Site Entrance 2
SE3	Site Entrance 3
SE4	Site Entrance 4
SE5	Site Entrance 5
SE6	Site Entrance 6
RMP	Records of Monuments and Places
NIAH	National Inventory of Architectural Heritage
ZoI	Zone of Influence
ZoN	Zone of Notification
RLB	Red Line Boundary
AIA	Archaeological Impact Assessment
WMP	Waste Management Plan
IAA	Irish Aviation Authority
DoD	Department of Defence
IAA-ANSP	Irish Aviation Authority Air Navigation Service Provider

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1. Introduction

This Non-Technical Summary (NTS) has been prepared by Rowan Engineering Consultants Ltd. on behalf of Ballyfeeny Green Energy Limited. This EIAR is in support of a planning application for the development of the proposed Ballyfeeny Green Energy Project in Ballyfeeny and adjacent townlands, County Roscommon.

The proposed wind energy development comprises six wind turbines, (hereafter referred to as WTGs and/or turbines) and all associated infrastructure including Turbine Foundations, Turbine Hardstands, Site Access Tracks, Wind Farm Internal Cabling, Relay Tower, Onsite Substation and all associated infrastructure. The proposed development also includes the underground grid connection from the Onsite Substation along the public road network, to where the R371 meets the Sliabh Bawn Substation Road (hereafter the proposed 'Development').

This document is a non-technical summary of the information contained in the EIAR.

1.1 Applicant

Ballyfeeny Green Energy Limited (hereafter referred to as 'The Applicant') is a subsidiary of Greensource Sustainable Developments Limited (Greensource). Greensource are an innovative Irish renewable energy company based in Adare, Co. Limerick, that specialises in the development of renewable energy projects, working with communities from pre-planning to operation, and creating long-lasting local partnerships.

Greensource has over ten years development and operational experience, holding a highly skilled and experienced team who are committed to developing projects with successful outcomes for all stakeholders. Working with integrity and care for the local environment, the team has a strong track record, having successfully completed wind energy and other renewable projects in the west of Ireland.

1.2 The Consultants

The Applicant has appointed Rowan Engineering Consultants Ltd. (hereafter referred to as 'Rowan') as the consultant for the proposed Project. Rowan are a wholly owned Irish environmental and forensic engineering company based in Trim, Co. Meath, and Oranmore, Co. Galway, holding expertise in renewable energy projects, sustainability, environmental planning and environmental due diligence. Rowan was founded in 1998 and have successfully completed renewable energy projects in both Ireland and overseas.

1.3 The Requirement for an EIAR

The proposed Project exceeds the threshold limits for an Environmental Impact Assessment as outlined under schedule 5, Part 2, Class 3(I) of the Planning and Development Regulations 2001 “(I) Such development would equal or exceed, as the case may be, any relevant quantity, or other limit specified” The proposed Project exceeds the following threshold of the aforementioned regulations:

“Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having an output greater than 5 megawatts”.

As the proposed Project exceeds the threshold of 5 turbines, an EIAR has been prepared as part of the planning application in compliance with the EU EIA Directive.

1.4 Structure and Purpose of the EIAR

An Environmental Impact Assessment (EIA) is undertaken to ensure that any proposed project likely to have significant effects on the environment and surrounding area is thoroughly evaluated. The assessment aims to identify such impacts and ensure they are either avoided or minimised wherever possible. The results of this process are presented in a document known as the Environmental Impact Assessment Report (EIAR).

Rowan has prepared the EIAR in line with all relevant environmental legislation, guidance, and advisory notes. The report has been developed through consultation with statutory authorities, stakeholders, and the local community.

- This document represents Volume 1 of the EIAR and serves as the Non-Technical Summary (NTS). It provides a straightforward overview of the proposed development and the key environmental considerations, explained in accessible, non-technical language.

The full EIAR is presented in four volumes:

- **Volume 1: Non-Technical Summary (NTS)** – A summary of the proposed Project and its environmental implications.
- **Volume 2: The Main EIAR** – Contains comprehensive details about the proposed development, including assessment findings, as well as supporting drawings, figures, and maps.
- **Volume 3: Appendices** – Includes supplementary data, drawings, and information referenced in Volume 2.

- **Volume 4: EIAR Figures** – Includes figures associated with each chapter of the EIAR to the correct scale.
- **Volume 5: Photomontages** – Provides visual representations used in the Landscape and Visual Impact Assessment discussed in Volume 2.
- **Volume 6: Natura Impact Statement (NIS)** – Provides an in-depth ecological assessment on the protected Natura 2000 sites, designated under the EU Habitats Directive and Birds Directive, which are in proximity to the proposed Project.

1.5 The need for the proposed Project

The proposed Project aims to generate renewable electricity, contributing significantly to Ireland's transition to a low-carbon economy. The project aligns with several national and EU climate and energy policies:

- **Climate Action Plan 2025 (CAP25):** Sets a roadmap for achieving net-zero emissions by 2050, targeting six key sectors including renewable energy. It also sets targets such as 80% of electricity from renewables by 2030 and 9GW of onshore wind capacity.
- **White Paper on Energy Policy (2015–2030):** Outlines the vision for reducing greenhouse gas emissions from the energy sector by up to 95% by 2050, reaffirming the importance of onshore wind.
- **Climate Action and Low Carbon Development Acts (2015 & 2021):** Provide a legal framework for achieving a climate-neutral economy, including a legally binding 51% emissions cut by 2030 and net-zero by 2050.
- **EU Renewable Energy Directives:** Updated in 2023, the latest directive sets a binding EU-wide renewable energy target of 42.5% by 2030, with an aim of 45%.
- **Roscommon County Development Plan (2022–2028):** Supports renewable energy developments to meet national targets and improve energy efficiency by 50% by 2030. It includes policy objectives to reduce emissions and support infrastructure for renewable energy.

Overall, the project is well-aligned with Ireland's climate goals and policies, and it will contribute to emissions reductions, renewable electricity, job creation, and national energy security.

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2. Proposed Project

2.1 Project Description

2.1.1 Overview of the proposed Project

The proposed wind energy development for which planning permission is sought comprises six wind turbines and all associated infrastructure including Turbine Foundations, Turbine Hardstands, Site Access Tracks, Wind Farm Internal Cabling, Relay Tower, Onsite Substation and all associated infrastructure. The proposed development also includes the underground grid connection from the Onsite Substation along the public road network, to where the R371 meets the Sliabh Bawn Substation Road (hereafter the proposed 'Development'). For the purposes of this EIAR, the works required within the existing Sliabh Bawn 110kV Substation and works to install the underground grid connection, along the Sliabh Bawn Substation Road to where it meets the R371, have been included as part of the assessment. However, these works will be subject to a separate planning permission and do not form part of this planning application. The underground grid connection works within the planning application Redline Boundary (RLB), the works required within the existing Sliabh Bawn 110kV Substation and along the Sliabh Bawn Substation Road to the R371, are collectively known as the Grid Connection Route (GCR).

The EIAR also presents an assessment of temporary accommodating works required along the public road network from the port of origin in Galway Port, to facilitate the delivery of turbine components to the wind farm Site. Two route options have been assessed in full within the EIAR. These routes collectively are referred to as the Turbine Delivery Route (TDR). These temporary accommodating works are assessed in this AA/NIS, however, do not form part of this planning application.

For this EIAR the proposed Development, the works for the underground grid connection within the existing Sliabh Bawn 110kV Substation and along the Sliabh Bawn Substation Road to the R371 and the temporary accommodating works along the TDR, are hereafter referred to as the proposed 'Project'.

The main elements of the proposed Project will consist of:

- The construction and operation of a wind farm consisting of six wind turbines;
- The turbine specification is unconfirmed but will fall within the parameter range outlined by Roscommon County Council and will be one of the following three Options;

- Technology Option 1: tip height of 160m, rotor diameter of 136m and hub height of 92m; or
- Technology Option 2: tip height of 156m, rotor diameter of 133m and hub height of 90m; or
- Technology Option 3: tip height of 159m, rotor diameter of 138m and hub height of 90m;
- Construction of Turbine Hardstands (including crane and assembly areas) and Turbine Foundations;
- Construction of approximately 3.9km of new permanent internal Site Access Tracks and the upgrade of 0.5km of existing internal access tracks;
- Construction of a permanent 38kV Onsite Substation, including one single story substation building with welfare facilities, Lidar, diesel generator and fuel storage tank, all associated electrical plant and equipment, all associated underground cabling, rainwater harvesting and storage tank, wastewater holding tank, security fencing, gates, signage, and all ancillary structures and works;
- Installation of underground electrical and communications cabling connecting the wind turbines to the proposed 38kV Onsite Substation;
- Construction, of two Temporary Construction Compounds with associated site offices, welfare facilities, car parking, site fencing and lighting;
- Erection of a permanent 30m high Communications Relay Tower;
- Construction access via six site entrances (SE1 – SE6) to include:
 - SE1 on the R371, SE2 and SE3 on the L6018, and SE4, SE5 and SE6 on the L60498;
 - SE1 and SE6 are temporary and will be reinstated following construction. SE1 may be re-established if required for turbine component repair or replacement. SE2 – SE5 will be retained permanently for operational access;
- Tree felling to facilitate the construction and operation of the proposed Project;
- Installation of approximately 5.8km of permanent underground electrical cabling for the Grid Connection Route including cabling within the public road corridor, extending from the proposed onsite 38kV Substation at Ballyfeeny to end at the existing Sliabh Bawn 110kV Substation in the townland of Bunnageddy (also known as Runnageddy);
- All associated site works, including site clearance, landscaping, site drainage, security gates, fencing, permanent and temporary signage and biodiversity mitigation and enhancements, including hedgerow and treeline planting.

- Temporary accommodating works along the TDR, to facilitate turbine delivery from the port of entry at the Port of Galway to the wind farm site entrance (SE1) at Ballyfeeny, via Lough Atalia Road, College Road, R339, R685, N6, M6, M18, M17, N17, N5 (New N5 Ballaghadereen to Scramoge Road Project) and the R371

The Applicant is seeking a 10-year planning permission and 35-year operational life, initiating from the date of full commissioning of the entire wind farm. The development is covered by the provisions of the Renewable Energy Directive III (Directive 2023/2413).

The planning application is subject to section 34D of the Planning and Development Act, 2000, as amended. When a notice issues in accordance with section 34D(b), the provisions of article 26A of the Planning and Development Regulations 2001 to 2025 shall apply.

2.1.2 Site Location

The proposed wind farm Site is located in the townlands of Ballyfeeny (also known as Ballyfeeney) and Tully, c.4.5km east of Strokestown and 15km northwest of Longford town, positioned at Irish grid reference c. E598813 N782007 ITM (**EIAR Figure 1-1 (Volume 4)**)

The Site has an elevation of approximately 70m Above Ordnance Datum (AOD) at its lowest to approximately 124m AOD at its highest elevation. Analysis of the coarse topographic information indicates that the proposed Project straddles the top and lower eastern flank of a small hill and sits on lands that generally slope to the east in the cases of Turbines T02, T03, T04, T05 and T06. Lands slope to the south and east at T01 and are generally flat at the Onsite Substation.

The proposed wind farm Site consists of areas of forestry, portions of agricultural grassland and pastureland for cattle together with parcels of mature and private forestry. Additionally, an adjacent active quarry—known as Ballyfeeney Rock Quarry—exists on the western boundary of the Site. Two watercourses run adjacent to the boundaries of the proposed Site, known as the Culliagh Stream and Ballymartin Stream. Dominant habitats within the Site include hedgerows, treelines and drainage ditches.

The proposed Grid Connection Route is located within the townlands of Tully, Ballyfeeny, Polymount, Bellanamullia, Scramoge, Treanaceeve, Ballyhubert, Toreen, Tonycurneen and Bunnageddy (also known as Runnageddy). The GCR will be approximately 5.8km in length, originating from the proposed Onsite Substation. Approximately 1.3km of the GCR located

within private lands and an estimated 4.5km of the GCR will be located along the R371, traversing under the N5, continuing along the R371 and terminating along the Sliabh Bawn Substation Road, where the GCR will connect to Sliabh Bawn 110kV Substation. The works required within the existing Sliabh Bawn 110kV Substation and works to install the underground grid connection, along the Sliabh Bawn Substation Road to where it meets the R371, have been included as part of the assessment. However, these works will be subject to a separate planning application.

The Redline Boundary encompasses approximately 49.774 hectares (ha) and is accessed off the R371 road.



NTS Figure 2-1: Site Location Map (Ref: EIAR Figure 1-1 (Volume 4))

2.1.3 Design Flexibility

The Applicant has received a notification of opinion from the Local Authority (See **Appendix 1-5. DFR-25-1 - Notification of Opinion by LA**), under section 32I (2) of the Planning and Development Act, 2000 (as amended)., The Local Authority was satisfied that “...it is appropriate that the proposed application be made and decided before the prospective

applicant has confirmed certain details of the application". With respect to the notification of opinion by the Local Authority, the Applicant in this EIAR, proposes to assess three distinct Technology Options within the range outlined by the Local Authority and in accordance with the design flexibility parameters sought as outlined in **Chapter 1 Introduction, Table 1-3, Volume II - EIAR**.

2.1.4 Summary of Project Elements

Table 2-1 stipulates a summary of each element of the proposed Project. Each element is outlined in further detail within **Chapter 2 – Project Description** of the EIAR.

Table 2-1: Overview of Project Elements

Project Element	Description
Wind Turbines	The proposed Project will encompass six turbines, which will have a total tip height of either 156m, 159m or 160m depending on which Technology Option is selected.
Site Entrances	The proposed wind farm site will be accessed via 6 no. site entrances that will facilitate the construction, operation and decommissioning of the infrastructure. 4 no. of site entrances will be new entrances onto the public road with the remaining 2 no. being upgrades onto the public road and to an existing Coillte forest track. Of these, 4 no. entrances which will be permanent and used for operations and 2 no. entrance will be temporary.
Site Access Tracks	The Site access tracks are necessary to allow access for cranes and delivery trucks during construction of the Project. The Access Tracks will be used during the operational phase for the service and maintenance of the wind turbines during the operational lifespan of the Project. Additionally, Access Tracks will be used to allow access for dismantling of infrastructure during the decommissioning phase. It is proposed to construct approximately 3.9km of new and 0.5 of upgraded Access Track (4.4km in total of Access Tracks), at 5.5 m wide within the proposed wind farm site. The Access Tracks will be permanent tracks. It is intended that materials required for the internal access tracks will be sourced from local quarries with preference for first consideration given by distance to the site. The majority of materials delivered to the Site will be quarry based products such as crushed stone aggregate, ready-mix concrete, concrete blocks and other stone, sand and concrete based products.
Drainage Design	A number of watercourses and surface water drains cross the public road along the GCR. These are displayed on the GCR Site Layout is depicted on Planning Drawing 23604-301 to 308 (Part 1). The proposed GCR is adjacent to the Gortlusia Stream. The GCR also transects the Bellmount or Cloggernagh Stream further south just before the GCR turns west into Sliabh Bawn Substation Road. The drainage design for both the new access tracks and existing track upgrade includes as cambered surface with a 2% cross fall to a 1.5m width drain. Within the site these drains are directed to settlement ponds and a hydrocarbon interceptor. Drainage design is depicted within Planning Drawing 23604-550 (Part 1). The implementation of erosion control prior to site clearance works to prevent runoff flowing across exposed ground is proposed, in addition to temporary settlement tanks in locations which require the pumping out of water. Additionally, removal and management of silt with construction runoff will be necessitated and deployed through a number of controls, including; Avoidance Controls; Source Controls, In-Line Controls, Water Treatment Controls and Outfall Controls. Further

	detail on Control Measures and their applications in detailed within the Surface Water Management Plan (Refer Appendix 2.1.1) .
Turbine Hardstands	All turbine suppliers have basic requirements for a Turbine Hardstand to be constructed beside each turbine. The Turbine Hardstand refers to the area where wind turbine components, transport and installation equipment is stored, placed or parked and includes vehicle parking areas, laydown and storage areas. It provides a safe area for the assembly of the main crane for the construction of the wind turbine. Hardstands will also be used for maintenance activities during the operational phase and also for decommissioning activities. Temporary set down areas will be created at each Turbine Hardstand to store Wind Turbine components such as the rotor hub assembly, turbine blades, turbine towers, and nacelle. These areas will be made of compacted stone aggregate, these will be removed, and the areas reinstated on completion of the Wind Turbine deliveries. The Turbine Hardstand areas requirements for the three Technology Options are nearly identical. Therefore, the hardstand design is shown with a single design that is suitable for all three Technology Options. This has been used for the purposes of the EIAR. The dimension of a single turbine hardstand is circa 42m in length and 25m in width. See Planning Drawing 23604-502 (Part 1).
Turbine Foundations	The Turbine Foundations are steel reinforced concrete foundation Construction of the turbine foundation. The foundation is located under ground level and is used to support the turbine structure. Turbine Foundations are carefully designed to securely support the turbine structure against the forces generated by the wind. The foundations will require excavation down to suitable baring strata and backfilling the trench with engineered fill up to the base of the foundation. Each turbine base will require a reinforced concrete foundation comprising a base slab bearing onto rock or other competent substrata with a central upstand to support the tower. The Turbine Foundation will be of circular shape on plan with an anticipated diameter of approximately 25.5m. The Turbine Foundation will require approximately 650m³ of poured concrete and 110 tonnes of steel reinforcement, this is based on the largest turbine Technology Option proposed, i.e., Technology Option 1. Steel reinforcement will be installed as per the Wind Turbine foundation Planning Drawing 23604-504 (Part 1). The foundation anchorage system will be set up, adjusted, and fastened to the steel reinforcement. Additionally, the foundation anchorage system will be inspected for level and alignment before pouring the concrete into the base. These checks will be submitted to the Wind Turbine supplier for their approval. Subsequently, ready-mix concrete will be delivered to the foundation by ready-mix concrete trucks via the site Access Tracks. Concrete will be poured into each base using a concrete

	pump, and vibrating pokers will be utilised to ensure proper compaction around the reinforcement. When concrete installation and finishing is complete, the foundation base will be covered and left to cure. After the curing process, the formwork around the Wind Turbine base will be dismantled and taken away. Earth wires will be installed around the base prior to backfilling around.
TDR	The components for the turbines will be delivered by cargo ships to the Port of Galway. The components for each turbine will be delivered in separate loads, some of which are abnormal in terms of their width and length. A Transport Delivery Route (TDR) Assessment including a detailed Swept Path Analysis (SPA) has been prepared for the proposed Project in order to determine an appropriate route for components to the proposed wind farm site. The route commences at Galway Port, travelling west along the N6 and onto the M6 to the south of Athenry and Ballinasloe to Athlone. At this point TDR 1a would utilise the proposed N5 Ballaghaderreen to Scramoge Road Scheme, if this new section of road is available at the time of deliveries. This route would avoid bringing abnormal loads through the town of Strokestown. In the unlikely event that the new N5 Ballaghaderreen to Scramoge Road Scheme has not been completed by the time deliveries are due to commence, TDR 1b, which is routed through Strokestown would be utilised. The TDR assessment and SPA considered both TDR 1a and 1b, as both routes have been assessed in the EIAR. Localised temporary accommodating works such as widening and stoning of public road verges and roundabouts will be required on the TDR 1a and 1b to facilitate abnormal load vehicle wheel over-run. Hedge and tree trimming will also be required as well as relocation of utility overhead lines, poles, lampposts, signage, and other street furniture.
CDR	Equipment, plant, machinery and materials will be transported from the site of origin to the Site on national and regional roads. Site Entrance 1 off the R371 will be the primary site access for all deliveries and materials. Where possible, preference will be given to local nearby. To both support the local economy and reduce the necessity for transit the only exception is the TDR which is assessed separately. Further detail included in Appendix 2.1.3 -TMP.
Relay Tower	A permanent telecommunications Relay Tower positioned at Irish grid reference c. E598178 N781670 ITM. will be installed as part of the proposed Project. The mast will be equipped with telecommunications equipment at various heights and will be a slender, free-standing lattice structure as shown in Planning Drawing 23604-510 (Part 1). The Relay Tower will be prefabricated off site and delivered by a single articulated lorry. Subsequently, the relay tower will be assembled on site onto a steel reinforced concrete foundation.
Onsite Substation	It is proposed to construct a 38kV electricity substation, control building and associated compound within the proposed wind farm site as shown in Planning Drawing 23604-520 and 521 (Part 1). This will provide a connection to the national grid via an underground 38kV transmission cable connection, to the existing Sliabh Bawn 110kV Substation. It will also

	provide a connection between the Onsite Substation and the wind turbines via the Internal Wind Farm Internal Cabling network. The footprint of the Onsite Substation compound will be 1,705m² and will comprise a block-built substation and control building (130m²), a 38kV electrical transformer contained in a concrete bund connected to a duty and stand by pump, Lidar equipment, a diesel tank and stand by generator, and associated electrical components that will be placed on concrete plinths and in concrete bunds. Palisade security fencing will be installed around the perimeter of the Onsite Substation compound and inside the compound to separate the Independent Power Providers outdoor electrical yard from the Electrical Supply Board Networks (ESBN) outdoor electrical yard. The Onsite Substation and GCR will become an ESB Networks asset and will form part of the electrical grid network and will not be decommissioned. They will remain in-situ post operation and decommissioning.
Wind Farm Internal Cabling	Each Wind Turbine will be connected to the proposed Onsite Substation via underground Medium Voltage (MV) cables. Fibre-optic cables will also connect each Wind Turbine to a control system located within the control building module in the Onsite Substation. The electrical and fibre-optic cables will be run in cable ducts circa 1m below the ground surface located off Site Access Tracks as shown in Planning Drawing 23604-555 (Part 1).
GCR	Ballyfeeny Green Energy Limited propose to connect into the Sliabh Bawn 110kV substation at Sliabh Bawn approximately 5km southeast of Strokestown Co. Roscommon. The underground grid connection is included in the proposed Development and Planning Application, and includes works from the proposed Onsite Substation, at Ballyfeeny to where the R371 meets the Sliabh Bawn Substation Road. For the purposes of this EIAR, the works required within the existing Sliabh Bawn 110kV Substation and works to install the underground grid connection, along the Sliabh Bawn Substation Road to where it meets the R371, have been included as part of the assessment. However, these works will be subject to a separate planning permission and do not form part of this planning application. The underground grid connection works within the planning application Redline Boundary (RLB), the works required within the existing Sliabh Bawn 110kV Substation and along the Sliabh Bawn Substation Road to the R371, are collectively known as the Grid Connection Route (GCR). The grid connection will consist of a 38kV underground cable, constructed primarily within private tracks and the existing public road network over a distance of approximately 5.8km. The design of the grid connection will comply with the grid operator's specifications and technical and operational requirements.

	Connection will be sought from the grid system operations by application to ESBN through the Enduring Connection Policy (ECP) process. This is the current pathway for generators to connect to the electrical system in Ireland.
HDD	It is proposed to utilise Horizontal Directional Drilling (HDD) at one location – at the N5/R371 road junction; to cross the N5 without open excavation of the road. HDD may also be utilised at other locations subject to the requirements of Roscommon County Council and / or the entity in charge of, or with responsibility for, the item to be crossed. See Planning Drawing 23604-562 (Part 1) .
Temporary Construction Compound	2 No. Temporary Construction Compounds will be established on site, initially during the Enabling Works and completed at commencement of the main construction works. These compounds will also be re-established and used for the decommissioning phase of the project. Each will measure circa 1,260m ² in total, as shown in Planning Drawing 23604-570 (Part 1) .

2.1.5 Construction Phase

A **Construction and Environmental Management Plan (CEMP)** has been developed for the Project and is provided in **Volume III, Appendix 2.1** of this EIAR. The CEMP outlines the primary environmental management measures to be implemented during the construction phase, ensuring environmental protection and the minimisation of potential impacts.

In addition, a separate **Traffic Management Plan (TMP)** has been prepared and is included in **Volume III, Appendix 12.2** of this EIAR.

The construction phase of the proposed Project will take place over 18 months, including commissioning of the Turbines.

The proposed construction phase working hours, subject to agreement with the Local Authority are:

- Monday – Friday: 0700 - 1900hrs; and
- Saturday: 0700 - 1400hrs.

To ensure that optimal use is made of good weather periods or at critical periods, it may be necessary to work outside of these hours. Any such out of hours working will be agreed in advance with the relevant planning authority.

2.1.6 Operational phase

The proposed Project is anticipated to have a lifespan of approximately 35 years, initiating from the date of full commissioning of the Project. During the operational and maintenance (O&M) phase, the site is generally unmanned and will be monitored remotely for aspects including turbine output, wind speeds and responses to any alarms at an offsite control centre, 24 hours per day.

O&M site visits will occur approximately 24 times per year, i.e. twice per month as a minimum, incorporating a routine maintenance programme for the turbines. Unscheduled maintenance visits will also be required for resetting alarms, rectifying turbine faults and the occasional replacement of larger turbine component parts. Periodic maintenance visits will be required for the internal site access roads (surfacing and drainage) and for the Onsite Substation.

Typically, traffic accessing the site during the O&M phase, will be vans and four wheeled drive vehicle. Larger vehicles such as cranes may be required for certain activities, such as the

changing of component parts. Once operational, the proposed Project will support 2-3 long term technical jobs, in addition to jobs for the wider ancillary services.

2.1.7 Decommissioning Phase

Following the completion of the operational phase the Applicant may opt to extend the lifespan of the proposed turbines, replace the turbines with new turbines or fully decommission the Project. The Onsite Substation and GCR will be in the ownership of ESBN and will remain in situ following the decommissioning to form part of the national electricity grid. Similarly, the Relay Tower will not be removed from the site as it will form part of the telecommunication network in the area.

3. Consideration of Reason Alternatives

Chapter 3 – Consideration of Reasonable Alternatives of the EIAR contains a description of the different options that were looked at in the early stages of the project before choosing the final plan. The options assessed include: alternative locations, alternative layout/designs, alternative processes, decommissioning alternatives, alternative mitigation measures and the “Do-Nothing” alternative.

The Applicant is in receipt of an opinion on design flexibility relating to Technology Options hence all Technology Options will be assessed throughout this EIAR which was deemed appropriate by Roscommon County Council.

3.1 Alternative Location

The wind farm Site was selected via consultation with national, regional and local policy. The Site and its environs are deemed as ‘Most Favoured’ for wind energy developments within the Roscommon County Development Plan 2022-2028. The site is located within a rural area with a low population density. Additionally, there are no archaeological or cultural heritage sites of significance within or proximal to the proposed wind farm Site. Alternative options for connecting the development to the grid have been assessed. The site location was determined by a shortlist of locations that was assessed on number of comparative features to identify the optimal site. The Ballyfeeny site was selected as there is low potential for likely significant environmental effects and a strong potential for wind energy generation.

3.2 Alternative Layout / Design

The design of the development will be informed by site surveys and ground investigations. A number of turbine layouts were assessed to maximise the potential energy generation on site and generate minimal impacts on receptors

Furthermore, evaluations of alternate turbine size, orientation and numbers will be carried out to ensure the development reaches its maximum generation potential while minimising its environmental impact. Baseline surveys were conducted and are outlined within each chapter of the EIAR.

The EIAR assesses three Technology Options within the range outlined by the Local Authority and in accordance with the design flexibility parameters sought. **Chapter 1 – Introduction Table 1-3**, outlines the options and associated parameters that are used in the EIAR, comprising three potential turbines classified as Technology Option 1, 2 and 3. Further detail on the assessment of the Technology Options in this assessment are described in each respective Chapter. However, for the purposes of this Chapter, the Technology Options are not considered as Alternatives. full description of the proposed Project and the three Technology Options is provided in **Chapter 2 - Project Description**.

3.3 Alternative Processes

Other forms of renewable energy generation were assessed but given the location and wind potential the best environmental option is a wind turbine development as it will maximise the area of continuing land use predevelopment. In terms of the land use on site the alternative process consists of repurposing the lands or continuation of existing land use.

3.4 Decommissioning Alternatives

The main decommissioning alternative that would have minimal environmental impacts would be repowering or life extension of the windfarm to extend its operational period which would be subject to future planning. The preferred option for the decommissioning is the partial removal of wind farm infrastructure. A Decommissioning Management Plan (EIAR **Appendix 2.1.4**) has been prepared for the proposed Project.

3.5 Alternative Mitigation Measures

The mitigation measures outlined in each chapter of the EIAR have been chosen as they are considered to have the least environmental effects. Alternative mitigations are discussed throughout the relevant chapters of this EIAR.

3.6 'Do-Nothing' Alternative

If the proposed Project does not go ahead then the land in the vicinity of the site will continue to be used for commercial forestry production and improved agricultural grassland. The 'do-nothing' approach would result in water quality, hydrological regimes and the aquatic ecology of the receiving watercourses remaining consistent with the emergent baseline (i.e. pre-development). The majority of the biological water quality samples (n=15 sites) achieved poor or occasionally moderate status (i.e. $\geq$ Q2-Q3) water quality (Appendix 6.7, Table 4.4). Agricultural and afforestation pressures would continue to pose a threat to water quality within the wider catchment in the absence of the proposed Project.

If the proposed Project were not to proceed, the opportunity to capture part of Roscommon's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions". The RCDP 2022-2028, supports the concept of generating renewable energy at 'local' level and the significant contribution that wind energy can make as a clean sustainable solution to energy requirements.

4. Legal and Policy Framework

Chapter 4 – Legal and Policy Framework, provides an overview of the principal plans and policies in place on an international, national, regional and local level that are relevant to the proposed project. Tom Phillips and Associates were appointed to prepare a Planning Statement, which supports the legal and policy framework context of the EIAR and this has been included in the planning application pack. Chapter 4 indicates how the proposed project promotes these policies and contributes to achieving the targets to generate more renewable energy and reduce greenhouse gas emissions.

On an international scale the project will generate clean, renewable energy which contributes to the 45% renewable energy targets set in place by International and European Climate policies and frameworks such as:

- The Renewable Energy Directives:
 - Directive (EU) 2009/28/EC – Renewable Energy Directive I (REDI);
 - Directive (EU) 2018/2001 – Renewable Energy Directive II (REDII); and
 - Directive (EU) 2023/2413 – Amended Directive (EU) 2018/2001 (REDIII).

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- The European Green Deal (2021);
- EU Fit for 55 Package (2023);
- The Intergovernmental Panel on Climate Change (IPCC);
- The United Nations Framework Convention on Climate Change (UNFCCC);
- The Kyoto Protocol (1997);
- The Conference of the Parties;
- The Doha Amendment to the Kyoto Protocol;
- COP 21 – The Paris Agreement (2015);
- COP 25 – Madrid (2019);
- COP 26 – Glasgow (2021);
- COP 27 – Sharm El-Sheikh, Egypt (2022);
- COP 28 – Dubai, United Arab Emirates (2023); and
- COP 29 – Baku, Azerbaijan (2024).

The proposed project aligns with the policies outlined in the National Legislation to meet the national target of increasing Irelands electricity supply from renewable energy sources from 42% in 2020 to 80% in 2030 through frameworks and policies in place such as:

- Planning and Development Act 2000 as amended;
- Climate Action Plan 2024 (CAP24);
- Climate Action Plan 2025 (CAP25);
- Climate Action and Low Carbon Development (Amendment) Act 2021;
- Ireland's Transition to a Low Carbon Energy Future 2015-2030 – White Paper;
- National Planning Framework (2018);
- Revised National Planning Framework;
- Wind Energy Development Guidelines (2006) (WEDG 2006);
- Draft Wind Energy Development Guidelines (DRAFT WEDG) (2019);
- Best Practice Guidelines for the Wind Energy Industry (IWEA, 2012);
- Good Neighbour – IWEA Best Practice Principles in Community Engagement & Community Commitment (2013); and
- Renewable Electricity Support Scheme (RESS).

In terms of the regional policy the proposed Project will aid the Regional Spatial and Economic Strategy for the Northern and Western regions goals to produce renewable energy in an effort to combat climate change and provide a level of energy security through renewable means.

Furthermore, locally the proposed project aligns with the Roscommon County Development Plan (CDP) 2022-2028 specifically objective CAEE 8.3 and CAEE 8.13, which stipulate the promotion of development of renewable energy developments at a local level to aid in achieving national and international targets. Additionally, the proposed Project aligns with the Roscommon Climate Action Plan 2024-2029, which aims to transition the county toward a low carbon, climate resilient future by 2050.

5. Population and Human Health

ElAR **Chapter 5 – Population and Human Health** evaluates the potential effects the proposed Project on the surrounding population and human health during the construction, operational and decommissioning phases. The receiving environments that were evaluated in this chapter include: land use, tourism, local resources and amenities including sensitive receptors, population and settlement patterns, employment and economic development, property values, and human health. The temporary works associated with the TDR were also assessed within the chapter.

The assessment has considered the proposed wind farm Site, the proposed GCR and the sections of the TDR that include temporary works such as hedge and tree cutting and sections of road widening. These works are described in detail in **Chapter 2 - Project Description**. The assessment is primarily focused on the proposed wind farm Site and the GCR and on this basis, the collation of baseline data has centred on these areas.

A site visit was carried out on the 18th of May 2024 where an assessment of the proposed Project area and surrounding environments were carried out.

There are 219 sensitive receptors identified within a 2km radius of the proposed Project, 215 of which were identified as residential receptors, 2 community receptors and 2 commercial receptors. The closest receptor is residential and is located 599m west of the site in line with WEDG's 2006 and Draft WEDG's 2019.

5.1 Assessment of Effects

5.1.1 Construction Phase

Land Use

The construction of the proposed Project is estimated to be phased over approximately 18 months to minimise the impacts on all construction locations. There will be a short term, adverse effect as a result of forestry felled to facilitate the installation of the Turbine

Hardstands and Turbine Foundations. Construction activities may require some restrictions for forestry operations within the Site. The effects are considered to be **Short-term, Adverse and Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

Additionally, the effect of the use of construction on the agricultural lands to facilitate the **Temporary** Construction Compound during the construction phase is **Short-term, Adverse, and Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

On leaving the proposed wind farm Site, the GCR will be installed within private tracks and the public road carriageway and along the R371 and whilst some traffic management may be required, the use of the R371 will continue during the installation works. The works to install the GCR are transient and it will be installed in sections over approximately 5 months. The effects of the GCR relating to land use are considered to be **Temporary, Adverse and Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

The works required for the TDR (surface levelling, compaction) may require some traffic management, but the use of the public road network will continue during this phase of works. Once the turbine deliveries are completed, the sections along the TDR will be reinstated. The effects of the TDR relating to land use are considered overall **Brief, Adverse and Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Tourism

In regard to the impact of the construction phase on tourism, the nearest attraction is c. 3km south of the proposed wind farm Site and will not be directly impacted as the boundaries of the Site do not overlap with the Sliabh Bawn Wind Farm Recreation Area. The GCR accesses the Sliabh Bawn Wind Farm Recreation Area to connect to the existing Sliabh Bawn 110kV Substation located c. 1km north of the marked walking trails. These works are expected to take c. 1 month. The effects of these works are **Temporary, Adverse and Slight** and overall considered **Not Significant** in EIA terms.

The National Famine Way will directly interact with the GCR where a walkway crosses the R371 which may require some management these works are expected to last c. 5 months in total. As a result, the impacts are considered as **Brief, Adverse and Not Significant** and therefore in EIA terms are considered **Not Significant**.

Similarly, the works required for the TDR (i.e. surface levelling, compaction) may require some traffic management. The works are **Temporary** only and once the turbine deliveries are

completed, the sections along the TDR will be reinstated. Any effects on tourism assets are considered overall **Brief, Adverse** and **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Local Resources and Amenities including Sensitive Receptors

In relation to Local resources and amenities there is potential effects arising from noise, traffic and dust generated during the construction phase of the proposed Project. These impacts are outlined in detail in **Chapter 9- Air Quality and Climate, Chapter 11 – Landscape and Visual** and **Chapter 12- Traffic and Transport**.

The proposed Project has due regard to the Draft WEDG's 2019, applying a setback distance of 4 times the tip height (640m) from sensitive receptors (which is 4 times the tallest tip height of the 3 turbine Technology Options) which is greater than the mandatory minimum setback of 500 metres. The 640m setback distance has been maintained for all sensitive receptors apart from sensitive receptor No. 35, located 599m from turbine T02 (**EIAR Figure 2-1 (Volume 4)**). The works associated with the GCR and TDR will be carried out close to sensitive receptors however, the works are transient and would last only a few days at most, outside any particular receptor.

The overall effect on the local resources, amenities and sensitive receptor is considered **Short-term, Adverse**, and **Slight** with the effect being considered **Not Significant** in EIA terms.

Population and Settlement

The expected number of people to be employed during the construction phase of this project is approximately 35 people over the approximate 18-month construction period. Construction workers may opt to stay in local accommodation which will have no noticeable effects on the existing population hence the effects would be considered as **Short-term, Neutral** and **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Employment and Economic Development

The construction phase is expected to have a direct, positive impact in term of employment and economic aspects. There are an estimated 35 full-time construction jobs to be generated during this phase of the Project with an estimated 200 additional people to be engaged with the project for elements such as support, supply and ancillary. The expected employment of these people for an approximate 18 months would have a positive impact on local businesses

and the overall economy in Roscommon. Therefore, the effects are expected to be **Short-term, Positive** and **Slight**.

The Project will lead to an increase in skilled people into the local area which may result in a transfer of knowledge and specialist skills to the local workforce. The effects are considered to be **Long-term, Positive** and **Moderate**. In EIA terms, the effect is **Not significant**.

Property Values

Construction phase activities for the wind farm Site will be carried out within the site boundary and construction traffic travelling to/from the site will be short term and use existing public roads. The works along the TDR and GCR will be localised, relatively minor and brief as they undertaken in proximity to properties.

It is considered that the construction phase activities for the proposed Project would have a **Short Term, Adverse** and **Imperceptible** effect on local property values. In EIA terms, the effect is considered as **Not Significant**.

Electromagnetic Fields

EMFs will be generated on site during construction with sources such as turbine infrastructure, the Onsite Substation and underground cabling for the Internal Wind Farm Cabling and GCR and the use of power tools. EMFs would be very localised and are predicted to pose a **Short-term, Adverse** and **Imperceptible** effect during the construction. In EIA terms, the effect is considered as **Not Significant**.

Human Health

Potential effects on human health include workplace accidents, dust generation causing air pollution, uncontrolled surface water runoff discharging to a drinking water supply, excessive noise causing health impacts, traffic causing air pollution and EMF exposure.

These construction phase human health effects would range from **Brief** to **Temporary** and are considered **Adverse**. In EIA terms, the effect is considered as **Not Significant**.

5.1.2 Operational Phase

Land Use

The project will encompass the long-term to permanent land use change due to the installation of associated infrastructure. During the operational phase the wind farm will cover approximately c. 12.678 ha of the Site. The overall effect of the operational phase on land use will be **Long-term, Positive and Slight**. In EIA terms, the effect is considered as **Not Significant**.

Tourism

The proposed wind farm Site will be visible in the surrounding environments including the National Famine Museum, the National Famine Way, Sliabh Bawn Recreation Area and Strokestown House and Gardens. **Chapter 11 – Landscape and Visual** concluded that there was no significant visual effects on tourism, heritage and amenity receptors in the area. Additionally, **Chapter 10 Noise and Vibration** concluded that during the operational phase, the proposed Project is predicted to operate within the established criteria and there would be no significant effects.

Therefore, it is considered that the proposed Project will have a **Long-term, Neutral and Slight** effect on tourism. In EIA terms, the effect is considered as **Not Significant**.

Local Resources and Amenities including Sensitive Receptors

The proposed Project will be monitored remotely at an offsite control centre 24 hours per day, so the Site will generally be unmanned. Local resources will be used for ongoing maintenance which will create long term employment in the area. The proposed Project will generate a Community Benefit Fund estimated over at €1.8 million over the first 15 years of operation.

The effects of the operational phase on local resources and amenities are considered to be **Long-term, Positive, Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

The effects of the operational phase on residential amenities are considered to be **Long-term, Adverse and Slight**. In EIA terms, the effect is considered as **Not Significant**.

Population

The proposed Project will generate two permanent jobs that would be created locally for maintenance and operation on the turbines. The effects of the operational phase on population

would be considered **Long-term, Neutral** and **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Employment and Economic Development

The operational phase will require ongoing purchases of local materials, services and equipment with the generation of jobs locally to maintain the turbines.

Positive economic effects will be noted in the wider study area as a result of the ongoing benefits of renewable electricity generation. The energy generated will provide a low impact energy supply to electricity consumers, thus, providing a positive long-term effect for consumers.

The effect in regard to employment and economic development is considered to be **Long-term, Positive** and **Slight**. In EIA terms, the effect is considered as **Not Significant**.

Property values

In the absence of any peer reviewed/published evidence to the contrary, studies included in **Chapter 5 – Population and Human Health** provide some context from the international perspective and indicate that wind farms do not affect property/ house value.

It is considered that the operational phase of the proposed Project would not significantly effect local property values in the area. The significance of effect is considered to be **Long-Term, Imperceptible** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

EMF

The EMF effects are considered to be localised and are predicted to pose a **Long-term, Adverse** and **Imperceptible** effect during the operational phase, which in EIA terms are considered as **Not Significant**.

Human Health

Human Health effects during the operational phase are summaries as follows:

- By understanding and adhering to Health & Safety Regulations the effects on workplace accidents and incidents are considered to be **Slight**. In EIA Terms, this is considered to be **Not Significant**.

- Pre mitigation, **Chapter 8 – Water, Hydrology (Flood Risk Assessment), and Hydrogeology** confirmed concluded that any effects on the water environment during the operational phase would range from **Slight – Moderate**. In EIA terms, the effects are considered as **Not Significant**.
- The operational phase will have a **moderate** effect on the surface water and ground water which is considered **Not Significant** in EIA terms.
- Noise is considered to be **Not Significant** which in EIA terms is considered **Not Significant**.
- The effect of Shadow Flicker in the worst-case scenario is considered to be **Significant**, similarly, in EIA terms, the effect is considered **Significant**.
- The EMF is considered to be localised and therefore expected to be **Imperceptible**, which is considered to be **Not Significant** in EIA terms.
- The air quality assessment concluded that emissions are considered to be **Imperceptible** and therefore **Not Significant** in EIA terms. Overall, the effect on air quality during the operational phase is considered to be **Long-term, Positive** and **Slight**. In EIA terms, the effect is considered as **Not Significant**.
- Effects from traffic during the operational phase would range from **Adverse- Not Significant**, which is **Not Significant** in EIA terms.
- The health impacts associated with the operational phase in regard to Landscape and Visual are considered to **Substantial – Moderate**. In EIA terms, the effect is considered as **Not Significant**.

5.1.3 Decommissioning Phase

A Decommissioning Management Plan (**DMP**) has been prepared as part of this and is included as **Appendix 2.1.4** of the EIAR. This Plan and all final requirements for the infrastructure will be updated and finalised with the Local Authority in advance of decommissioning activities commencing. Further details on the decommissioning phase are provided in **Chapter 2 - Project Description**.

It is anticipated that for the purposes of the assessment, that the effects arising during the decommissioning phase will be similar to those identified during the construction phase. Furthermore, in most cases the impacts in terms of population and human health will be of a shorter duration and scale during the decommissioning phase. The effects are considered to be **Short-term, Adverse** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

To minimise the impact of the aforementioned effects, mitigation measures have been proposed and are discussed in **Chapter 18 – Schedule of Mitigation and Monitoring**. The overall assessment has concluded that the effects of the construction, operational and decommissioning phases on Population and Human Health are expected to be **Not Significant**.

5.2 Mitigation Measures and Residual Impacts

Mitigation measures across the construction, operational and decommissioning phases of the proposed Project addressing elements that may affect human health are detailed in the relevant chapters throughout this EIAR and within **Appendix 2.1 – CEMP**. The relevant chapters are listed as follows:

- **Chapter 7- Land, Soils and Geology**
- **Chapter 8 – Water, Hydrology (Flood Risk Assessment) and Hydrogeology**
- **Chapter 9 - Air Quality and Climate**
- **Chapter 10 - Noise and Vibration**
- **Chapter 11 - Landscape and Visual**
- **Chapter 12 - Traffic and Transport**
- **Chapter 14 – Material Assets**
- **Chapter 15 - Shadow Flicker**

5.2.1 Construction Phase

A Blasting Coordination and Cooperation Plan (See **Appendix 2.1.5**) has been prepared for the proposed Project. The plan details the procedures implemented during a blasting event at the Ballyfeeny Rock Quarry during the construction, operational and decommissioning phases of the Project. The Blasting Coordination and Cooperation Plan is a live document which will be updated to include the blasting schedule and any potential conditions of planning on the proposed Project. This plan will be implemented onsite by the Project Site Manager and the Health and Safety Manager.

During the construction phase of the proposed Project monitoring of surface waters will be conducted. Surface water will be monitored under the following parameters: pH, conductivity, chemical oxygen demand, suspended solids and total dissolved solids. If any exceedances of the S.I No 77/2019 European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2009 to 2019 threshold levels are recorded mitigation measures will be reviewed by the Environmental Manager acting on behalf of the Appointed Contractor.

Rigorous statutory and engineering safety checks will be implemented during the design, construction and commissioning of the wind turbines to minimise risk to human health. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts.

The residual impact of the construction phase on human health in relation to Workplace accidents and incidents, Land use, Tourism, Population and settlement patterns, Local resources, Property values, and EMF are considered **Short-term**, and **Not Significant**. In EIA terms the residual effect is deemed **Not Significant**.

The residual impact associated with Employment and Economic effect is considered **Short-term, Positive** and **Long-term, Positive** which is deemed **Not Significant** in EIA terms.

The residual impact on Human health in relation to air pollution, traffic, EMF and water following the implementation of mitigation measures are considered **Brief to Temporary, Adverse** and ranging to **Imperceptible to Slight**. In EIA terms the residual effects are deemed **Not Significant**.

The residual impact following the implementation of mitigation measures on Noise ranges from **Significant to Not Significant**. The residual effect of Noise is **Significant** during peak periods and at distance of up to 60m from a sensitive receptor, which in EIA terms is **Significant**. The residual impact of Noise outside of peak periods and at distances further than 60m from a sensitive receptor is considered **Not Significant** in EIA terms.

5.2.2 Operational Phase

Appropriate site safety measures will be utilised for all operational staff working onsite during the operational phase of the proposed Project. All personnel will be fully trained and use the appropriate PPE while working in or around the wind turbines.

The Onsite Substation and Relay Mast will be enclosed by palisade fencing and equipped with intruder and fire alarms in ESBN and EirGrid standards to minimise potential health hazards associated with high voltage substations. The Onsite Substation will also be fitted with emergency lighting and closed-circuit television (CCTV) to monitor and discourage unauthorised access. Suitable signage with details of the hazards associated with the wind farm and emergency contacts will be erected at the wind farm entrance (SE2) and at the Onsite Substation. All electrical components will be in compliance with electrical and EMF standards for human safety. All on-site electrical connections are carried underground with marks above ground to identify where they extend beyond Site Access Tracks or Turbine Hardstands. Lightning conductors will be installed on each wind turbine, the Relay Mast and

Onsite Substation as required to prevent power surges to electrical components of the infrastructure. The wind farm control system will include a system over-ride switch to facilitate manual shutdown of the turbines in the event of an emergency.

Turbines doors will be fitted with secure locks and anti-vandal measures to ensure there is no unauthorised access. Ice detection systems will be fitted on turbines to stop the turbine if ice begins forming to prevent ice throw. The turbines will be visually assessed for ice, or the temperature of the blade will be checked before restarting the turbine. Access to the inner turbine structure will be locked at all times and only accessed for maintenance by licensed employees.

Rigorous statutory and engineering safety check will be imposed on turbines during the operation phase to ensure the risk posed to humans is negligible. There will also be 24-hour monitoring and fault notifications as standard in the Turbine Operations and Maintenance Contracts. A Supervisory Control and Data Acquisition ("SCADA") system will monitor the performance of the wind farm, and any recorded faults will be messaged to the operations personnel for preventing emergency situations.

The turbines and Onsite Substation will be fitted with firefighting equipment and training will be provided to site maintenance engineers. Routine checks on firefighting equipment, alarms and emergency lighting will be carried out by a designated person.

The residual impacts on Workplace accidents and incidents, Land use, Tourism, Local resources and amenities, Population and settlement patterns, Employment and economic effects, Property values, EMF and Human health following the implementation of mitigation measures are considered **Long-term** and **Not Significant**. In EIA terms the effect is deemed **Not Significant**.

5.2.3 Decommissioning Phase

The mitigation measures associated with the construction phase will also be implemented during the decommissioning phase of the Project. A Decommissioning Management Plan (See **Appendix 2.1.4**) has been prepared for the proposed Project and will be re-evaluated 3-5 years prior to the commencement of the decommissioning phase.

The residual impact of the decommissioning phase is anticipated to be no greater than that of the construction phase. Hence in EIA terms the residual effect is considered **Not Significant**.

6. Biodiversity

This chapter was prepared by INIS Environmental Consultants Ltd., and examines the potential impacts on biodiversity, terrestrial and aquatic ecology and ornithology associated with the proposed Project. The report assesses the current ecological baseline characteristic and determines the potential impacts that may arise as a result of the proposed Project. A desktop study a field survey was carried out to establish any sites of significance within the study area.

6.1 Baseline Environment

The site for the proposed Project is located in Ballyfeeny Co. Roscommon. The primary land-use in the area is agricultural pastureland and mature private forestry. There are multiple designated sites including SPAs, SACs, NHAs, and pNHAs sites within the local area are detailed below:

Table 6-1: Designated Statutory Sites near the proposed Project.

Site Type	Special Protection Areas	Special Areas of Conservation	Natural Heritage Areas	Proposed Natural Heritage Area
Designated Sites	Ballykenny-Fisherstown Bog	Annaghmore Lough	Derrycanan Bog	Kilglass & Grange Loughs
				Annaghmore Lough
		Clooneen Bog	Aghnamona Bog	Lough Boderg & Lough Bofin
				Clooneen Bog
		Lough Forbes Complex	Rinn River	Lough Forbes Complex
				Ardakillin Lough
	Lough Ree			Corbo Bog
		Brown Bog	Lisnarragh Bog	Lough Ree
				Royal Canal
				Lough Bannow
		Lough Ree	Corracramph Bog	Corbally Turlough
				Brown Bog
				Shad Lough
		Corbo Bog	Cashel Bog	Lough Rinn
				Brierfield Turlough
				Clooncoe Wood & Lough

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Client: Ballyhenry Gasen Energy Limited

Project: Ballyhenry Gasen Energy Project

Figure: S-6 European Designated Sites

Subproject
district
region
county



Furthermore, some of the bird species in the local area included: Buzzard, Sparrowhawk, Kestrel, Peregrine, Redwing, Starling, Willow Warbler, Mallard, Tufted Duck, Lapwing, Whooper Swan, Coot, Teal, Wigeon, Goldeneye, Shoveler, Golden Plover, Common Scoter, Woodcock and Barn Owl.

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6.2 Assessment of Effects

6.2.1 Construction Phase

The proposed Project is not located within any European or Nationally designated statutory site as a result there will be no direct impact on any designated sites. Within the Zol three European sites were screened for further assessment which include: Lough Ree SAC [000440], Ballykenny-Fishertown Bog SPA [004101], and Lough Ree SPA [004064].

The Lough Ree SAC is located c.11.7km from the site. The construction phase is expected to have an **Adverse, Short-Term**, and **Slight** effect in the absence of mitigation. In EIA terms, the effect is considered as **Not Significant**.

The Ballykenny-Fishertown SPA is c.7.4km and is proposed to experience an **Adverse, Short-Term**, and **Not Significant**. In EIA terms, the effect is expected to be **Not Significant**.

The construction phase is expected to have an **Adverse, Short-Term** and **Slight** on the Lough Ree SPA. In EIA terms, this effect is considered **Not Significant**.

There are six Nationally Designated sites were identified within the Zol as listed:

- Kilglass and Grange Loughs pNHA;
- Lough Boderg and Lough Bofin pNHA;
- Ardakillin Lough pNHA;
- Corbally Turlough pNHA;
- Lough Ree pNHA; and
- Shad Lough pNHA.

The effects of the construction phase on the nationally designated sites are expected to be **Short-Term, Adverse** and **Slight**, which in EIA terms is deemed **Not Significant**.

During the construction phase, habitat loss and fragmentation is anticipated particularly during the installation of Site Access Tracks, Turbine Foundations, Turbine Hardstands, Relay Tower and the onsite Substation. Each habitat was assessed with impacts on the habitats deemed as **Not Significant** in EIA terms. The assessment of the impacts during the construction phase associated with ornithology, bats, mammals and receptors along with aquatic ecology were carried out with the application of the worst-case scenario and without the application of mitigation measures. From this study the Peregrine was the only species that may experience **Significant** effects in relation to disturbance and displacement during construction.

6.2.2 Operational Phase

During the operational phase there will be no direct impacts on European or Nationally designated statutory sites. The effects associated with operation on European and National sites were deemed **Not Significant** in EIA terms. Similarly, the impacts of the operational phase on habitats, ornithology along with other receptors are deemed **Not Significant** in EIA terms as there will be no additional removal of habitats associated with the operational phase of the Project. The effects of the operational phase of bats are deemed **Significant** in the absence of mitigation measures due to the risk of collision with the turbines.

6.2.3 Decommissioning Phase

The decommissioning phase is expected to have similar impacts to those of the construction phase with habitat removal and alteration limited to small-scale temporary removal. The impact on habitats and species is considered **Not Significant** in EIA terms. Decommissioning would likely result in short-term disturbance to ornithology which is expected to have a **Significant** impact in EIA terms on the Peregrine in the absence of mitigation measures.

6.3 Mitigation Measures and Residual Impacts

6.3.1 Construction Phase

During the construction phase Best Practice measures will be implemented to avoid worst-case scenario impacts on biodiversity within the study area. Civil enabling works and any construction works requiring vegetation clearance will be carried outside of nesting and breeding seasons to minimise the damage, destruction and disturbance to species. Sensitive areas will be subject to restricted activities and exclusion zones with checks being carried out within 48hr prior to the commencement of works to ensure there is no active nests. A qualified Ecological Clerk of Works (EcoCoW) will be appointed to oversee Environmental compliance on the Project. Furthermore, there will be a Project Ecologist employed to carry out periodic site inspections during construction. A Species and Habitat Management Plan (SHMP), Surface Water Management Plan (SWMP) and Construction Environmental Management Plan (CEMP) have been prepared and mitigation measures outlined will be implemented during construction. To minimise disturbance and displacement vehicles and mechanical plant will be fitted with exhaust silencers along with the implementation of buffer exclusion zones specific to outlined species. New habitats and treelines will be planted to minimise the impact on commuting and foraging for species.

The residual impact associated with statutory sites, bats, ornithology, mammals and other receptors and aquatic ecology is considered **Not Significant** in EIA terms.

The residual effect of the construction phase on habitats is deemed a **Positive Significant** effect.

6.3.2 Operational Phase

During the operational phase site audits will be conducted by the wind farm operator to ensure control measure are adhered to. These audits will include:

- Confirmation that any fuels are stored appropriately;
- The **Appendix 2.1.3 Waste Management Plan** is adhered to; and
- Surface Water and run-off control measures are in-place and functioning.

All environmental records and audits will be retained.

Newly created or enhanced habitats will be assessed by a qualified ecologist to identify ongoing management actions. Real time monitoring of breeding locations will be carried out to determine when young birds are at the highest risk of collision. To minimise the collision risk turbine may be stopped during this period. Similar monitoring will be carried out to minimise any impacts on bats in the area furthermore, directional lighting will be used to minimise light spillage.

The residual impact associated with statutory sites, ornithology, mammals and other receptors and aquatic ecology during the operational phase is considered **Not Significant** in EIA terms.

The residual impacts on habitats and bats are considered **Positive** and **Significant** in EIA terms.

6.3.3 Decommissioning Phase

All mitigation measures implemented during the construction phase will be implemented as relevant for the decommissioning phase. Pre-commencement surveys will be carried out to identify any additional measures required. The Decommissioning Management Plan will be re-evaluated 3-5 years prior to decommissioning and updated accordingly.

The residual impact of the decommissioning phase on the local biodiversity is deemed **Not Significant** in EIA terms.

7. Land, Soils and Geology

Chapter 7 – Land, Soils and Geology assesses the likely significant direct and indirect effects on land, soils and geology of the proposed Project on the receiving environment, during

the construction, operation and decommissioning phases. The natural superficial soils that mantle the study area consist predominantly of topsoil's, underlain by glacial till (mineral soils) consisting of sandy, gravelly, silts or clays. GSI mapping indicates the presence of isolated pockets of cut over raised peat bog in the region.

While ground slope ranges are generally low (less than 5 degrees to the horizontal at the location of the turbines and Onsite Substation, slopes of up to 10 degrees are present within the entire construction footprint. There are steeper slopes associated with the existing quarry faces and are often in excess of 45 degrees but located outside the proposed wind farm site boundary.

Primarily, the soils and geology scope of the proposed Project can be characterised as follows:

- Construction Zone 49.774ha (Redline Boundary);
- Peat is absent across the entire surveyed landholding. Screening peat depth = 0m;
- Six turbines with a total tip height of either 156m, 159m or 160m;
- Construction of reinforced concrete base foundations for six turbines. (Typically, circular with a foundation diameter of c.25.5m);
- Construction of Turbine Hardstand areas located beside each turbine to facilitate erection by mobile cranes. (42m x 25m);
- Construction of an Onsite Substation;
- Construction of approximately 3.9km of new Site Access Tracks and the upgrade of 0.5 km of existing internal site access tracks, having a minimum finished width of c.5.5m, of which all will consist of new traditionally constructed track
- Installation of 4,333m of Internal Wind Farm Internal Cabling from the turbines to the Onsite Substation;
- Erection of a permanent Relay Tower;
- Provision of two Temporary Construction Compounds;
- GCR from the Onsite Substation to the electricity grid network at the existing Sliabh Bawn 110kV Substation;
- TDR between Galway Port and the Site Entrance; and
- Elevations within the wind farm Site range from approximately 70m to 124m above ordnance datum (AOD).

7.1 Assessment of Effects

7.1.1 Construction Phase

The project will require construction activities that will have a direct or indirect effect on the land, soils and geology. Effects that may occur as a result of construction activities. The following works associated with the construction phase of Project are likely to have an effect on land, land use, natural resources and geological protected sites:

- Turbine Construction including the Turbine Foundations and Turbine Hardstands;
- Construction of Onsite Substation;
- Provision of 2 no. Temporary Construction Compounds;
- Installation of Wind Farm Internal Cabling;
- Installation of GCR;
- Installation of Relay Tower;
- Construction of the Site Access Tracks; and
- Temporary accommodating works for the TDR.

The effects of the construction phase in relation to land, soils and geology are assessed under the following aspects:

- Land take;
- Soil compaction and sealing;
- Subsoil and bedrock removal;
- Storage and stockpile management;
- Vehicular movement;
- Peat landslide hazard, ground stability and failure;
- Soil contamination;
- General waste;
- Quarry blasting activity; and
- Features of geological heritage.

During the construction phase a total of 62.731m³ of topsoil, subsoil and bedrock will be removed from the site during construction excavations. This is an unavoidable consequence of the construction phase and is considered to adversely affect the agricultural capability of the land. However, it is anticipated that this material will be utilised onsite for operations and there will be reinstatement of the land capability after decommissioning. The effects of the

construction phase on lands, soils and geology are individually evaluated in **Chapter 7 – Land, Soils and Geology**.

7.1.2 Operational Phase

The effects associated with the operational phase of this proposed Project are expected to have direct and indirect impacts include:

- Land take;
- Soil compaction, erosion and degradation;
- Soil contamination;
- General waste;
- Quarry Blasting; and
- Sites of Geological Heritage.

From the assessment of the effects during the operational phase, the majority of effects were deemed **Not Significant** with one potential effect considered to be **Significant**. The potential soil contamination may occur due to potential spills of chemicals or hydrocarbons and is deemed to be a **Short-term, Adverse** and **Significant** effect which is considered a **Significant** effect in EIA terms.

7.1.3 Decommissioning Phase

The Applicant is seeking consent for a period of 35 years for the operation of the proposed Project from the date of commissioning. Following the end of the operational phase the Applicant may wish to replace the turbines with a new set of turbines, subject to fulfilling the planning requirements at the time or the proposed Project may be decommissioned. The Onsite Substation and grid connection will remain in place as it will be in the ownership of ESB Networks and will form part of the National Grid. The Relay Tower will remain in place as it will form part of the telecommunication network in the area.

A description of the decommissioning is as follows:

- Removal of the turbines including the blades, hub, nacelle and wind turbine towers.
- Removal of the above ground section of the Turbine Foundation called the 'plinth'.
- Removal of all Wind Farm Internal Cabling. The cable ducting will remain in-situ to minimise the associated ground disturbance.

- Reinstatement of the Turbine Hardstands and Turbine Foundations, by covering with earth and returned in a state suitable for reseeded/replanting as appropriate.

The Turbine Foundations will remain in place underground except for the foundation plinth that will be removed below ground level. The Site Access Tracks and associated drainage will serve the ongoing forestry and farming practices in the area. All other hard surfaced areas such as the Turbine Hardstands will be covered by earth and returned in a state suitable for reseeded/replanted as agreed at the time with the landowners and the Local Authority.

Overall, the potential effects associated with the decommissioning phase are considered **Not Significant** in EIA term as extensive excavations and concrete pouring will not be required.

7.2 Mitigation Measures and Residual Impacts

7.2.1 Construction Phase

Mitigation measures will be implemented during the construction phase of this proposed project to minimise and avoid potential effects on the environment that may occur. Mitigation measures proposed are outlined and detailed under the following headings in **Chapter 7 – Land, Soils and Geology**:

- Design;
- Construction Environmental Management Plan;
- Pollution Prevention;
- Soil Compaction and Sealing;
- Subsoil and Bedrock Removal;
- Vehicular Movements;
- Ground Stability; and
- Soil Contamination.

An Emergency Response Plan (ERP) will be in place for the construction phase and includes a spill response and control procedure that will be followed in the event of a spill/leakage occurring during construction.

All site operatives will be trained in the requirements of the ERP and all site vehicles will also contain emergency spill kits.

The ERP will be updated prior to the construction phase commencing, by the Appointed Contractor. The ERP is detailed in **Appendix 2.1 - CEMP**. In the event of a spill/leak, the following steps will be followed:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required;
- Do not spread or flush away the spill. If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats;
- If possible, clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;
- Notify the Environmental Clerk of Works (ECoW) immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- The ECoW will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The ECoW will notify the appropriate regulatory body such as Roscommon County Council and the Environmental Protection Agency (EPA), if deemed necessary.

A record of all environmental incidents will be kept on file by the ECoW and the Main Contractor.

Mitigation measures will also be implemented through good practice, reduction and reuse to minimise the environmental impact.

The residual effect of the construction phase on the proposed Project following the implementation of all mitigation measures is considered to be **Not Significant** in EIA terms.

7.2.2 Operational Phase

The proposed Project is considered to not have a significant effect on the land, soils and geology as the operational phase will cause no further disturbances. The most potentially

significant effect that may occur due to the operational phase is soil contamination as a result of fuel and chemical spills. The potential effects are limited by the size of the fuel tanks used and the volume oils and lubricant used for maintenance. The mitigation measures to prevent soil contamination are:

- Fuels, lubricants and hydraulic fluids for equipment used on the Site will be carefully handled to avoid spillage;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the Site and properly disposed of;
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for recycling by a licensed contractor;
- Appropriate spill control equipment, such as oil soakage pads, will be kept within the refuelling areas and in each item of plant to deal with any accidental spillage; and
- All wastes from the Onsite Substation, turbines and ancillary facilities will be removed by the licensed contractor. The operational team will carry out maintenance works (to Site Access Tracks, Onsite Substation, turbines and other ancillary facilities) and will put in place control measures to mitigate the risk of hydrocarbon or oil spills during the operational phase of the wind farm. Any vehicles utilised during the operational phase will be maintained on a weekly basis and checked daily to ensure any damage or leakages are corrected.

Onsite Substation transformers and batteries will incorporate bunding to protect soils against accidental leakages of oils and battery fluids.

Welfare facilities will be located on site in a 'closed' system where no irrigation field is required. These facilities will be regularly serviced with the removal of waste for disposal at the appropriately licensed off-site facility occurring on a regular basis.

The residual effect of the operational phase of the proposed Project following the deployment of all mitigation measures is considered **Not Significant** in EIA terms.

7.2.3 Decommissioning Phase

During the decommissioning phase, silt protection controls similar to those used during the construction phase will be implemented. The drainage system will remain operational to treat any sediment-laden surface water runoff caused by soil disturbance.

The residual effect of the decommissioning phase of the proposed Project following the implementation of all mitigation measures is considered **Not Significant** in EIA terms.

8. Water, Hydrology (Flood Risk Assessment), & Hydrogeology

Chapter 8 – Water, Hydrology (Flood Risk Assessment) and Hydrogeology considers water sources like rivers, streams, lakes, and drainage systems in the area around the Project assessing their condition and possible effects. It also studies the underground water within 2km of the site, using available maps and data from government sources and local plans. The study completed by JBA Consulting looked at how important local water and groundwater features are, using guidelines to rate their value and possible effects. Impacts were assessed by identifying the source, how effects could reach water, and what might be affected, with plans to reduce any negative effects. The overall significance of effects was determined by combining how big the impact is and how sensitive the environment is, following EPA guidelines. Some information about nearby groundwater wells is limited, but no major data issues affected the study.

8.1 Baseline Environment

The project is located in the Upper Shannon area. The wind farm, grid connection, and turbine route cover three smaller river areas called sub-catchments: Scramoge to the west, and two parts of the Upper Shannon to the north and east.

The Upper Shannon catchment encompasses an area of 1,500km² which is characterised by karstified lowland area, including much of the western half of the catchment and the area underlying the main Shannon channel, north of Lough Ree. The upland areas in the catchment are underlain by a mix of sandstones and metamorphic rocks.

Water Framework Directive (WFD) sub-catchments are subdivided into river sub-basins, which are the WFD management and reporting divisions. The proposed Project and surrounding watercourse are situated across three river sub-basins. These are the MOUNTAIN(ROSCOMMON)_010 west of the Site, the OWENUR_030 north of the Site, and the FEORISH(TARMONBARRY)_020 east of the Site. The FEORISH(TARMONBARRY)_010 river sub-basin is located northeast of the Site, upstream of the FEORISH(TARMONBARRY)_020 and east of the OWENUR_030.

Surface water features within the vicinity of the wind farm Site can be seen in Error! Reference source not found.. The local hydrology includes the Culliagh Stream (first order stream) which runs adjacent to the Site's eastern boundary and approximately 153m from turbine T03. The Culliagh Stream flows south and turns east to join the Feorish River (second order river) (and

also referred to as the Tammonbary) before joining the Shannon Upper River (third order river).

The Ballymartin Stream (first order stream) is also located directly adjacent to the wind farm Site's western boundary and approximately 60m from the proposed Onsite Substation and Communications Relay Tower. The Ballymartin Stream flows west before turning north to flow into Kilglass Lough. There are no EPA mapped watercourse crossings within the proposed wind farm Site boundary.

The Gortlustia Stream (first order stream), rises west of the GCR, which flows into the Scramoge River (second order river). The Scramoge River then continues into the Mountain West River (third order river) and ultimately reaches Kilglass Lough.

The GCR crosses the Bellmount or Cloggernagh Stream (first order stream) further south, just before it turns west to join the existing Sliabh Bawn 110kV Substation. There are two watercourse crossings over EPA mapped waterbodies along the GCR to the existing Sliabh Bawn 110kV substation.

Desktop research was carried out in regard to waterbodies within and proximal to the Site and the associated works.

Hydrological walkover surveys were completed in May 2024, encompassing surface water sampling. **Appendix 8.2** of the EIAR contains **Surface Water Sampling Results**.

An Aquatic Baseline Report was prepared by Triturus Environmental Ltd in August 2023 on behalf of the applicant and is included within **Appendix 6.6 – Aquatic Ecology** of the EIAR.

8.2 Assessment of Effects

8.2.1 Construction Phase

Fine sediment pollution may arise through several potential pathways during the construction phase of the project. A fine sediment pollution event would be expected to immediately impact the local environment which would subsequently affect downstream environments. The effects are expected to be reversible giving that flushing is expected. Without the implementation of mitigation measures the effect of fine sediment pollution is expected to be **Short-Term, Adverse** and **Moderate**, which in EIA terms the effect is **Not Significant**.

Changes to the hydromorphology of the water and its environs is likely to be limited as interactions with Bellmount Stream will be minimal. The effects are deemed **Short-Term, Adverse** and **Slight** which is considered **Not Significant** in EIA terms.

Accidental leaks and spills are expected to be an isolated events if they occur during the construction phase. The effects without mitigation measures are expected to be **Short-Term, Adverse** and **Significant** which in EIA terms are considered **Significant**.

Dewatering groundwater from Turbine Foundations is expected to be limited in extent and temporary. Hence the effects are **Temporary, Adverse** and **Not Significant** without the implementation of mitigation measures. In EIA terms, the effect is deemed **Not Significant**.

The magnitude of potential impacts to groundwater features through accidental pollution are considered **Short-Term, Adverse** and **Significant**, which in EIA terms are deemed **Significant**.

The source protection zones identified through desktop research are expected to experience **Slight, Short-Term** and **Adverse** effects during the construction phase. In EIA terms, the effect is deemed **Not Significant**.

Karst landforms may be impacted by enabling works along the TDR. The effects of the construction phase on karst environments are expected to be **Slight, Short-Term** and **Adverse**. In EIA terms, the effect is considered as **Not Significant**.

8.2.2 Operational Phase

During the operational phase effects may arise from the static ongoing operation and specified maintenance requirements of the proposed Project. A newly constructed drainage system will be integrated into the existing network. The effects of the operational drainage are expected to be **Long-Term, Adverse** and **Slight**. In EIA terms, the effect is considered as **Not Significant**.

The effects of maintenance on water, hydrology and hydrogeology are considered **Moderate, Long-Term** and **Adverse**. In EIA terms, the effect is considered as **Not Significant**.

8.2.3 Decommissioning Phase

The decommissioning phase is anticipated to generate similar effects to the construction phase but to a lesser degree. The removal of infrastructure could lead to disruption to the local environment hence the effect is **Temporary, Adverse** and **Moderate**. In EIA terms the effect is deemed **Not Significant**.

8.3 Mitigation Measures and Residual Effects

8.3.1 Construction Phase

A **CEMP** and **SWMP** plan are appended to **Chapter 2 – Project Description** of the EIAR. Both plans will be implemented by the Appointed Contractor during the construction phase and comprise mitigation measures regarding the impacts on the water, hydrology and hydrogeology of the environments.

Mitigation measures have been implemented into the design of the proposed Project to minimise any potential effects that may arise from construction. The main potential risk to water, hydrology and hydrogeology is pollution arising from accidental spills and leaks of oils and fuels.

The residual effect of fine sediment pollution following the implementation of mitigation measures are considered **Slight, Short-Term** and **Adverse**. In EIA terms, the effect is considered **Not Significant**.

The residual effect for hydromorphology following the implementation of mitigation measures is expected to be **Slight, Short-Term** and **Adverse** which is **Not Significant** in EIA terms.

The residual effect associated with accidental spills and leaks is regarded as **Slight, Short-Term** and **Adverse**. In EIA terms the effect is **Not Significant**.

The residual effect to groundwater bodies and wells following the implementation of mitigation measures is considered **Slight, Short-Term** and **Adverse**. In EIA terms the effect is **Not Significant**.

The residual effect to source protection zones and karst landforms is considered **Imperceptible, Short-Term** and **Adverse** which in EIA terms is considered **Not Significant**.

8.3.2 Operational Phase

During the operational phase the mitigation measures associated with accidental spills and leaks will still be implemented onsite. The revegetation of drainage works, and other exposed surfaces will minimise the risk of sediment release into watercourses. Furthermore, attenuation/settlement ponds will be installed at discharge points. Check dams within the drainage channels will remain in place. In the operational phase, the reliance on the drainage system will be reduced as areas naturally revegetate.

The residual effect on drainage following the implementation of mitigation measures is expected to be **Slight, Long-Term** and **Adverse** which in EIA terms is considered **Not Significant**.

The residual effect for maintenance during the operational phase is deemed as **Slight, Long-Term** and **Adverse** which in EIA terms is considered **Not Significant**.

8.3.3 Decommissioning Phase

As the decommissioning phase is expected to be similar to the construction phase on a lesser scale, there is similar mitigation measures in place. Silt protection controls will be implemented while the drainage system will remain operational to treat any sediment-laden runoff caused by soil disturbances. The revegetation process will be monitored and if necessary, erosion control matting will be used to aid in the re-establishment of vegetation.

The residual effect of the decommissioning phase on water, hydrology and hydrogeology following the implementation of mitigation measures will be **Slight, Temporary** and **Adverse** which in EIA terms is considered **Not Significant**.

9. Air Quality and Climate

Chapter 9 – Air Quality and Climate assesses the likely significant direct and indirect effects of the proposed Project on air quality and climate during the construction, operational and decommissioning phases.

9.1 Baseline Environment

The proposed Project is located within Zone D – Rural Ireland, under the CAFÉ Directive for managing air quality.

The primary pollutants will primarily result from construction activities onsite as well as the combustion of fossil fuels as a result of traffic, machinery and construction. The EPA has carried out air monitoring within all zones from 2021 to 2023. Results from the EPA Air Quality in Ireland reports found the annual average nitrogen oxide (NO_x) concentrations ranged from 14.2 to 16.3 µg/m³ and the annual nitrogen dioxide (NO₂) concentrations ranged from 7.5 to 8.1 µg/m³.

The concentration of sulphur dioxide (SO₂) was 4.2 µg/m³ in 2021 and 5 µg/m³ in 2023. In terms of particulate matter the range recorded for PM₁₀ concentrates was 10.9 to 12.7 µg/m³ and the range recorded for PM_{2.5} concentrates was 7.1 to 8.7 µg/m³. The concentrations for carbon monoxide have an annual average of 0.3 and 0.8 mg/m³. Carbon monoxide monitoring

conducted across Zone D sites confirmed an average annual mean concentration ranging from 0.3 and 0.8 mg/m³ from 2021 to 2023.

All results recorded did not exceed the relevant limit value stipulated in the WHO Guidelines, CAFÉ 2022 Directive or the upcoming amended Directive.

Dust levels on the Site may be slightly higher than that of the average for the wider area. This can be attributed to the Ballyfeeny Rock Quarry that is located on the western boundary of the proposed Project.

9.1.1 Climate Change and Carbon Calculations

Climate change is a major global issue, largely caused by greenhouse gas (GHGs) emissions from burning fossil fuels. These emissions lead to extreme weather events and also have long-term consequences for ecosystems. To address this, reducing fossil fuel use and transiting to renewable energy sources like wind is essential.

A carbon calculator was used to assess the climate impact of the proposed Project by estimating both carbon costs and savings associated with the development. This tool evaluates emissions across the wind farm's entire lifecycle including the construction, operation, and decommissioning and compares them to the carbon savings from displacing fossil fuel energy. The assessment considers scenarios for both 25 MW and 29 MW capacities, and a median with detailed inputs and outputs provided in **Appendix 9.1 – Scottish Government – Carbon Calculation Input and output.**

Based on the energy the wind farm is expected to produce, the project will create about 124,802 tonnes of CO₂, but this will be offset in approximately 28 months through the clean energy it generates.

The wind farm is expected to generate about 2,288,315 megawatt-hours (MWh) of energy over its lifetime. Each year, the Project has the potential to save approximately 14,972 tonnes of CO₂ compared to using the average electricity mix from the grid, or up to 41,974 tonnes of CO₂ per year if compared to electricity made from fossil fuels.

9.2 Assessment of effects

9.2.1 Construction Phase

The potential effects to air quality and climate during the construction phase of the proposed Project are dust emissions from construction along with exhaust emissions from construction traffic and machinery.

In terms of dust soiling, human health and ecological effects, the sensitivity of the area has been deemed as **Low** as per the IAQM Guidance.

In terms of the GCR and works on the TDR, these will be restricted to limited activities and will be brief-temporary in duration. The GCR installation is anticipated at a rate of approximately 100m per day and the HDD crossing will take approximately 1.5 weeks.

The overall significance of effect of dust emissions during the construction phase will be **Short-term, Adverse** and **Slight**. In EIA terms, the effect is **Not Significant**.

Whilst construction phase traffic and equipment will generate exhaust emissions, any emissions associated with the proposed Project would result in a small and localised increase in overall, over the course of the 18-month construction period.

The effect of exhaust emissions during the construction phase will be **Short-term, Adverse** and **Imperceptible**. In EIA terms, this is considered **Not Significant**.

9.2.2 Operational Phase

Once the proposed Project is operational, it will make a significant contribution to renewable sustainable energy generation, which will allow a reduction in the potential CO₂ and other emissions that would have occurred if the power had been generated from traditional carbon-based resources. Over the lifespan of the wind farm Site, it is anticipated to generate approximately 2,288,315 MWh of electricity with an annual saving of up to 14,972 tCO₂ per year. This reduction will result in an improvement in air quality both nationally and locally. This effect during the operational phase will be **Long-term, Positive** and **Slight**. In EIA terms, this is **Not Significant**.

Operational traffic will access the Site through the permanent site entrances and access tracks. The effect of exhaust emissions during the operational phase will be **Long-term, Adverse** and **Imperceptible**. In EIA terms, this is considered **Not Significant**.

9.2.3 Decommissioning Phase

The Project will operate for 35 years and upon the end of the operational phase the Applicant may repower to extend the Projects lifecycle (subject to future planning) or fully decommission the proposed Project. A Decommissioning Management Plan (DMP) has been prepared for this phase of the Project.

It is predicted that the effects will be similar to those identified for the construction phase. Furthermore, the effects in terms of air quality will be of a shorter duration and scale during

the decommissioning phase. The effects are considered to be **Short-term, Adverse** and **Imperceptible**. In EIA terms, the effect is considered **Not Significant**.

The effects identified for the construction, operational and decommissioning phases are all predicted to be **Not Significant** in EIA terms. The final selection of Technology Option 1, 2 or 3 would not introduce any new receptor pathways that have not already been considered in this assessment and would not result in any changes to the significance of effects, which have been determined for the construction, operational and decommissioning phases.

9.3 Mitigation Measures and Residual Effects

9.3.1 Construction Phase

The pre mitigation assessment concludes that no likely significant effects will arise in respect of air quality as a result of the proposed Project. Nonetheless, mitigation measures implemented to reduce/avoid potential impacts during the construction phase consist of:

- The Site Access Tracks and public roads in the vicinity will be regularly cleaned to remove mud and aggregate materials from their surface;
- The Site Access Tracks will be well maintained;
- Dampening of the Site Access Tracks using water bowsers during prolonged dry periods if necessary
- Construction vehicles delivering or collecting material with potential for dust emissions shall be enclosed, covered or wetted at all times to restrict the escape of dust;
- Construction vehicles delivering or collecting material with potential for dust emissions shall be checked before accessing the public road network, to confirm there is no potential for dust emissions;
- Public roads directly outside the construction site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary;
- Transport of materials to and from the construction site will take place in normal working hours and along routes agreed with Roscommon County Council;
- Vehicle speeds will be restricted on the internal Site Access tracks
- Dusty materials such as excavated materials will be stored and handled appropriately (e.g. covering where necessary and minimising the drop heights of materials).
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods;
- Suitable hoardings will be erected at construction site to prevent wind blow of materials;

- Ensuring timely completion of all construction works;
- Construction vehicles will be routinely maintained to minimise vehicular emissions;
- Vehicles will be switched off when not in use;
- Vehicles will not be left running unnecessarily and low emission fuels will be used where possible;
- The appointed Contractor shall monitor performance and undertake regular site inspections, to ensure that the mitigation measures are implemented; and
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

The residual effect following the implementation of mitigation measures is considered a **Short-term, Adverse and Not Significant**. In EIA terms the effects of the construction phase are considered **Not Significant**.

9.3.2 Operational Phase

The operational phase of this Project will have a positive effect on air quality and climate due to the reduction in the use of fossil fuels, hence there is no additional mitigation measures required for the operational phase.

The residual effect is considered to be **Long-term, Positive and Significant** following the implementation of mitigation measures. Hence in EIA terms, the effect is considered **Significant**.

9.3.3 Decommissioning Phase

The decommissioning phase will follow mitigation measures put in place during the construction phase due to the similar works that will be carried out. Furthermore, a **Decommissioning Management Plan (DMP) (EIAR Appendix 2.1.4)** will be implemented during the mitigation phase.

The residual effect associated with air quality and climate following the implementation of the mitigation measure is considered to be **Short-term, Adverse and Imperceptible**, which in EIA terms is considered **Not Significant**.

The residual effects identified for the construction; operational and decommissioning phases are all predicted to be **Not Significant** in EIA terms. The final selection of Technology Option 1,2 or 3 would not result in any changes to the significance of the residual effects, which have been determined for the construction, operational and decommissioning phases.

10. Noise and Vibration

This chapter evaluates the impact of noise and vibrations on the environment that may occur during the construction, operational and decommissioning phase of the proposed Project. Enfonc has been commissioned to conduct a noise assessment to determine the likely noise effects that may arise during the proposed Project.

10.1 Baseline Environment

The noise monitoring results for the baseline environmental conditions concluded that the significant noise sources were noted as local and distant traffic, domestic activity in and around residencies, wind generated noise from local foliage and other anthropogenic sources.

Blasting activities at the nearby Ballyfeeny Rock quarry were recorded as part of the baseline environment assessment. The investigation demonstrated that vibration tremor levels were detected however, turbine manufacturers confirmed that the energy is of such duration and frequency as not to pose any risk to the structural integrity of the turbine tower.

A blasting event may present a sufficiently significant source of vibration and appropriate guidance on the matter has been provided by the Wind Energy Converter (WEC) manufacturer. This document *Specification Foundation soil tremor Status: 2017-09-028* as follows:

“The determined value for the vibration velocity on the WEC foundation as the result of a non-stationary tremor should not exceed a defined reference value.”

The “defined reference value” for non-stationary tremors is provided as a vibration velocity of 10mms⁻¹. This is therefore the appropriate criteria for this assessment.

10.2 Assessment of Effects

10.2.1 Construction Phase

During the construction phase the likely working hours are to be 07:00 – 19:00hrs Monday to Friday and 07:00 – 14:00hrs on Saturdays. Using the background noise level information the noise limits are 65dB during the outlined working hours. It should be noted that to facilitate certain construction activities in good weather periods such as concrete pouring works may continue outside of stated hours but will remain within the noise limits that have been set out.

The construction phase will require some activities that will present a more significant noise impact than others all associated works have been evaluated to identify if the noise impact will be minor or major in nature. The Site Enabling Works, Wind Farm Internal Cabling, Wind Turbine Erection and Vibration during the construction phase are considered to have a minor impact on noise. With all other associated works considered to have a major impact on noise.

The assessment of the construction phase effects that are expected to have a major impact on noise is outlined in the Table 10-1:

Table 10-1: Summary of the effects associated with the construction phase of the proposed Project.

Site Works	Duration	Quality	Significance in EIA terms
Internal Access Tracks & Site Entrances	Temporary	Adverse	Not Significant
Enabling Works for Turbine Delivery Route	Brief	Adverse	Not Significant
Forestry Felling	Brief	Adverse	Not Significant
Turbine Delivery	Brief	Adverse	Not Significant
Onsite Substation	Temporary	Adverse	Not Significant
Turbine Hardstand & Foundations	Temporary	Adverse	Not Significant
Turbine Erection	Temporary	Adverse	Not Significant
Relay Tower	Temporary	Adverse	Not Significant
Material Volumes (Construction Phase Traffic)	Brief	Adverse	Not Significant
Grid Connection Route (GCR)	Brief	Adverse	Not Significant
Horizontal Directional Drilling (HDD)	Temporary	Adverse	Not Significant
Temporary Construction Compound	Temporary	Adverse	Not Significant
Vibration	Temporary	Neutral	Not Significant

10.2.2 Operational Phase

A detailed review of the background noise data recorded as part of the baseline was undertaken and appropriate noise criteria between cut-in and the rated power wind speeds for

the three modelled turbine technology types have been calculated and are shown in **Chapter 10 – Noise and Vibration, Table 10-27**.

Technology Option 1 will operate within the noise limits set out in **Chapter 10 – Noise and Vibration** and in accordance with the WEDG 2006 criteria at all wind speeds. The significance of the effect from the operational phase of the proposed Project is therefore **Long Term, Adverse** and **Not Significant**. This is considered to be **Not Significant** in EIA terms.

Technology Option 2 will operate within the noise limits set out in **Chapter 10** and in accordance with the WEDG 2006 criteria at all wind speeds. The significance of the effect from the operational phase of the proposed Project is therefore **Long Term, Adverse** and **Not Significant**. This is considered to be **Not Significant** in EIA terms.

Technology Option 3 will operate within the noise limits in accordance with the WEDG 2006 criteria with the exception of an apparent exceedance of 0.4dB at NSL 18 at 6 m/s wind speeds during day time hours. However, the predicted noise levels are omni-directional and the operation of the proposed project will not result in a worst case condition of all NSLs being downwind of all turbines at the same time i.e. omni-directional. Where noise predictions indicate that adopted criteria may be exceeded, the effects of propagation in different wind directions can therefore be considered.

Consequently, Technology Option 3 will operate within the noise limits in accordance with the WEDG 2006 criteria at all wind speeds. The significance of the effect from the operational phase of the proposed Project is therefore **Long Term, Adverse** and **Not Significant**. This is considered to be **Not Significant** in EIA terms.

To address this issue, a directional analysis of the noise levels at NSL 18 was conducted in accordance with the IOA GPG Guidance. Table 10-33 in Chapter 10 displays the results of this analysis and confirmed that that the cumulative noise levels for Technology Option 3 will be below the noise criteria at NSL 18 for all wind speeds and wind directions.

Tonality

A warranty will be sought from the eventual supplier of turbines for the proposed Project that the turbines will emit no tonal component.

In the event of a complaint regarding tonality once the turbines are operational, a detailed assessment following the guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be followed.

Description of Effects - Noise

As demonstrated above, the proposed Project is expected to operate within the established criteria, therefore, in EIA terms, effects are considered as **Not Significant**.

Operational noise emissions assume no special audible characteristics including Amplitude Modulation, Tonality or Infrasound/Low Frequency Noise apply as these cannot be foreseen at this stage.

Description of Effects – Vibration

Wind turbines generate minimal vibration levels when operational, which is too weak to be felt by people or affect buildings and structures. As a result, no noticeable impact on nearby receptors or structures are anticipated. The significance of the effect is therefore considered **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Onsite Substation Noise Impact Assessment

The significance of the effect from the Onsite Substation at the nearest NSL during the operational phase is therefore considered **Long-Term, Adverse** and **Imperceptible**, which is **Not Significant** in EIA terms.

10.2.3 Decommissioning Phase

The effects of the decommissioning phase on noise and vibration levels are expected to be similar to the effects experienced during the construction phase but on a lesser scale. As it is anticipated that the Onsite Substation, Relay Tower and GCR will not be removed the expected effect on noise levels is reduced slightly and limited to the windfarm area.

As the decommissioning phase works are **Short-Term**, the significance of the effects is considered **Adverse** and **Slight**. In EIA terms, the effect on nearby receptors is considered as **Not Significant**.

10.3 Mitigation Measures and Residual Effects.

10.3.1 Construction Phase

Noise

The Appointed Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures when deemed necessary to comply with the

recommendations of *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction on open sites – Noise*. The following list of additional noise control measures will be implemented to ensure compliance with the relevant construction noise criteria:

- Erection of site hoarding and temporary noise screening of the noisiest plant;
- Selection of plant with low inherent potential for generation of noise and/or vibration;
- Placing of noisy/vibratory plant as far away from sensitive receptors as permitted by site constraints;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working for the duration of the contract;
- Compressors will be attenuated models, fitted with properly lines and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen; and
- Keeping the surface of the Site Access Tracks even to mitigate the potential for vibration from lorries.

These mitigation measures for the construction phase are captured in **Chapter 2 – Project Description** and the **CEMP (Appendix 2.1)**.

Vibration

No likely significant effects due to vibration were identified for the construction works and no mitigation measures are therefore required. A Blasting Coordination and Cooperation Plan in relation to the adjacent Ballyfeeny Rock quarry (**Appendix 2.1.5 – Blasting Coordination and Cooperation Plan**) has been prepared that will ensure effective communication and safety and health, control measures are implemented during the construction, operational and decommissioning phases.

Noise Monitoring

Noise and vibration monitoring in accordance with the guidance contained in BS 5228-1:2009 during the construction and decommissioning phases will be undertaken to ensure compliance with the criteria or if noise complaints are received.

10.3.2 Operational Phase

The noise levels associated with the proposed Project's three Technology Options have been assessed using practice criteria contained in the '*Wind Energy Development Guidelines for Planning Authorities, 2006*' and have been assessed following guidance from ETSU-R-97 and the IOA GPG and its supplementary guidance notes, and no likely significant effects are predicted to arise during the operational phase. No specific mitigation measures are therefore required.

If the proposed Project is permitted and constructed, a post-commissioning noise surveys will be carried out in accordance with best practice.

A suitable Noise Complaint Monitoring Plan (NCMP) will be implemented for the proposed Project. Should a noise complaint or evidence of an exceedance of the noise limits occur, a detailed assessment and appropriate mitigation measures such as a curtailment programme on the wind turbine operations will be undertaken. The NCMP will follow the guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014).

Onsite Substation and Vibration

The impact assessment has demonstrated that there is no likely significant effect with respect to noise and vibration on the NSLs during the operational phase and therefore no mitigation is required.

10.3.3 Decommissioning Phase

Activities and noise levels associated with the decommissioning phase are expected to be similar to the construction phase. The mitigation measures that will be implemented in relation to any decommissioning of the site are the same as those proposed for the construction phase of the Project.

10.4 Residual Effects

10.4.1 Construction Phase

During the construction phase of the proposed Project, the significance of noise effect ranges from **Imperceptible (Not Significant)** in EIA terms) to **Slight (Not Significant)** in EIA terms) depending on the activity and distance to the NSL.

After the proposed mitigation measures have been adopted, the range of residual noise effects will be minimised. These mitigation measures, in accordance with the EPA Guidelines along with the application of binding limits, working hour restrictions, and implementation of appropriate noise control measures, will ensure that noise and vibration effects are kept to a minimum.

The duration of the works is brief or temporary and the assessment has considered the worst-case scenario in which all the equipment is operating simultaneously, which is not expected to occur.

10.4.2 Operational Phase

Wind Turbines – Noise

As has been demonstrated no likely significant effects have been identified for the operational phase for any of the 3no. Technology Options. No mitigation measures are therefore required and the residual noise effect remain as **Not Significant**. In EIA terms, the effect is considered as **Not Significant**

Wind Turbines – Vibration

No mitigation measures are required in relation to vibration emissions from the wind turbines and the residual vibration effects will remain as **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

Onsite Substation

No mitigation measures are required in relation to the operation of the substation and the residual noise effects will remain as **Imperceptible**. In EIA terms, the effect is considered as **Not Significant**.

10.4.3 Decommissioning Phase

With the adoption of mitigation measures outlined in **Section 10.6.7**, the significance of the residual effects will be **Imperceptible** to **Slight** depending on the activity and distance to the NSL. In EIA terms, the effect is considered as **Not Significant**.

11. Landscape and Visual

Chapter 11 – Landscape and Visual evaluates the landscape and visual impacts associated with the proposed Project during the construction, operational and decommissioning phases. Macro Works were commissioned to carry out a Landscape and Visual Impact Assessment (LVIA) in support of the proposed Project.

A Zone of Theoretic Visibility (ZTV) map was computer generated during this study to analysis the potential visibility of the turbines from the local area. Areas that are recognised for having scenic view or areas of that are of value for tourism, heritage or culture. The assessment is supported by Photomontages (**EIAR Volume 5**).

11.1 Baseline Environment

The proposed Project is located on elevated terrain west of the Scramoge River, with the Sliabh Bawn rising in the south.

Pastoral farmland is the principal land use within the area with fields bound by hedgerows. Coniferous forests also characterise the land use within the site area. Within the immediate vicinity of the site there is a rock quarry to the west. To the eastern side of the Site there is peatland with transitional scrub.

Due to the sites location and land use the area is zoned as ‘Most Favoured’ for wind energy developments. Furthermore, there is several large settlements within the Study Area. A baseline ZTV map concluded that all settlements within the study area are likely to have some level of visibility of the turbines.

The ZTV maps provide a basis for selecting relevant Viewpoints (VP’s) to assess the visual impact associated with the proposed Project. The potential visual impacts are assessed under the 6 following categories:

- Key Views (KV) (National or international importance);
- Designated Scenic Routes and Views (SR/SV);
- Local community views (LCV);

- Centres of population (CP);
- Major routes (MR); and
- Tourism, recreational and heritage features (AH).

11.2 Assessment of Effects

11.2.1 Landscape Effects

The potential landscape effects include:

- Irreversible physical effects on sensitive landscape features;
- Disruption of sensitive land cover and/or land use patterns; and
- Substantial and incongruous change to areas of sensitive landscape character.

The landscape of the Central Study Area (<5km to the nearest turbine) will be impacted by the turbines along with the ancillary developments which include Site Access Tracks, Turbine Hardstands, Wind Farm Internal Cabling, Grid Connection Route (GCR), installation of the Relay Tower, Onsite Substation and the Turbine Delivery Route (TDR). However, the impacts of the proposed Project on the Wider Study Area (c.5 – 20km to the nearest turbine) will exclusively refer to the impact of the turbines on the character of the landscape.

Construction Phase

The construction phase of this project is expected to have a modest impact on the physical landscape. Construction work associated with the installation of the turbine infrastructure will have a more notable impact in the landscape in comparison to the operational and decommissioning phases. Construction will require soil excavation, tree felling and use of machinery on site which will impact the landscape.

Overall, the magnitude of construction stage landscape effects within the site and its immediately surrounding context is deemed to be **High-medium** and of an **Adverse** quality, but of a **Short-term** duration. Beyond 5km from the site, the magnitude of landscape effect is deemed to reduce to low and negligible at increasing distances as the construction activities relating to the proposed Project becomes a proportionately smaller component of the overall landscape fabric.

Operational Phase

The impacts on landscape during the operational phase are considered to have physical impacts on the landscape within the Central Study Area, however the development scale responds well to the landscape context and does not detract significantly from the landscape.

Hence the landscape impact is deemed to be **Medium**. In regard to the Wider Study Area the impacts are reduced to **Low** and **Negligible**.

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Decommissioning Phase

The decommissioning phase is considered to have temporary effects that are similar to the construction phase. A Decommissioning Management Plan (DMP) will be implemented during this phase to minimise any potential impacts. The works associated with decommissioning the proposed wind farm Site involves the dismantling of some of the infrastructure onsite. The Site Access Tracks, Turbine Foundations and GCR will remain onsite. The magnitude of the landscape effects during the decommissioning phase is considered to be **High-medium, Adverse** and **Short-term** within the Central Study Area. In EIA terms the decommissioning landscape effects are deemed as **Not Significant**.

Overall Significance of Landscape Effects

The overall significance of the potential impacts arising during the construction, operational and decommissioning phase of the proposed Project are assessed below.

The construction and decommissioning phase of the proposed Project is considered to have a **Substantial-moderate, Adverse** and **Short-term** impact on landscape. In EIA terms the landscape effects are deemed as **Not Significant**.

The effects of the operational phase of the proposed Project are deemed as **Moderate, Adverse** and **Long-term** in the Central Study Area. These effects will reduce to **Slight** and **Imperceptible** as the distance from the Site increases. Hence the effects are considered **Not Significant** on the landscape in EIA terms.

11.2.2 Visual Effects

Visual effects related to the following:

- A sense of spatial dominance as seen from highly sensitive receptor locations. This is most likely to occur within 3km of the proposed Project;
- Visual clutter and ambiguity as seen from highly sensitive receptor locations. This can occur at any distance but tends to occur beyond 2-3km as turbines become stacked in perspective and a more two-dimensional layout is perceived; and
- A combination of both of the above effects.

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Construction Phase

The construction phase will result in visual impacts arising from frequent heavy vehicle movements, stockpiles of excavated materials, GCR and TDR construction works, and crane use onsite to erect turbines. The immediate Study Area (<1-2km from the Site) impacts are considered to be **Substantial-Moderate/Moderate** and **Adverse** which are reduced to **Moderate/Moderate/Slight** in the Central Study Area. The wider Study Area is considered to have **Slight** and **Imperceptible** visual effects. The overall significance of visual impacts that will arise from the Project during the construction phase is considered **Not Significant** in EIA terms.

Operational Phase

Viewpoints were used to assess the visual impact of the proposed wind farm Site. The effects of the proposed Project on the local community receptors represented by 14 viewpoints range from **Slight/Slight-moderate**, **Substantial-moderate** and **Moderate**.

Some areas will experience more prominent visual effects, however the setback minimum limits as outlined in WEDG's 2006 and Draft WEDG's 2019 were regarded in this assessment. Designated scenic viewpoints were represented by 6 viewpoints with the visual effects ranging from **Moderate** to **Slight** and **Imperceptible**.

The turbines do not obstruct sensitive viewing points to the west where most of the sensitive viewing points are located. There are 8 viewpoints selected to represent centres of populations which visual impacts are **Moderate-Slight** to **Slight** and **Imperceptible**. Major route receptors were represented by 9 viewpoints along the N4, N5, N61, and N63 which visual impacts range from **Slight** to **Imperceptible**.

Impacts on heritage and amenity features were represented by 11 viewpoints with the impacts ranging from **Moderate-Slight**, to **Imperceptible**. The overall impacts of the proposed Project on visual receptors in the local area range from **Substantial-Moderate** to **Imperceptible**. Hence, the visual impacts occurring during the operational phase are deemed **Not Significant** in EIA terms.

Decommissioning Phase

Visual impacts at the decommissioning phase will be very similar to the construction phase and will arise from frequent heavy vehicle movements and worker vehicles travelling to and from the site and using the site entrance. The most notable visual impact will result from the

use of cranes for the removal of the turbines. To minimise the impacts of the decommissioning phase some elements of infrastructure will remain onsite such as the Onsite Substation, Turbine Foundations and Turbine Hardstands. The magnitude of the visual impacts will be no greater than **Substantial-moderate/Moderate** and of an **Adverse** within the immediate study area which is reduced to **Moderate/Moderate-Slight** in the central Study Area.

Furthermore, the impacts are reduced to **Slight** and **Imperceptible** in the wider Study Area. Therefore, the significance of the visual impacts associated with the decommissioning phase of the proposed Project is considered **Not Significant** in EIA terms.

11.3 Mitigation Measures and Residual Effects

11.3.1 Mitigation Measures

Mitigation measures for the proposed Project will be incorporated into the early-stage selections and design phase. Embedded mitigations are used as part of the project design for the construction, operational and decommissioning phases. For landscape and visual impacts, the main forms of mitigation employed on Site were:

- Mitigation by Avoidance and Design; and
- Buffering of Residential Receptors.

Mitigation by Avoidance and Design

The main mitigation measure employed through avoidance and design was site location and selection. The Site is located in an area deemed 'Most Favoured' in relation to wind energy developments. Mitigation by design was implemented which led to the micro siting turbines T01 and T02 to create a more cohesive layout and avoid the appearance of an outlier.

Overall, the proposed Project will not present an incongruous built feature.

Buffering of Residential Receptors

The proposed Project has due regard to the minimum setback of 500m from receptors as outlined in the Draft WEDG's 2019 as the closest residential receptor (receptor No. 35) is c.599m from T02.

11.3.2 Residual Impacts

As there are no additional mitigation measures to be implemented there is no predicted residual effects for landscape and visual.

12. Traffic and Transport

Chapter 12 – Traffic and Transport examines the potential effects that may arise during the proposed Project in the context of traffic and transport. Mitigation measures and residual effects are also assessed for the construction, operational and decommissioning phases of the Project in this chapter. The chapter was prepared by Stephen Reid Consulting Traffic and Transport Ltd.

12.1 Baseline Environment

The proposed Project will investigate components such as the Wind Farm Site, the GCR and the TDR which are the three principal components that may impact traffic and transport.

There is 6 No. site entrances/exits proposed to service the proposed Project, 4 No. of which will be permanent entrances and 2 No. temporary entrances.

The proposed Permanent Access points are as follow:

- **SE2 – Site Entrance 2:** Entrance off the L6018 servicing the proposed Turbine T01, this is a new site entrance onto the public road;
- **SE3 – Site Entrance 3:** Entrance off the L6018 servicing the substation, Relay Tower, and Turbines T02 to T05, this is a new site entrance onto the public road;
- **SE4 – Site Entrance 4:** Entrance off the L60498 servicing the proposed Turbine T05, this is an upgrade to an existing field entrance onto an unsealed public road;
- **SE5 – Site Entrance 5:** Entrance off the L60498 to proposed Turbine T06, this is a new site entrance onto an unsealed public road.

The proposed Temporary Access points are outlined below:

- **SE1 – Site Entrance 1:** Entrance off the R371 servicing the proposed Turbine T01 during the construction phase; This is an upgrade to an existing Coillte forest track site entrance; This site entrance will accommodate abnormal length deliveries and construction traffic during the construction phase. SE1 will revert back to its original layout and use on completion of the construction phase.
- **SE6 – Site Entrance 6:** Entrance off the L60498 connecting the main wind farm track to SE5 to accommodate a straight run through with turbine component deliveries to T06. Except for abnormal length loads, SE6 will not be used for construction traffic, a removable barrier will be constructed across the entrance to this road to prevent

unauthorised use. This site entrance will be removed and the area reinstated on completion of abnormal length deliveries and the construction phase.

The R371 extends northeasterly from Ballyfeeny passing to the east of Kilglass Lough and eastwards to Roosky where it crosses the River Shannon bridge on the Co Roscommon/Co Leitrim border and intersects with the former N4 route, before turning southwards to connect with the N4 at the Tomisky Roundabout on the southern end of the N4 Roosky Bypass (13km by road from Ballyfeeny).

The R371 junction with the N5 is 4.3km from Strokestown by following the existing N5 road, and the N5 extends in a generally northwestern direction from Strokestown via Tulsk and Frenchpark, to Castlebar and then Westport in Co Mayo, intersecting with the N17 at the grade separated Ballyglass interchange, to the south of Charlestown in Co Mayo. The distance by road on the N5 from Scramoge to the N17 junction is 58km.

From the Scramoge crossroads junction, the N5 also takes a southeast heading for 9.25km to Termonbarry where it crosses the River Shannon on the border between Co Roscommon and Co Longford, continuing for a further 7km to the N5 Western Bypass of Longford Town, which terminates into the N4 Longford North Bypass.

Surveys of traffic volumes and speeds were undertaken in June 2024 to obtain baseline data for the R371, with the Automatic Traffic Counters (ATCs) installed to the north and south of the Ballyfeeney National School outside of the school zone road markings

The Grid Connection Route (GCR) will consist of 5.8km of underground grid connection works with 8 No. joint bays and connection chambers within the boundaries of the public road infrastructure to the existing Sliabh Bawn 110kV Substation. The GCR follows the R317 southwards through Scramoge to the Sliabh Bawn 110kV Substation.

The TDR was proposed with two route options: TDR 1a and TDR 1b. TDR 1a is the preferred option, which will utilise the new N5 Ballaghaderreen to Scramoge Road Project, which will avoid abnormal loads moving through Strokestown. TDR 1b is an alternative route that will be utilised if the N5 Road Project has not been completed by the commencement of the proposed Project.

12.2 Assessment of Effects

12.2.1 Construction Phase

The construction phase is estimated to take 18 months with a workforce ranging from 5 to 35 people onsite and potential 10 further people employed for the GCR works. A CEMP and TMP have been prepared and will be utilised during the construction phase.

The construction of the Site Access Tracks from the R371 and permanent access to the wind farm from L6018 and from the L60498 have been designed by Mable Consulting Engineers. The project requires 4.4km of 5.5m wide access tracks in a combination of new and upgraded sections. Material quantities and number of deliveries to the site are outlined in the CEMP.

During the construction phase there is an estimated 3,496 deliveries expected on site, the majority of which are for stone/aggregate (1,971 deliveries) and concrete (948 deliveries). There are also an estimated 520 removals of materials by trucks from the Site, with 315 removals for excavated materials and 105 removals for general construction waste/recycling.

There is a further estimated 567 deliveries to the GCR worksites with stone/aggregates requiring 135 deliveries, concrete requiring 245 deliveries and bituminous road surfacing materials requiring 80 deliveries. Moreover, there is an estimated 360 removals of materials in relation to the GCR worksites. In relation to the TDR 54 abnormal length vehicles will result in 18 separate convoys of 3 abnormal vehicles per convoy escorted by An Garda Síochána. As the vehicles travel at low speeds the convoy could take several days of movements.

The direct impacts on traffic and transport during the construction phase of the proposed Project are as follows:

- As the construction phases are short-term the significance of the project on the R371 from the N5 through Scramoge to the temporary access SE1 is expected to be **Temporary, Adverse** and **Not Significant** which in EIA terms is considered **Not Significant**;
- The construction delivery and site access route crosses the L6018 between SE2 and SE3 as the accesses at SE2 and SE3 will be controlled during the construction the impact are considered to be **Temporary, Adverse** and **Not Significant** which is deemed **Not Significant** in EIA terms;
- Similarly, the construction delivery and site access cross the L60498 between SE4 and SE5/SE6, however traffic is not expected to travel along the L60498 hence the effects

are deemed **Temporary, Adverse** and **Not Significant** which in EIA terms is considered **Not Significant**;

- The GCR works near the Sliabh Bawn 110kV Substation require works along sections of the R371 between the N5 and wind farm Site which will not occur on peak delivery days. The significance of the effects on traffic and transport is expected to be **Temporary, Adverse** and **Not Significant**. In EIA terms the effect is considered **Not Significant**;
- A Swept Path Analysis was carried out for TDR 1a and TDR 1b to identify area along the TDR that may require works. The impact of the works is considered **Temporary, Adverse** and **Not Significant** which in EIA terms is deemed **Not Significant**;
- The turbine delivery will require convoy of abnormal length vehicles traveling slowly along the selected TDR the impact of this is expected to be **Temporary, Adverse** and **Not Significant**, which in EIA terms is considered **Not Significant**; and
- Following the delivery of the wind turbine components trees and hedges will be replanted along with the reinstatement of street furniture the significance of these works is expected to have a **Temporary, Adverse** and **Not Significant** effect, which in EIA terms is considered to be **Not Significant**.

There are also indirect effects associated with the construction phase of the proposed Project. The construction phase will impact on traffic and transport in the local area, which is expected to have a **Temporary, Adverse** and **Not Significant**. In EIA terms, the effect is considered to be **Not Significant**.

The works associated with the GCR are expected to have a **Temporary, Adverse** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

The construction phase of the TDR is expected to have a **Temporary, Adverse** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

12.2.2 Operational Phase

The wind farm will be an unstaffed site, and therefore during the operational phase of the proposed Project will result in only occasional vehicle access to the wind farm Site by van or small truck for the purposes of routine planned maintenance and monitoring by operatives and technicians. Therefore, the significance of direct effect on the traffic and transport assets is **Long Term, Imperceptible** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

In the case of the wind turbine components requiring maintenance, repair or replacement that will require abnormal length deliveries the Turbine Route Accommodation Works will be temporarily re-established. The significance of unplanned maintenance is considered to be **Temporary, Adverse** and **Not Significant**, which is deemed **Not Significant** in EIA terms.

The operational phase of the proposed Project will have no indirect effect on traffic and transport assets, including the roads used for the GCR as these will be fully reinstated once GCR works are completed. The significance of effect is **Long Term, Imperceptible** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

12.2.3 Decommissioning Phase

The works associated with the decommissioning phase include the removal of certain elements of infrastructure which will impact traffic and transport. The main effects will result from staff travelling to and from the site during the decommissioning phase. Overall, the effect is considered to be **Short-Term, Adverse** and **Not Significant**. In EIA terms, this is considered **Not Significant**.

12.3 Mitigation Measures and Residual Effects

Mitigation measures will be incorporated into the Project design to minimise disruption to public roads and ensure that the highest standards of road safety are adhered to throughout the duration of works associated with the proposed Project. A Traffic Management Plan (TMP) along with a Construction Environmental Management Plan (CEMP) have been prepared and will be utilised for the proposed Project.

12.3.1 Construction Phase

During the construction phase detailed mitigation measures relating to the following aspects will be implemented:

- Deliveries and Delivery Programme;
- Signage;
- Protection of works area;
- Construction Staff Traffic;
- Operator Training;
- Consultation to the Surrounding Businesses and Residential Receptors;
- Pedestrian Safety;

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- Access for Landowners;
- Emergency Vehicles;
- Travel Plan for Construction Workers;
- Road Dirt and Dust Management;
- Complaints Procedures;
- Reinstatement Works;
- Works to Public Roads; and
- Traffic Management Procedures.

The residual effect of the proposed project following the implementation of mitigation measures is considered to be **Short-Term, Adverse** and **Not Significant**, which is considered **Not Significant** in EIA terms.

12.3.2 Operational Phase

Mitigation measure will be implemented into the design which was carried out by Mable Consulting Engineers. The design mitigations include appropriate setback/fencing and position replacement planting and maintenance of roadside boundaries and sightlines during the operational phase. The main mitigations are embedded mitigations that have been incorporated into the Project design.

In the event of a wind turbine requiring repair or replacement during the operational phase, the Temporary Accommodation Works along the routes will be re-established to accommodate abnormal loads. This will require the mitigation measures outlined in the construction phase to be followed. Additionally, if works need to be carried out along the GCR route they will be undertaken by the ESB Network, and the underground cable will be exposed by “Open-Dig” techniques which may require temporary traffic measures to be implemented. Any temporary traffic measures implemented will follow the mitigation measures outlines in the construction phase mitigation measures.

The residual effect associated with the operational phase of the proposed project following the application of mitigation measures is deemed **Long-Term, Imperceptible** and **Not Significant**. In EIA terms, is considered **Not Significant**.

12.3.3 Decommissioning Phase

The traffic management plan will include a plan for material recycling or disposal along with similar mitigation measures to the construction phase. A Decommissioning Management Plan (DMP) will also be implemented. During the decommissioning process selected structures will

be dismantled in opposite order to their construction. Overall, the decommissioning phase will mirror the construction phase in terms of traffic and transport.

The residual effect on traffic and transport following the implementation of mitigation measures as a result of the decommissioning phase is considered **Short-Term, Adverse** and **Not Significant**, which is considered **Not Significant** in EIA terms.

13. Archaeology, Architectural & Cultural Heritage

Chapter 13 – Archaeology, Architectural & Cultural Heritage addresses the likely direct and indirect effects on the archaeology, architectural and cultural heritage during the construction, operational and decommissioning phase of the project. Icon Archaeology Ltd., was commissioned to carry out the assessment.

13.1 Baseline Environment

The baseline environment assessed consists of the Wind Farm Site, the GCR and the TDR. There is no UNESCO World Heritage Sites within a 20km Study Area, however the Rathcroghan Complex which is located c.18.2km west of the proposed Site is on the Tentative list for UNESCO World Heritage Status.

There are no recorded National Monuments subject to a preservation order or in State Care within the 2km Study Area. Furthermore, there is 11 Recorded Monuments within the 2km Study Area which are located on private land. The Record of Monuments and Places (RMP) sites are of 'Medium to High' value due to their protected status, quality and importance.

A review of the Topographical Files at the National Museum of Ireland, excavations database, record of Protected Structures, the National Inventory of Architectural Heritage (NIAH) and the Cartographic Sources found there was no features of additional significance within the 2km Study Area. A field inspection consisting of a walkover examination of the proposed Site was carried out during November 2023. No feature of archaeological significance or interest were noted at any of the turbine locations during the investigation.

A geophysical survey was carried out by Ger Dowling (Archaeogeophysical surveyor) for the National Monuments Service in February 2025 as part of a preliminary archaeological investigation. The geophysical investigation did not identify any anomalies of clear archaeological interest, there was a few anomalies of potential archaeological interest however the interpretation is cautious. Furthermore, there is cultural assets located within 50m of the GCR.

13.2 Assessment of Effects

13.2.1 Construction Phase

The construction phase of the proposed Project poses no direct effect to any known cultural assets within the Study Area.

The geophysical survey did not identify any anomalies of clear archaeological interest thus the significance of effect, albeit not likely, would be **Adverse, Long-term** and range from **Slight** to **Significant**. This effect could be deemed **Significant** in EIA terms.

Previously unknown archaeological remains located within the wind farm Site may be directly impacted during the construction phase. Thus, the significance of the effect albeit not likely would be **Adverse, Long-term** and range from **Slight** to **Significant**, this effect could be considered **Significant** in EIA terms.

The GCR to the existing Sliabh Bawn 110kV Substation c. 5.8km to the south will have no direct effect on any known cultural asset. The nearest known cultural asset is located 138m to the west of the route. There will be no direct effects on any known cultural asset. This is considered **Not Significant** in EIA terms.

Unknown archaeological remains located along the GCR may be directly impacted during construction works associated with the GCR. However, the likelihood of previously unknown archaeological assets along this route is considered Negligible-Low due to the baseline data review, very limited scale of the proposed works and use of existing infrastructure. The magnitude of the impact could range from Low- High and thus the significance of the effect albeit not likely would be **Adverse, Long term** and range from **Slight** to **Significant**. This effect could be **Significant** in EIA terms.

Proposed works associated with the TDR are located within the ZoN of Recorded Monument. The works will not directly impact the monument therefore the significance of effects is **Temporary, Adverse** and **Not Significant** which in EIA terms is considered **Not Significant**.

The proposed Project may also have indirect effects on the archaeological, architectural and cultural heritage. There are 11 cultural assets located within the 2km Study Area which were represented by 4 key viewpoints in **Chapter 11 – Landscape and Visual**. The significance of the effect is considered **Short-Term, Adverse** and **Slight**. In EIA terms, the effect is considered **Not Significant**. In terms of the GCR and TDR the effects are considered to be **Temporary, Adverse** and **Not Significant**, which in EIA terms is considered **Not Significant**.

The Rathcroghan Complex is located 18.2km from the proposed Project and is represented by VP11 in **Chapter 11 – Landscape and Visual**. The significance of the visual effect at VP11 is **Imperceptible** during construction, which is the **Not Significant** in EIA terms. Indirect effects on the Rathcroghan Archaeological Complex were therefore considered to be negligible. The significance of the indirect effect would be **Short-term, Neutral** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

The construction phase of the proposed Project will have a negligible indirect visual impact on known cultural assets along the GCR. The nearest known cultural asset (RMP site) is located 138m to the west of the route. The significance of the effect would therefore be **Temporary, Adverse** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

The construction phase of the proposed Project will have a negligible indirect visual impact on known cultural assets along the TDR. Temporary accommodating works (street furniture removal) at Node No. 2040 to the west of Galway City are located within the ZoN of Recorded Monument GA082-043002 (Fulacht Fiadh). These minor works will have a negligible indirect visual impact on this Recorded Monument. The significance of the effect would therefore be **Temporary, Adverse** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

13.2.2 Operational Phase

There are no direct effects on known cultural assets expected during the operational phase of the proposed Project.

However, there will be indirect impacts on the 11 cultural assets within the 2km Study Area. The significance of the effects is considered to be **Long-Term, Adverse** and **Slight**. In EIA terms the effect is considered **Not Significant**.

Furthermore, the Rathcroghan Complex is located 18.2km from the proposed Project and will be entirely screened. It is represented by VP11 in **Chapter 11 – Landscape and Visual Impact Assessment**. The significance of the visual effects during the operational phase is considered **Long-Term, Neutral** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

13.2.3 Decommissioning Phase

In relation to the Cultural Heritage and the decommissioning phase, the potential for sub-surface archaeological remains within the wind farm Site is considered negligible as these lands will have been subject to geophysical survey, archaeological test excavation and

monitoring of groundworks during the construction phase of the proposed Project. It is possible that previously unknown archaeological remains uncovered during test excavation and/or monitoring were preserved in-situ and thus included in the Record of Monuments and Places. Based on a review of the baseline data and the completion of proposed mitigation measures outlined in **Section 13.6.1 of Chapter 13 – Archaeology, Architectural & Cultural Heritage (EIAR Volume II)** for the construction phase the effect on any previously unknown cultural heritage assets is considered as **Not Significant**.

13.3 Mitigation Measures and Residual Effects

13.3.1 Construction Phase

An archaeological test excavation, carried out under licence from the NMS in consultation with the Local Authority, shall be undertaken prior to the commencement of the construction phase across all suitable lands within the construction footprint of the wind farm Site. The anomalies identified as part of the geophysical survey shall be assessed as part of any test excavation programme.

It should be noted that specific areas within the wind farm Site are not suitable for archaeological testing due to commercial forestry operations. These areas shall be subject to archaeological monitoring during the construction phase, carried out under licence from the NMS in consultation with the Local Authority.

All areas of ground disturbance within the RLB shall be subject to archaeological monitoring during the construction phase, carried out under licence from the NMS in consultation with Roscommon County Council.

During all construction and decommissioning works an Archaeological Chance Finds / Discoveries Protocol will be in effect to report any potential items to the Project Archaeologist for investigation. Should previously unknown archaeological remains be discovered during the course of archaeological testing or monitoring, the Consultant Archaeologist will notify the NMS and Roscommon County Council to ensure that appropriate mitigation measures are put in place to protect and potentially preserve (preservation by record or preservation in-situ) any archaeological remains.

The residual effects associated with the construction phase following the implementation of the mitigation measures are considered to be **Not Significant** in EIA terms.

13.3.2 Operational Phase

There is no mitigation proposed for the operational phase of the proposed Project.

The residual effects associated with the operational phase in EIA terms are considered **Not Significant**.

13.3.3 Decommissioning Phase

An updated Archaeological Impact Assessment (AIA) will be prepared prior to the decommissioning phase to incorporate legislation and baseline data changes that may occur. The mitigation measures will be implemented as part of the DMP (**Appendix 2.1.4** of the EIAR (Volume 2)). A Chance Finds Protocol will also be in effect during decommissioning works.

The residual effects associated with the proposed Project following the implementation of the mitigation measures is considered to be **Not Significant** in EIA terms.

14. Material Assets

Chapter 14 – Material Assets assesses the effects of the construction, operational and decommissioning phase on the material assets associated with the proposed Project. The assessment is carried out in relation to 6 material assets: Land Use – Agricultural and Forestry, Waste Management, Utilities, Telecommunications, Aviation and Quarries.

14.1 Baseline Environment

Desktop study was carried out to identify and review licensed waste facilities proximal to the Site. There is five permitted waste facilities located near the site and one Uisce Eireann wastewater discharge treatment plant which includes Strokestown Wastewater Treatment Works within 5km of the proposed Project.

Desktop and onsite surveys were carried out to identify existing gas, water, electricity and broadband infrastructure. The study concludes there is no gas mains located within the site or along the GCR and no planned works along the TDR in regard to gas.

The Ballyfeeny Water Reservoir is located c.62m southeast of the proposed Project. Water mains run along the public road network with a single main running along the R371 which is along the proposed GCR, and two water mains which run along the L6018.

The Irish electricity is split into two main components the Transmission Network and the Distribution Network. The transmission network is operated by Eirgrid and owned by ESB Networks. Similarly, the distribution network is owned and operated by the ESB. The Project is proposed to not utilise any elements of the existing distribution network but will connect to the transmission network at the Sliabh Bawn 110kV substation.

The National Broadband Plan has been rolled-out to the homes and businesses surrounding the proposed Project. The Broadband Network is not anticipated to be impacted along the TDR or the CDR.

A Telecommunications Impact Assessment Report was prepared by Ai Bridges which concluded that there is three Telecom Operators: Eir, Three Ireland and Vodafone Ireland Network in the vicinity of the proposed Project. A field survey assessment and desktop impact analysis was carried out. Four radio links were found to be likely impacted by the proposed Project.

14.2 Assessment of Effects

14.2.1 Construction Phase

Waste

Waste streams which cannot be recycled on site and incorporated into the works be managed, collected, segregated and stored in separate areas at the Temporary Construction Compound and removed off site by licensed waste contractors. Waste fuel, oils and chemicals will be stored for short durations on site in a covered bunded refuelling area which will be collected and disposed of by a suitably licensed waste contractor.

Excavated materials will be stored in stockpiles and re-used on site where possible for backfill/re-grading or revegetation. Timber waste will be stored separately with containers for wood waste. Improper management or storage of waste materials has the potential to cause littering, pollution or contamination which poses risks to the biodiversity, the wind farm Site and the local environment. The effects of improper management and storage are likely to be **Short-Term, Adverse** and **Moderate**, which in EIA terms is considered **Not Significant**.

All waste generated during construction will be transported to registered, permitted, or licensed facilities. In the absence mitigation measures to reduce or reuse waste generated sites the effect on waste infrastructure would be **Short-term, Moderate** and **Adverse**. In EIA terms the effect is considered as **Not Significant**.

Utilities

Water Infrastructure

Non-potable water is proposed to be tankered onsite as a holding tank for use in the Portaloo toilets. The self-contained toilets and wash areas will be provided for sanitary provisions with integrated foul wastewater holding. The foul water will be removed on a regular basis by pumping into a foul tanker and being removed to a licensed waste facility for disposal. Potable water will be brought onsite in bottles for use in canteen facilities. The proposed Project has been designed to avoid any direct interactions with the Ballyfeeny Water Reservoir. The effects on the Ballyfeeny Water Reservoir are considered **Neutral** and **Not Significant** which are deemed **Not Significant** in EIA terms.

The GCR was chosen to avoid impacting 2 water mains located along the L6018. Therefore, the effects associated with the GCR in relation to water infrastructure is considered **Short-term, Moderate** and **Not Significant** which is regarded as **Not Significant** in EIA terms.

Electricity Infrastructure

During the construction phase of the proposed Project electricity will be generated by temporary generators. The GCR will connect to the Transmission Network at the Sliabh Bawn 110kV substation. A temporary grid outage will occur to facilitate the connection to the national grid. The effects are expected to be **Short-term** and **Moderate**. In EIA terms, the effect on the existing electricity infrastructure is **Not Significant**.

Broadband Infrastructure

In terms of broadband the site has no existing Eir infrastructure. The Eir Civil Infrastructure follows the public road network utilising existing poles and ducts where possible. The GCR or wind farm Site is not expected to impact the Eir Civil Infrastructure or Broadband Infrastructure. Thus, the effect of the construction phase in Broadband Infrastructure will be **Short-term** and **Slight**, which is considered **Not Significant** in EIA terms.

Telecommunications

Electromagnetic interference from wind turbines occurs during the operational phases of the Project. The construction phase is not expected to cause any electromagnetic interference affecting telecommunications or broadcasting in the area. Therefore, the effect will be **Neutral** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

Prior to the transport of the turbine components, the applicant will coordinate with the pertinent telecommunications provider to ensure that appropriate mitigation measures are deployed to circumvent and minimize disruption to telecommunication services. Thus, the effect on telecommunications will be **Neutral** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

Aviation

As previously outlined, the proposed Project is approximately 53km southeast from Ireland West Airport, which is considered a significant distance. However, during the later stages of construction, erected turbines may pose a potential obstacle to low-flying aircraft.

The Aviation Review Statement prepared by Ai Bridges (**Appendix 14.2 - Aviation Review Statement**) stipulates that the wind farm Site would be located outside the Outer Horizontal Surface of the Ireland West Runway Obstacle Limitation Surfaces (OLS), as defined in ICAO (International Civil Aviation Organization) Annex 14. As the proposed wind farm is situated outside the Outer Horizontal Surface and there is no penetration of the take-off or approach surfaces, it is unlikely that there will be any impacts to the OLS surfaces for Ireland West Airport. Therefore, potential effects on aviation for the construction phase is **Neutral**, **Imperceptible** and **Short-term**. In EIA terms, the effect is considered as **Not Significant**.

14.2.2 Operational Phase

Waste

During the operational phase, the Project is expected to generate minimal amounts of waste during routine inspections and maintenance activities. This may include organic or food waste, dry mixed recyclables (such as paper, newspapers, plastic bottles, packaging, aluminium cans, tins, and general non-recyclable waste). Small quantities of waste fuels, oils, WEEE (Waste Electrical and Electronic Equipment), and used batteries may also be produced occasionally. All waste will be securely stored in a manner that protects it from wind, rain, and wildlife, which can scatter waste materials. In general, best practice procedures will minimise waste generated on-site during the operational phase. Measures including good site management will be taken to limit the quantity of waste generated and waste will be recycled where possible.

The effect on waste infrastructure for the operational phase is **Neutral, Imperceptible** and **Long-term**. In EIA terms, this is **Not Significant**.

Utilities

Water Infrastructure

A water closet is proposed for the Onsite Substation building to be utilised by maintenance staff during the operational phase of the proposed Project. A domestic wastewater holding tank will be installed to hold effluent and will be fitted with a high-level alarm, from the toilets within the substation building. A rainwater harvesting tank will collect rainwater from the roofs of the substation building for toilet flushing and hand washing. Potable water will be provided in the office for drinking during the operational phase.

As the wind farm and grid connection route will be installed and operational, no effects are anticipated with respect to the Ballyfeeny Water Reservoir. In the unlikely event of a cable fault on the underground cable along the GCR, it may be required to open the public road under license during the operational phase to make any repairs necessary. The effect on the existing water infrastructure is considered **Slight** and **Long Term**. In EIA terms, the effect is considered as **Not Significant**.

Electricity Infrastructure

The proposed Project is anticipated to connect to the existing Sliabh Bawn 110kV Substation. When connected, the project will facilitate the installation of a new 38kV/110kV transformer and switchgear apparatus at the Sliabh Bawn 110kV Substation. The proposed Project will help to strengthen the electricity grid network and support the Climate Action Plan 2025 targets of achieving 80% of electricity demand being met by renewable sources by 2030. The effect on the existing grid network would be **Slight, Positive** and **Long Term**. In EIA terms, the effect is considered as **Not Significant**.

Broadband Infrastructure

No likely significant adverse effects are anticipated on the broadband infrastructure during the operational phase. The effect on the broadband network is considered to be **Neutral** and **Long Term**. In EIA terms, the effects is considered as **Not Significant**.

Telecommunications

Turbines can interfere with microwave communications link systems, as they can reflect and block microwave link signals. Communication which can be affected by operational turbines include the following:

- RADAR systems;
- Satellite Communications;
- Mobile Networks;
- Television broadcasts;
- Aircraft instrument landing systems; and
- Air Traffic Control.

Based on the findings of the consultation process, there are three Telecom Operators with networks proximal to the wind farm Site that require a detailed technical analysis, including Eir Network, Three Ireland Network and Vodafone Ireland Network. The Eir network in the vicinity of the proposed wind farm consists of one Point-to-Point (PTP) microwave radio link from Ballyfeeny to Edercloon.

The Telecommunications Impact Assessment (**Appendix 14.1 – Telecommunications Impact Assessment**) indicated that four radio links (one link within Three Ireland Network and three links within Vodafone Ireland Network) would be impacted by the turbines. There are no effects to the remaining six radio links included in the impact assessment. There are three radio links for Vodafone Ireland and one link for Three Ireland impacted by the turbines. If mitigation measures were not deployed to minimise/avoid impacts, the effect on telecommunications would be **Long-term, Significant and Adverse**. In EIA terms, the effect is deemed as **Significant**.

Aviation

The rotating blades of the wind turbines may interfere with flight paths and communication, navigation and surveillance equipment. An Obstacle Warning Light system is required to be fitted on wind turbine obstacles. The effects on aviation during the operational phase are **Neutral, Moderate and Long-term** which is deemed **Not Significant** in EIA terms.

14.2.3 Decommissioning Phase

Waste

The decommissioning phase is expected to be similar to the construction phase. The least disruptive methods will be employed during the decommissioning phase. The effects are

considered to be **Neutral**, **Imperceptible** and **Long-term**. In EIA terms the effects are regarded as **Not Significant**.

Waste generated during the decommissioning phase will be handled appropriately and will generate **Moderate**, **Adverse** and **Temporary** effects. The effects are considered **Not Significant** in EIA terms.

Utilities

Water Infrastructure

The Onsite Substation and GCR will become an ESB Networks asset and will be part of the electrical grid network and will not be decommissioned. They will remain *in-situ* post operation and decommissioning. Any impacts on the water infrastructure will be similar to the operation phase for the ongoing operation and potential fault repairs to the underground cable. No new impacts are anticipated on the water infrastructure during the decommissioning phase. The effect on the existing water infrastructure is considered **Slight** and **Long Term**. In EIA terms, the effect is considered as **Not Significant**.

Electricity Infrastructure

The decommissioning of the wind farm Site will result in the loss of clean renewable energy to the national electricity grid. Thus, the effects are **Slight**, **Positive** and **Long Term** and considered **Not Significant** in EIA terms.

Broadband Infrastructure

There are no new anticipated effects on broadband infrastructure however any impacts that may arise during decommissioning are expected to be similar to the construction phase. Hence the effects on broadband are deemed **Slight**, **Neutral** and **Long term** which is considered **Not Significant** in EIA terms.

Telecommunications

There are no significant effects anticipated on the Telecommunications Network as the relay tower will remain in place throughout and after the decommissioning phase.

Aviation

The removal of the wind turbine infrastructure during the decommissioning phase will have a **Neutral**, **Positive** and **Long-term** effect on aviation. Hence the effects are considered **Not Significant** in EIA terms.

14.3 Mitigation Measures and Residual Effects

14.3.1 Waste

A **Waste Management Plan (WMP)** – refer to **Appendix 2.1.2** of the EIAR (Volume 2) was prepared for the proposed Project which details best practice procedures to be implemented through the entirety of the Project. The waste management plan will remain as a live document to ensure compliance with any legislation changes or best practice procedures. Detailed mitigation measures are outlined in the WMP and **Chapter 14 - Material Assets**.

The residual effects associated with waste following the implementation of mitigation measures are examined in relation to the construction, operational and decommissioning phases of the proposed Project.

The residual effects associated with the construction phase are considered **Short-term, Slight** and **Adverse** which is deemed **Not Significant** in EIA terms.

The residual effects associated with the operational phase are deemed as **Long-term, Neutral** and **Imperceptible**. In EIA terms the effects are considered **Not Significant**.

The residual effect associated with the decommissioning phase is considered **Long-term, Neutral** and **Imperceptible** which is regarded as **Not Significant** in EIA terms.

14.3.2 Utilities

All works will adhere to any requirements or guidelines issued by the providers. Mitigation measures through avoidance by design have been implemented to minimise the impact on utilities. The mitigation measures are outlined in **Chapter 14 – Material Assets**.

The residual impact is examined in relation to the construction, operational and decommissioning phases following the mitigation measures.

The residual effects related to the construction phase are considered **Neutral** and **Not Significant** which is deemed **Not Significant** in EIA terms.

The residual effects for the operational phase are expected to be **Long-term, Neutral** and **Positive**. In EIA terms the effects are regarded as **Not Significant**.

There is no residual effect associated with the decommissioning phase following the implementation of mitigation measures. In EIA terms the residual effect is considered **Not Significant**.

14.3.3 Telecommunications

All mitigation measures regarding telecommunications are outlined in the Telecommunications Impact Assessment. In summary to avoid any impacts on the Three Ireland Networks the radio link will be relayed via the existing Lissawaddy telecom mast. Similarly, to avoid any impacts on the Vodafone Links the radio link will be relayed through existing telecom masts. Further mitigation measures include routing the Vodafone Link 2 and Link 4 through a new 33m high telecom mast on Site which planning permission is being sought for as part of this application. In the event of the planning application being successful consultation with Three Ireland Network and Vodafone Network will finalise the mitigation proposals outlined in Chapter 14 and the Telecommunications Impact Assessment.

The residual effect associated with the construction phase following the implementation of the mitigation measures is expected to be **Neutral** and **Not Significant** which is considered **Not Significant** in EIA terms.

The residual effects that may arise during the operational phase are considered to be **Long-term**, **Neutral** and **Imperceptible** which in EIA terms is deemed **Not Significant**.

There is expected to be no residual effect to telecommunications following the implementation of mitigation measures during the decommissioning phase of the proposed Project. In EIA terms the effect is deemed **Not Significant**.

14.3.4 Aviation

The IAA, IAC/DoD and the IAA-ANSP will require the wind turbines to be fitted with an Obstacle Warning Light System. The Applicant will liaise with the IAA and the IAC/DoD upon the receipt of planning permission.

The residual effect on aviation during the construction phase are **Neutral** and **Not Significant** and considered **Not Significant** in EIA terms.

The residual effects associated with the operational phase are deemed **Long-term**, **Slight** and **Imperceptible** which is considered **Not Significant** in EIA terms.

The residual effects are considered to be **Long-term**, **Positive** and **Imperceptible** following the implementation of mitigation measures. The effect is considered **Not Significant** in EIA terms.

15. Shadow Flicker

A shadow flicker assessment for the Project was prepared by Macro Works Ltd., to assess the effects of shadow flicker on nearby sensitive receptors during the construction, operational and decommissioning phases.

15.1 Baseline Environment

Chapter 15 of the EIAR contains a Shadow Flicker analysis. Shadow Flicker refers to the visual disturbance caused when sunlight is intermittently blocked by rotating turbine blades, resulting in fluctuating light levels inside a room, can be a source of annoyance or discomfort for occupants.

Shadow flicker can only occur under specific combined circumstances such as:

- The sun is shining;
- The turbine is directly between the sun and the affected property; and
- There is enough wind energy to ensure that the turbine blades are moving.

To assess this, industry-standard software was used to model the potential occurrence of shadow flicker, taking into account the proposed turbine locations and specifications, as well as the positions of nearby residential properties.

The study area was determined in line with the 2006 Wind Energy Development Guidelines, which recommend assessing properties within a distance of 10 rotor diameters. For this project, this equated to a worst-case scenario of 1,380m extended to 2km for completeness. Within this area, 219 sensitive receptors were identified.

15.2 Assessment of Effects

15.2.1 Construction Phase

Shadow flicker can only occur when the wind turbines are fully constructed and operational hence there is no associated effects with the construction phase.

15.2.2 Operational Phase

While there are subtle differences in the output figures for the three Technology Options, there is no tangible difference between the significance of effect experienced at the sensitive receptors assessed. It is considered that, in the worst-case scenario for each of the three Technology Options, the shadow flicker effects at each receptor which exceeds the WEDG

2006 (a maximum of 51 receptors) is considered of short duration on any exposure but of **Long Term, Adverse** and **Significant**. This is considered **Significant** in EIA terms.

For the receptors that showed potential to experience shadow flicker and did not exceed the WEDG 2006 (a maximum of 26 receptors), the effects are considered **Long Term, Adverse** and **Not Significant**. This is considered **Not Significant** in EIA terms.

It is considered that, in the real-case scenario for each of the three Technology Options, the shadow flicker effects at each receptor is considered **Long Term, Adverse** but are below the exposure threshold acceptable under the WEDG 2006 guidelines for all receptors and therefore **Not Significant**. This is considered **Not Significant** in EIA terms.

15.2.3 Decommissioning Phase

Once the wind turbines have been dismantled appropriately during the decommissioning phase there will be no shadow flicker effects.

15.3 Mitigation Measures and Residual Effects

15.3.1 Construction Phase

As there are no effects associated with shadow flicker during the construction phase. Thus, there is no mitigation measures required, or residual effects expected.

15.3.2 Operational Phase

It is proposed that each turbine is fitted with an automatic shadow detection system during turbine manufacturing which will ensure the turbines will shut down during periods where shadow flicker is predicted at any of the identified receptors. The control system will detect that the sunlight strong enough to cast a shadow and the turbines will automatically shut down and will restart when the potential for shadow flicker is ceased. Should persistent complaints be made in regard to shadow flicker a shadow flicker survey will be carried out.

Upon implementation of the proposed mitigation measures, it is assessed that there would be no significant residual adverse shadow flicker effects as a result of the proposed Project. The proposed Project would align with the Draft WEDG 2019, in accordance with best industry practice and would be well below the WEDG 2006 thresholds. Thus, residual shadow flicker effects are considered to be **Imperceptible** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

15.3.3 Decommissioning phase

The decommissioning phase of the Project will require no mitigation measures as no shadow flicker will occur following the dismantling of the turbines. Hence there is no residual effects noted for this phase of the phase of the development.

16. Cumulative Impact Assessment

The EIAR conducted a Cumulative Effects Assessment using methodologies identified as best practice for onshore wind. No significant adverse cumulative effects are expected from the Project in combination with other existing and approved developments. A notable positive impact is anticipated due to the reduced dependence on electricity generated from fossil fuels. A number of projects were considered in the assessment, it was determined that none of the proposed or ongoing developments and activities have a spatial overlap with the proposed project. Where there is potential temporal overlap for the project lifetime for known developments and activities, any potential for cumulative effects would be limited and it was determined any cumulative effects would be **Not Significant**.

Over the long term, when considered alongside other existing and/or approved renewable energy projects, the cumulative impact of the Project is likely to be significantly beneficial. No additional mitigation measures are required to those already identified in the topic Chapters were identified as required.

17. Interrelated Effects

Chapter 17 – Interrelated Effects of the EIAR assesses interactions between various environmental aspects which could potentially arise as a result of the proposed Project. Interrelated effects address interactions between various environmental aspects, for example, Air Quality and Population and Human Health. While many environmental factors are interrelated to some extent, the significant interactions and interdependencies were considered when preparing the Environmental Impact Assessment Report (EIAR).

Chapters 5-15 of the EIAR identify the potential likely significant environmental effects that may occur in relation to Population and Human Health, Biodiversity, Ornithology, Land, Soils and Geology, Water, Hydrology (Flood Risk Assessment) & Hydrogeology, Air Quality and Climate, Noise and Vibration, Landscape and Visual, Traffic and Transport, Archaeology, Architectural & Cultural Heritage, Material Assets and Shadow Flicker, as a result of the

proposed Project as described in **Chapter 2 – Project Description** of the EIAR. Potential likely significant effects are assessed for the construction, operational and decommissioning phase of the Project.

Table 17.1 overleaf displays potential interactions between various environmental aspects during all phase of the Project.

This section of the EIAR reviews and examines the potential interrelated effects and how these factors might affect each other during the construction, operational, and decommissioning stages of the proposed Project the assessment shows that likely significant adverse effects are not expected.

No other interactions, besides the ones already discussed in chapter 17 are anticipated. Monitoring is proposed during the construction, operation, and decommissioning phases of the proposed Project to capture any change. All monitoring proposals relating to proposed Project were set out in various Chapters of the EIAR, and NIS.



RECEIVED: 13/09/2025

Table 17.1: Potential Interactions (Where C= Construction; D=Decommissioning and O= Operational)

Inter-relationship Matrix		Population & Human Health	Biodiversity	Land, Soil and Geology	Water, Hydrology (Flood Risk Assessment) & Hydrology	Air Quality & Climate	Noise and Vibration	Landscape and Visual	Traffic and Transport	Archaeology, Architectural & Cultural Heritage	Material Assets	Shadow Flicker
Population & Human Health						O	O	O			O	O
Biodiversity					O							
Land, Soil and Geology		C/D	C/D				O					
Water, Hydrology (Flood Risk Assessment) & Hydrology		C/D	C/D	C/D								
Air Quality & Climate		C/D		C/D								
Noise and Vibration		C/D		C/D					O			
Landscape and Visual		C/D								O		
Traffic and Transport		C/D				C/D	C/D					
Archaeology, Architectural & Cultural Heritage				C/D				C/D				
Material Assets		C/ D			C/D	C/D						
Shadow Flicker												
C/D	Construction and/or Decommissioning Phase Interrelated Effect											
O	Operational Phase Interrelated Effect											

18. Summary of Mitigation and Monitoring

Chapter 18 – Summary of Mitigation and Monitoring of the EIAR summarises the proposed mitigation and the proposed monitoring for the construction, operational and decommissioning phases of the Ballyfeeny Green Energy project. The purpose is to provide a reference summary of the required measures which are included in the Construction Environmental Management Plan which accompanies the EIAR (**Appendix 2.1 CEMP**).