

Ballyfeeny Green Energy Project



Environmental Impact Assessment Report Volume II

Chapter 14 – Material Assets September 2025

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Acronyms

Term	Meaning
GCR	Grid Connection Route
TDR	Turbine Delivery Route
EIAR	Environmental Impact Assessment Report
CEMP	Construction Environmental Management Report
WMP	Waste Management Report
DMP	Decommissioning Management Plan
TMP	Traffic Management Plan
EU	European Union
EC	European Commission
EPA	Environmental Protection Agency
ESB	Electrical Supply Board
WEDG 2006	Wind Energy Development Guidelines 2006
Draft WEDG 2019	Draft Wind Energy Development Guidelines 2019
IAA	Irish Aviation Authority
EIA	Environmental Impact Assessment
kV	Kilovolt
HDPE	High-Density Polyethylene
COF	Confirmation of Feasibility
PCE	Pre-Connection Enquiry
ha	Hectares
AOD	Above Ordnance Datum
T01	Turbine 1
T02	Turbine 2
T03	Turbine 3
T04	Turbine 4
T05	Turbine 5
T06	Turbine 6
WD4	Coniferous forestry
GA1	Improved Grassland
GS4	Wet Grassland
WAPCE	Waste Action Plan for a Circular Economy
ESBN	Electrical Supply Board Network
DoD	Department of Defence
BAI	Broadcast Authority of Ireland
TI	Tetra Ireland
OLS	Obstacle Limitation Scale
BRA	Building Restricted Areas
MSA	Minium Sector Altitudes
GASU	Garda Air Support Unit
EAS	Emergency Aeromedical Service
C&D	Construction & Demolition
NWCPO	National Waste Collection Permit Office
SE1	Site Entrance 1
MW	Megawatts
NBI	National Broadband Ireland
CDR	Construction Delivery Route
ECOW	Environmental Clerk of Works
EcoCoW	Ecological Clerk of Works
COR	Certificate of Registration
OLS	Obstacle Limitation Surfaces

Term	Meaning
ICAO	International Civil Aviation Organization
WEEE	Waste Electrical and Electronic Equipment
PTP	Point-To-Point
MSA	Minimum Sector Altitudes
GASU	Garda Air Support Unit
EAS	Emergency Aeromedical Service
CO ₂	Carbon dioxide
ERP	Emergency Response Plan
ECow	Environmental Clerk of Works
LOS	Line-of-Sight
HAS	Health and Safety Authorities
EIA	Environmental Impact Assessment

14. Material Assets

14.1 Introduction

This Chapter assesses the likely significant effects of the proposed Project on material assets during the construction, operational and decommissioning phases.

The proposed Project includes six no. turbines and all associated infrastructure including Turbine Foundations, Turbine Hardstands, Site Access Tracks, Wind Farm Internal Cabling, Grid Connection Route (GCR), Relay Tower, Onsite Substation and works required along the public road network for the two Turbine Delivery Route (TDR) options to facilitate the delivery of turbine components. A full description of the proposed Project is provided in **Chapter 2 - Project Description**

The Applicant is in receipt of a notification of opinion by the Local Authority on design flexibility. The notification is provided in **Appendix 1.5 – DFR-25-1 Notification of Opinion by Local Authority**. This opinion from the Local Authority (LA) confirmed that it was *‘appropriate that the proposed application be made and decided before the prospective applicant has confirmed certain details of the application’*.

Chapter 1 – Introduction, Section 1.6 Approach to Design Flexibility, outlines 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. **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. This Chapter is supported by the following appendices:

- **Appendix 2.1 – Construction Environmental Management Plan (CEMP);**
- **Appendix 2.1.2 – Waste Management Plan (WMP);**
- **Appendix 2.1.3 – Traffic Management Plan (TMP);**
- **Appendix 2.1.4 – Decommissioning Management Plan (DMP);**
- **Appendix 14.1 –Telecommunications Impact Assessment;**
- **Appendix 14.2 – Aviation Review Statement; and**
- **Appendix 14.3 – Eir Civil Engineering Infrastructure Maps for the Site.**

The assessment should be read in conjunction with:

Chapter 7 – Soils and Geology;

Chapter 8 - Water, Hydrology (Flood Risk Assessment) and Hydrogeology; and

Chapter 12 – Traffic and Transport.

14.1.1 Statement of Authority

This section of the EIAR has been prepared by Rowan Engineering Consultants Ltd., (Rowan). Rowan has been providing environmental, ecological and planning services since the company was founded in 1998 to a broad range of clients.

This Chapter of the EIAR has been written by Jessica Boyd. Jessica is a Senior Environmental Consultant, having joined Rowan Engineering Consultants Ltd., in February 2024 with over 6 years' experience in Environmental Impact Assessment, in relation to Pharmaceutical, Aggregate Industry and Onshore Wind Developments. Additionally, Jessica's experience includes Environment and Planning preparation for Onshore Wind, Solar and Battery Energy Storage Systems across Ireland. Jessica holds a BSc in Environmental Management and MSc in Spatial Planning: Cities, Water & Climate Change.

James Massey has reviewed this Chapter. James is a Senior environmental consultant and ecologist with over 25 years' experience, specifically on environment assessment of renewable projects, onshore and offshore in Ireland and worldwide. James is a Fellow of the Institute of Environmental Sciences and a member of several professional organisations. James is a Chartered Environmentalist and Chartered Scientist and holds a PhD, DSc, BSc in Applied Marine Biology and a number of professional and industry qualifications.

Kevin Hayes is the Founding Director and Engineering Manager at Ai Bridges Limited. He has a B.Eng. Hons. - Electronic Eng, M.Eng. Hons. Communications Engineering and Aviation OLS Assessment Training, 2020. Kevin has over 20 years' experience in Telecommunications Network Design and Project Management. He also managed and designed the software prediction model for the TVI & Broadband EMI Interference Studies for Wind Farms. Ai Bridges led by Kevin completed **Appendix 14.1 - Telecommunications Impact Assessment** and **Appendix 14.2 - Aviation Review Statement**.

14.2 Legislation, Policy and Guidance

14.2.1 Legislation

The material assets assessment has been carried out in accordance with all applicable legislation including the following:

- EU Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU) (the EIA Directive);
- The Planning and Development Act 2000 (as amended);
- The Planning and Development Regulations, 2001 (as amended); and
- Waste Management Acts 1996-2024.

14.2.2 Guidance

The material assets assessment has been carried out in accordance with all applicable guidance including the following:

- Roscommon County Development Plan 2022 – 2028;
- 'Best Practice Guidelines for the Irish Wind Energy Industry', published by the Irish Wind Energy Association (2012);
- Information about Electric & Magnetic Fields and the Electricity Transmission System in Ireland, EirGrid;
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission (EC), 2017);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003);
- Gas Networks Ireland & ESB Networks – Dial Before You Dig;
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) EIAR Guidelines, 2022);
- Wind Energy Development Guidelines 2006 (WEDG 2006);
- Draft Wind Energy Development Guidelines 2019 (Draft WEDG 2019);
- Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects (2021); and
- A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020–2025.

14.2.3 Policy

The overarching planning policy relevant to the proposed Project is detailed in **Chapter 4 – Planning and Policy**. A Planning Statement has been provided with the planning application documents.

The Roscommon CDP 2022-2028 outlines policies to improve Infrastructure, Transport and Communications as follows:

- **(ITC 7.34)** *“Support Irish Water in the implementation of their capital investment programme to ensure the timely delivery of water and waste-water infrastructure for the county.”*
- **(ITC 7.40)** *“Ensure that all new developments connect to the public wastewater infrastructure, where available, and to encourage existing developments that are in close proximity to a public sewer to connect to that sewer. These will be subject to a connection agreement with Irish Water.”*
- **(ITC 7.43)** *‘Require all new development to provide a separate foul and surface water drainage system and to incorporate sustainable urban drainage systems where appropriate in new development and the public realm.’*
- **(ITC 7.48)** *‘Ensure new development is adequately serviced with surface water drainage infrastructure which meets the requirements of the Water Framework Directive, associated River Basin Management Plans and CFRAM Management Plans. Furthermore, the Council will undertake its obligations under the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017.’*
- **(ITC 7.57)** *“Support the implementation of the Connacht Ulster Region Waste Management Plan 2015- 2021 and any subsequent updates;”*
- **(ITC 7.58)** *“Encourage and support waste prevention, minimisation, reuse, recycling and recovery as methods of managing waste.”*
- **(ITC 7.60)** *“Promote the principles of the circular economy in minimising waste going to landfill and maximise waste as a resource, with prevention, preparation for reuse, recycling and recovery prioritised in that order, over the disposal of waste.”*
- **(ITC 7.64)** *“Support the delivery of high capacity Information Communications Technology Infrastructure, broadband connectivity and digital broadcasting, throughout the county, in order to ensure economic competitiveness for the enterprise and commercial sectors and in enabling more flexible work practices.”*
- **(ITC 7.65)** *“Encourage co-location of antennae on existing telecommunications structures. The shared use of existing structures will be required where the numbers of masts located in any single area is considered to have an excessive concentration.”*

- (ITC 7.66) “Ensure that telecommunications structures are located to minimise and /or mitigate any adverse impacts on communities, public rights of way and the built or natural environment.”

14.3 Methodology

14.3.1 Consultation

Scoping and consultation have been carried out in support of the proposed Project and in line with the EIA Directive, together with the EPA Guidelines and with due regard for the *Environmental Impact Assessment of Projects: Guidance on Scoping* (European Commission, 2017).

An EIA Scoping Report was issued to 48 Statutory and non-statutory stakeholders via email in September 2024, of which 10 responded. All scoping consultation responses are provided in **Appendix 1.3 – Scoping Consultation Responses**.

Additional direct consultation was undertaken by Ai Bridges with telecommunication providers and aviation authorities with respect to the proposed Project. **Appendix 14.1 – Telecoms Impact Assessment** and **14.2 – Aviation Review Statement**, provides a summary of consultations undertaken with regards telecommunication and aviation.

Table 14-1 summarises issues raised during this consultation process and relevant to material assets associated with the proposed Project.

Table 14-1: Consultation responses relevant to material assets.

Stakeholder Details	Stakeholder Comment	How comment has been addressed in the EIAR
Irish Aviation Authority (Response to the EIA Scoping Report)	the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to: (1) agree an aeronautical obstacle warning light scheme for the wind turbine development, (2) provide as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location and (3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection."	The applicant acknowledges the response from the Irish Aviation Authority (IAA) and confirms that the matters raised in consultation will be undertaken in the event that planning permission is granted All matters raised in regard to lighting are fully detailed within Appendix 14.2 – Aviation Review Statement.

Stakeholder Details	Stakeholder Comment	How comment has been addressed in the EIAR
Uisce Éireann (Response to the EIA Scoping Report)	Summary of Scoping Document Key Points – Uisce Éireann Considerations <u>Grid Connection Routes</u> Route 1: Via R371 to Sliabh Bawn 110kV substation – may impact underground infrastructure; a Diversions Enquiry is required; and Route 2: To Lanesborough 110kV substation via Lanesborough town – may interact with wastewater infrastructure and a water treatment plant. Potential impact to 250mm HDPE piping near Shannon must be considered; a Diversions Enquiry is also needed. <u>Planning & Consultation Requirements</u> - A Diversions Enquiry and Confirmation of Feasibility (COF) letter from Uisce Éireann are mandatory before submitting a planning application; and - Uisce Éireann will review the final Environmental Impact Assessment Report (EIAR) and provide a statutory response. <u>EIAR Scope Requirements</u> <u>The applicant must address the following in the EIAR:</u> - Protection measures for drinking water sources; - Waste sampling strategy for backfilled material; - Environmental management and incident response plans;	The proposed Project has been designed in line with best practice and Uisce Éireann's technical standards. Non-potable water for construction will be tankered onsite, with potable water supplied in bottles. Self-contained toilets with double-lined foul water tanks will be used, regularly serviced, and removed post-construction. The Grid Connection Route (GCR) has been designed to avoid known water infrastructure, including the Ballyfeeny Reservoir and water mains along the L6018. Separation distances compliant with Uisce Éireann specifications will be maintained, and directional drilling will be used where necessary.

Stakeholder Details	Stakeholder Comment	How comment has been addressed in the EIAR
	• Assessment of impact on water services and capacity; • Required infrastructure upgrades; • Trade effluent discharge plans; • Management of surface water and avoidance of combined sewer impacts; • Identification and protection of Uisce Éireann assets; • Potential impacts on receiving waters and protected areas; • Avoid building over existing water infrastructure; survey and maintain separation as per Irish Water standards; and • Submission of Pre-Connection Enquiry (PCE) and Diversions Enquiry where needed. <u>Additional Notes</u> • Uisce Éireann prohibits new surface water discharges to combined sewers; and • Connection agreements (new or revised) must be established before development begins.	

Stakeholder Details	Stakeholder Comment	How comment has been addressed in the EIAR
	Summary of Scoping Document Key Points – Department of Defence Considerations: - The Minister for Defence is responsible for the regulation of military aviation, whereas the IAA is responsible for the safety regulation of civil aviation including aerodromes. The IAA does not have remit for military aviation installations. Safeguarding of military flight operations and installations is intended to protect both current and future aircraft operations and also to take account of the security requirements associated with some of those operations. - All turbines should be illuminated by Type, C, Medium intensity, Fixed Red Obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. - Obstacle lighting should be incandescent, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near infra-red range of the electromagnetic spectrum, specifically at or near 850 nanometres of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light. - Any IAC requirements are separate requirements are separate to IAA requirements	Matters raised on IAC restricted areas are addressed in Section 2.11.1 of Appendix 14.2 – Aviation Review Statement. All matters raised in regard to lighting are fully detailed within Appendix 14.2 – Aviation Review Statement.

14.3.2 Approach to Assessing the Material Assets

The EPA Guidelines stipulate that material assets comprise built services and infrastructure. Traffic is included because traffic consumes transport infrastructure. The European Commission Guidance refers to numerous examples of material assets encompassing buildings, other structures, mineral resources, and water resources. The EIA Directive defines material assets as ‘resources that are valued and that are intrinsic to specific places; they may be of either human or natural origin.’ In accordance with the EPA Guidelines, this chapter of the EIAR aims to focus the assessment solely on elements which could potentially have an effect on the environment and resources.

In line with the aforementioned guidance, this assessment outlines the potential effects of the proposed Project on waste management and built services which comprise the following:

- Land Use – Agricultural and Forestry;
- Waste Management;
- Utilities (gas, water, electricity, broadband);
- Telecommunications;
- Aviation; and
- Quarries,

The EIAR outlines various potential effects on material assets in respective chapters, based on the guidance provided in **Section 14.2**; therefore, these effects will not be addressed within this Chapter.

Potential effects on material assets are also discussed in the following documents:

- **Chapter 6 - Biodiversity**
- **Chapter 12 – Traffic and Transport**
- **Appendix 2.1 – Construction Environmental Management Plan (CEMP)**
- **Appendix 2.1.2 – Waste Management Plan (WMP)**
- **Appendix 14.1 – Telecoms Impact Assessment**
- **Appendix 14.2 – Aviation Review Statement**

14.3.3 Land Use – Agricultural and Forestry

The proposed wind farm site is located at Ballyfeeny, c.4.5km northeast 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 encompasses approximately 49.774 hectares (ha) and is accessed off the R371 road.

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.

Land Use within the Site consists of agricultural pastureland for cattle and sheep and parcels of coniferous forestry. Approximately 33.15 hectares (ha) of coniferous forestry (WD4), 29.56ha of improved agricultural grassland (GA1), and 15.09ha of wet grassland (GS4) was recorded within the study area. (Refer to **Chapter 6 – Biodiversity**).

Please refer to **Chapter 7 – Land, Soils and Geology** where the assessment of likely significant effects associated with land and land use has been undertaken. Land Use is not assessed further in this chapter.

14.3.4 Roads and Traffic

With regards to roads and traffic the EPA EIAR Guidelines 2022 outline;

“In Directive 2011/92/EU this factor included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.”

For the purposes of this EIAR and with respect to the traffic and transport requirements of a wind farm, a separate EIAR chapter is prepared to assess any likely significant effects with respect to traffic and transport associated with the wind farm Site, the Turbine Delivery Route and the Grid Connection Route.

Please refer to **Chapter 12 –Traffic and Transport** where the assessment of likely significant effects associated with roads and traffic network has been undertaken. Roads and traffic is not assessed further in this chapter.

14.3.5 Waste

The assessment of the effects resulting from waste generation due to the proposed Project was carried out using the methodology outlined in applicable guidance documents. This assessment was supported by a thorough review of documentation to identify current and anticipated waste management requirements, including national and regional waste policies, strategies, management plans, legislative obligations, and other relevant reports.

A desktop study was carried out which comprised the following:

- Review of policy and legislation which constitutes the legal framework for resource and waste management in Ireland;
- Identification of waste streams that will be generated during all phases of the proposed Project; and
- Identification of operational permitted waste management facilities proximal to the proposed Project.

Waste management in Ireland is governed by a combination of EU, national, and regional legislation, which sets out the requirements for the handling, transport, and treatment of waste materials. The primary EU legislation in this area includes the Waste Framework Directive (2008/98/EC), which has been transposed into Irish national law and sets the overarching framework for waste management in Ireland. Additionally, the Waste Management Act 1996 (as amended) serves as the key piece of national legislation governing waste management in Ireland. Under this Act, waste disposal and recovery activities must be authorised accordingly.

The Act establishes a framework aimed at enhancing waste management practices, including recycling and recovery. It places a general obligation on all individuals to ensure that waste is not held, transported, recovered, or disposed of in a way that could cause environmental pollution. Amendments to the act have enhanced the effectiveness of waste management policies, promoting environmental protection as required under EU directives.

The Irish government has released a series of policy documents aimed at improving waste management practices and supporting the country in meeting EU recycling and waste disposal targets. The most recent of these include the Waste Action Plan for a Circular Economy (WAPCE) – Waste Management Policy in Ireland 2020- 2025, was published in 2020 and the Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects, published in 2021. These plans mark a strategic shift away from traditional waste disposal, focusing instead on earlier stages in the production cycle. The Best Practice Guidelines emphasises waste prevention, in line with the Waste Hierarchy. The

Waste Hierarchy states that the preferred option is prevention and minimisation, followed by re-use, recycling, recovery, with the least desirable option being disposal to landfill or incineration. The Waste Hierarchy is detailed in **Figure 14-1**.

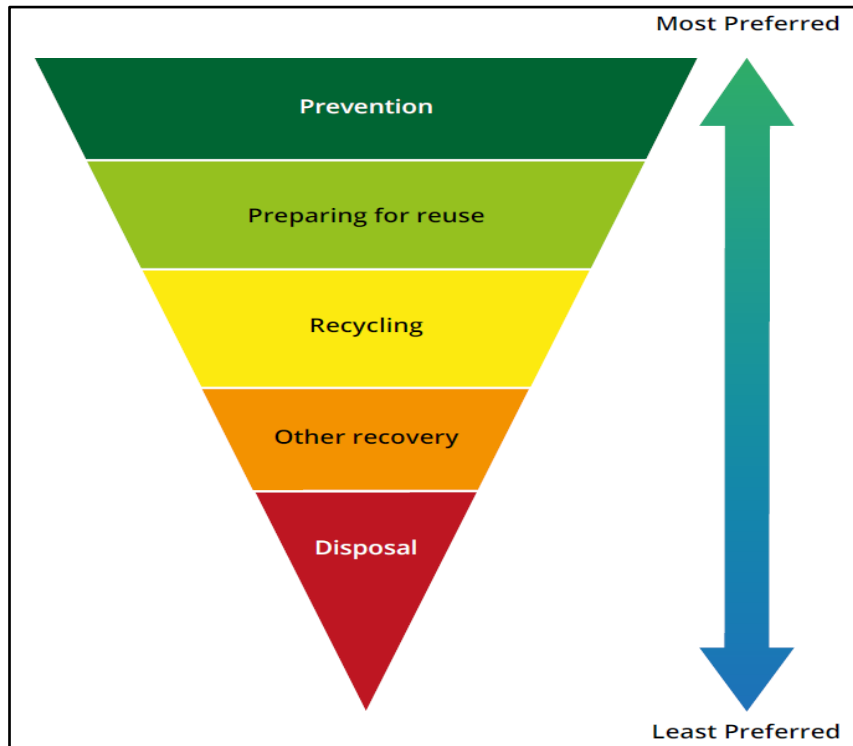


Figure 14-1: Waste Hierarchy (Source: EPA)

14.3.6 Utilities

A scoping exercise was undertaken in consultation with key stakeholders, including ESB Networks (ESBN), Uisce Éireann, Gas Networks Ireland, the Commission for Regulation of Utilities, and relevant local authorities. Full details of the scoping exercise are provided in **Appendix 1.2 – Scoping Report** and **Appendix 1.3 – Scoping Consultation Responses**.

A response was received from Uisce Éireann during the scoping process. For further information on the consultation responses received, please refer to **Table 14-1**.

As part of the design phase of the proposed Project data requests to Eir, Gas Networks Ireland and ESB Networks were made to gain copies of the built infrastructure within the Site, its environs and along the Grid Connection Route (GCR).

The following technical standards and best practice documents were followed to ensure an accurate assessment and design of the proposed Project with respect to existing utilities;

- Uisce Éireann – Water Infrastructure Standard Details;

- ESB Networks – Functional Specification for the installation of 38kV Underground Power Cables for Contestable Works;
- Gas Networks Ireland – Guidelines for Designers and Builders – Domestic Sites;
- Gas Networks Ireland – Guidelines for Designers and Builders – Industrial and Commercial; and
- Road Management Office – Guidelines for Managing Openings in Public Roads.

14.3.7 Telecommunications

Telecom Operator Consultations commenced in September 2022 to assist in the identification of telecommunication infrastructure that could potentially be impacted by the proposed Project. During consultation, operators were advised to raise any matters they may have in terms of potential impacts to their networks as a result of the wind farm Site. **Table 14-2** displays a list of operators contacted together with those who responded to highlight any potential impacts in relation to the proposed Project.

Table 14-2: Telecom Operators Consulted

ID	Operator	Response Received	Observations
1	2RN	Yes	No issues regarding transmission links; however, 2RN have requested that a protocol document be signed should the wind farm go ahead (regarding the TV broadcast service in the area).
2	Airwave	Yes	No Impact
3	An Garda Síochána	No	No Impact
4	Broadcast Authority of Ireland (BAI)	Yes	No Impact
5	BT Ireland	Yes	No Impact
6	CIE	Yes	No Impact
7	Dept. of Defence	No	No response. (DoD is a statutory consultee and have previously stated that they will only respond to the Planning Authority under an RFI at Planning Application Stage.)
8	Eir	Yes	Eir have raised a concern regarding one Licensed PTP microwave radio link.

9	Enet	Yes	No Impact
10	ESB Networks	No	No Impact
11	Imagine Broadband	Yes	No Impact
12	Irish Aviation Authority (IAA)	No	No Impact
13	Irish Water	Yes	No Impact
14	Roscommon County Council	No	No Impact
15	Tetra Ireland (TI)	Yes	No Impact
16	Three Ireland	Yes	Three Ireland have raised concern regarding four licensed PTP microwave radio links.
17	Viatel	Yes	No Impact
18	Virgin Media	No	No Impact
19	Vodafone Ireland	Yes	Vodafone have raised concern regarding five licensed PTP microwave radio links.

Ai Bridges was appointed to undertake a telecommunications impact assessment of the operational phase of the Project, included in **Appendix 14.1 – Telecommunications Impact Assessment**.

Key stages involved in the preparation of a telecommunication impact assessment include the following:

- Telecom operator consultations;
- Field surveys;
- Desktop survey network modelling and analysis; and
- Report generation.

Ai Bridges assessed the effects of the proposed turbine layout on the Telecom Operator radio links for three operators including Eir, Three Ireland and Vodafone Ireland. Links for these operators were assessed as these comprise the operators who forwarded observations during consultation, as detailed in **Table 14-2**. There was one radio link description for Eir, four radio

links for Three Ireland and five radio links for Vodafone Ireland. As a result, these three telecom operator networks required a detailed technical analysis. One Radio link operated by Three Ireland was impacted by the proposed turbines and three radio links operated by Vodafone Ireland were impacted by the proposed turbines. No impacts were identified for Eir's radio link. Refer to **Appendix 14.1 – Telecommunications Impact Assessment** for further detail.

14.3.8 Aviation

Ai Bridges were appointed to prepare an Aviation Review Statement of the Operational phase of the Project, included within **Appendix 14.2 – Aviation Review Statement**.

As part of the review, the following subjects were considered:

- Annex 14 - Obstacle Limitation Surfaces (OLS);
- Annex 15 – Aerodrome Surfaces;
- Building Restricted Areas (BRA);
- Minimum Sector Altitudes (MSA);
- Instrument Flight Procedures;
- Permitted Wind Farms in vicinity of Proposed Wind Farm;
- Communications, Navigation and Radar Surveillance Systems Safeguarding;
- Flight Inspection and Calibration;
- IAA - Aeronautical Obstacle Warning Light Scheme;
- Department of Defence Aeronautical Safeguarding; and
- Garda Air Support Unit (GASU) and Emergency Aeromedical Service (EAS).

14.3.9 Quarries

Materials required for the construction of the proposed Project will be quarry based products such as crushed stone aggregate for the construction of Site Access Tracks, Turbine Hardstands, Temporary Construction Compounds etc.

The construction of the Onsite Substation, Relay Mast foundation and Turbine Foundations will require ready-mix concrete, concrete blocks, and other stone, sand and concrete based products.

A desktop assessment has been completed to identify quarry-based products surrounding the proposed Project that may be used as a source of materials during the construction and operation phases of the proposed Project. Local quarries have been identified within 40km of

the proposed Project and are identified in **Chapter 2 – Project Description** and shown in **EIAR Figure 2-8 Quarries within 40km of the wind farm Site (Volume 4)**.

Please refer to **Chapter 7 – Land, Soils and Geology** where the assessment of likely significant effects for the proposed Project with regards to local quarries has been undertaken. Quarries and Quarry based products are not assessed further in this chapter.

14.3.10 Determining the Significant of Effects Description and Significance of Effects

The effects on Material Assets are described as outlined in **Chapter 1 – Introduction**. The significance of an effect was determined by considering the magnitude of the impact and the sensitivity of the receptor, with the classifications assigned in accordance with the EPA Guidelines, including **Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant** and **Profound**.

In considering the effects, criteria such as quality, duration, probability and type were also considered. These criteria are detailed in Table 3.4 of the EPA Guidelines, which are also noted within **Table 1-6 of Chapter 1 – Introduction**. As per the guidelines, all categories of these terms do not need to be used for every effect.

For the purpose of this assessment, effects rated as '**Significant**' or above are considered to be **Significant** in EIA terms. Effects identified as '**Moderate**' significance or below are considered **Not Significant** in EIA terms.

In order to determine the significance of effect, the EPA Guidelines has provided a matrix which compares the character (magnitude) of the potential impact to the sensitivity of the receiving environment, see **Figure 14-2**.

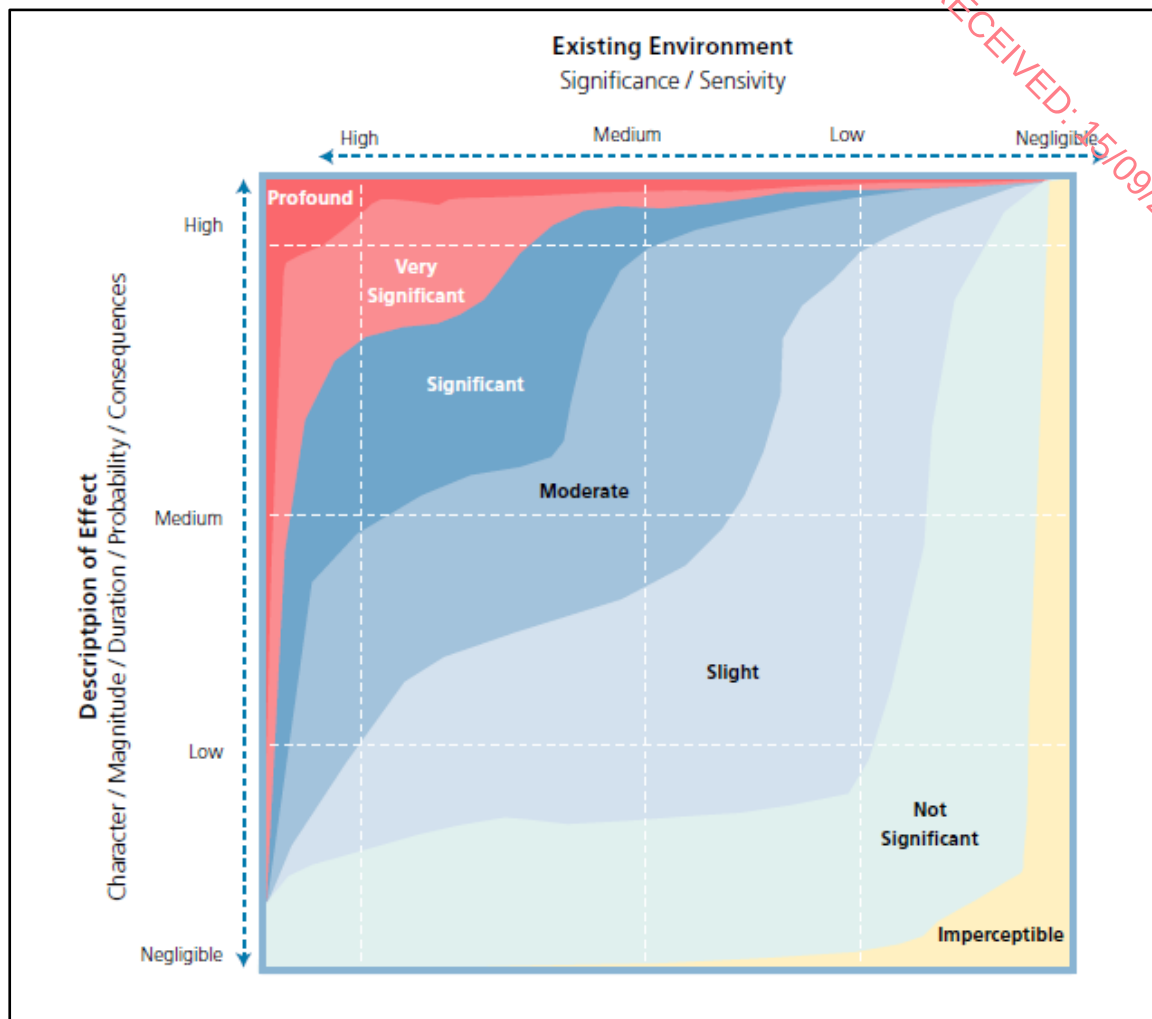


Figure 14-2: Typical Classification of the Significance of Effects (EPA, 2022)

14.4 Baseline Environment

14.4.1 Waste

The Waste Hierarchy is an integral part of European and National Waste management regulation and policy. The hierarchy stipulates that the preferred option is prevention and minimisation, followed by re-use, recycling, recovery, with the least desirable option being disposal to landfill or incineration.

Prevention is the most preferred option and can be implemented by minimising the volume of waste through various means of control. If prevention is not an option in certain circumstances, reuse is the subsequent preferred option. Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill. Where reuse is not viable, recycling is preferred. All waste that is produced

during the construction phase will be segregated and placed in material specific waste skips to facilitate off-site recycling.

When recycling is not feasible, Other Recovery is the preferred alternative. This involves repurposing materials for uses different from their original intent. For example, in terms of the proposed Project, an example of other recovery includes processing felled timber for use in other industry and mulching and shredding of cut tree branches, hedging and other and vegetation for topsoil enrichment. Another example includes waste incineration with energy recovery.

The least preferred option in the waste hierarchy includes disposal. Materials to be disposed of will be sent to a registered landfill or incinerator. Disposal to a registered landfill or incineration without energy recovery will be used only after all other waste hierarchy options have been considered and found not to be suitable.

Roscommon County Council is the Local Authority responsible for setting and controlling waste management activities for the area. This is governed by the conditions stipulated in the Connaught-Ulster Region Waste Management Plan 2015 – 2021 and the WACPE.

The Connaught-Ulster Region Waste Management Plan stipulates targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The strategic targets have been set in the plan to exhibit a clear focus and transparent measures for success within the region. The targets encompass aspects such as prevention, recycling and landfilling.

The EC (Waste Directive) Regulations 2011, as amended, implement the EU Waste Framework Directive (2008/98/EC). A primary aim of the Directive related to Construction and Demolition (C&D) waste, with a goal of a minimum of 70% by weight of non-hazardous C&D waste must be prepared for reuse, recycled or undergo other material recovery, including backfilling operations using waste to substitute other materials by 2020. The 70% target for material recovery (excluding energy recovery) of C&D waste was met in Ireland in 2018, with a recovery rate of 78% (EPA, 2020).

As of 2022, most C&D waste underwent final treatment; only 6% was exported abroad for final treatment. Greater prevention of construction and demolition (C&D) waste can be achieved by adopting best practice circular construction approaches. This involves designing projects to minimise waste from the outset, increasing the use of the By-products Regulation (Article 27), and maximising the efficient use of materials specified for projects (EPA, 2022).

A desktop study was undertaken to review the licensed waste facilities proximal to the proposed Project. Waste management facilities in Ireland are required to hold authorisation in adherence to the Waste Management Act 1996, (as amended). A review of the EPA database and the National Waste Collection Permit Office (NWCPO) database was carried out to identify permitted waste facilities located near the Project site. **Table 14-3** displays the permitted waste facilities in proximity to the proposed Project. There are no facilities located within 5km of the Site.

Table 14-3 Permitted waste facilities proximal to the proposed Project

Site name	Site address	Licence/Permit No.	Status	Activity undertaken	Distance from site
Laragan Farm Ltd	Laragan, Elphin, Roscommon	P0515	Licensed	Agricultural	6km northwest
Knockhall Farms Ltd	Knockhall, Rooskey, Roscommon	P0705	Licensed	Agricultural	4.7km northeast
Glanbia (FP) Ltd	Ruskey, Roscommon	P0182	Licensed	Industrial	7.6km northeast
Atlantic Mills Ltd	Fishertown, Clondra, Longford	P0221	Licensed	Industrial	8.2km southeast
JMW Farms (IRL) Ltd	Ballinakill, Killashee, Longford	P1082	Licensed	Industrial	11.6km southeast

It must be noted that there is one Uisce Éireann wastewater discharge treatment plant within 5km of the proposed Project - Strokestown Wastewater Treatment Works (Reg No. D0228), situated c. 4km west of the Site at its nearest point.

14.4.2 Utilities

In order to identify any existing utility services, desktop and onsite surveys have been completed within the wind farm Site, the GCR and TDR including gas, water, electricity and broadband. **Appendix 2.1 – CEMP** details existing underground services, including water mains, which will require crossings during the installation of the GCR. Details with respect to utility crossings along the GCR are provided in **Planning Drawing 23604-562, 563 and 564**.

Gas Infrastructure

There is no gas mains located within the Site, along the GCR or its environs. The closest gas mains to the proposed Project is approximately 14.56km at Longford. (**Figure 14-3**)



Figure 14-3: Closest Gas Network to the proposed Project

Gas Networks are not present at nodes requiring temporary accommodating works along the Turbine Delivery Route and no works are expected along the Construction Delivery Route and any infrastructure will remain undisturbed. No likely significant effects are predicted with respect to the Gas Network and therefore, it has been scoped out for further assessment.

Water Infrastructure

Following a data request detailed information on the water services was provided by Uisce Éireann for the proposed Project.

Ballyfeeny Water Reservoir (**Figure 14-4**) is located c. 62m southeast from the proposed Onsite Substation. Roscommon County Council refurbished the Reservoir in 2021 which remains in use. The reservoir is maintained by Roscommon County Council and Uisce Éireann and constitutes part of the regional water supply. Ballyfeeny Water Reservoir is a secondary storage source and does not supply the immediate area. The primary storage reservoir for the area surrounding the proposed Project encompasses Kiltristan Hill Reservoir, located c. 4.5km northwest of the Site at its nearest point.

Water mains are present within the public road network surrounding the wind farm Site and along the GCR (**Figure 14-4**).

A single water main runs within the R371 from site entrance 1 (SE1) to the entrance to Sliabh Bawn 110kV Substation, along the proposed Grid Connection Route.

Two water mains run along the L6018 from the cross with the R371 to the Ballyfeeny Water Reservoir. (**Figure 14-5**)

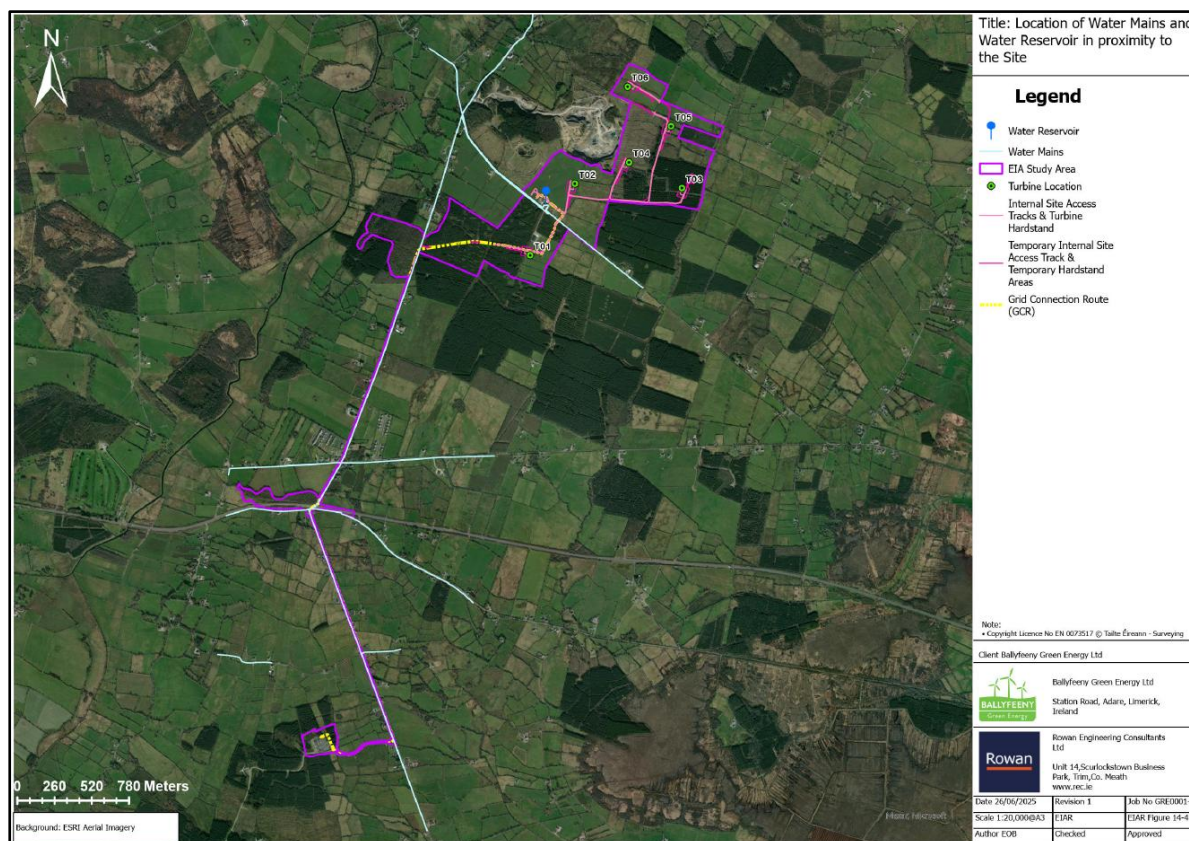


Figure 14-4: Location of Water Mains and Water Reservoir in proximity to the Site (Ref: EIAR Figure 14-4 (Volume 4)).

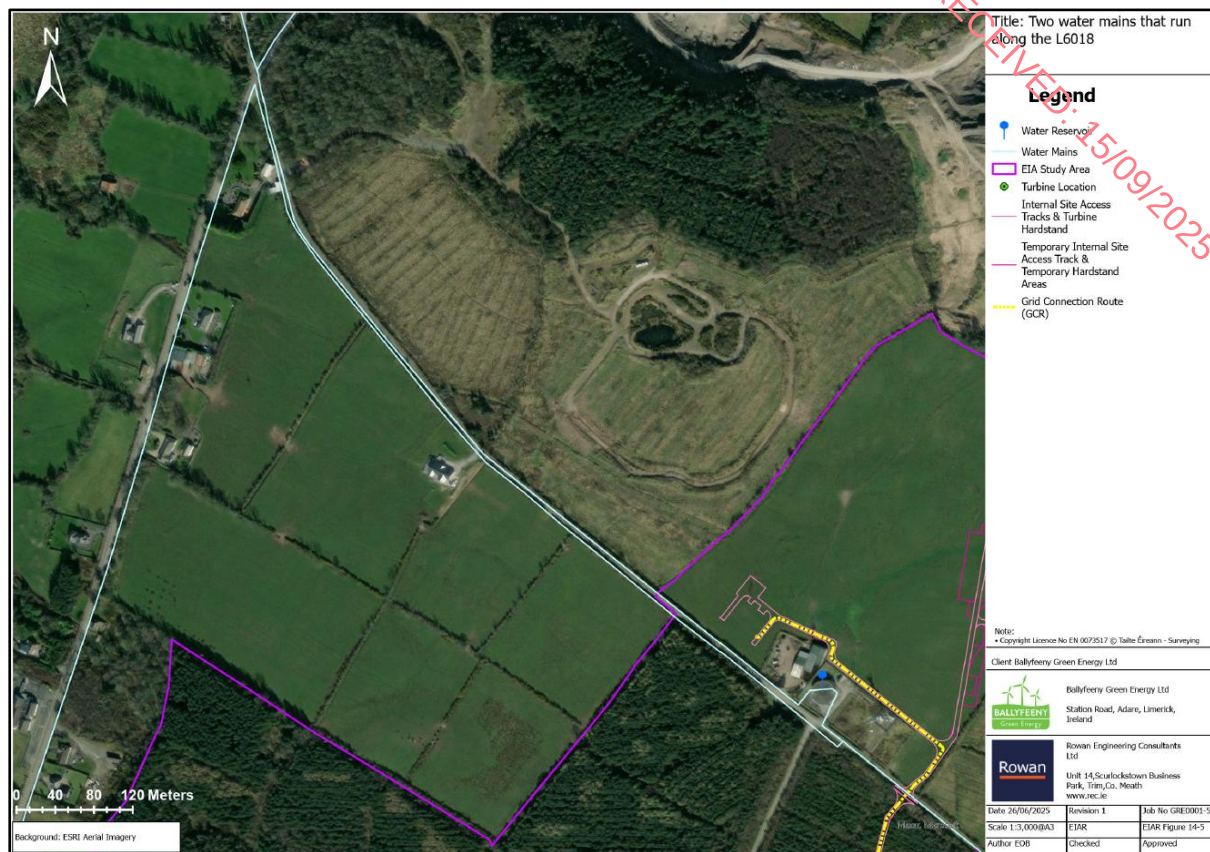


Figure 14-5: Figure showing Two water mains that ruin along the L6018 (Ref: EIAR Figure 14-5 (Volume 4))

Electricity Infrastructure

The Irish electricity network is split into two main components, the Transmission Network and the Distribution Network.

The transmission network operates at high voltages (110kV, 220kV and 400kV), to transport large volumes of electricity over long distances from points of generation such as wind farms, and fossil fuel generation stations etc. The Transmission Network is operated by Eirgrid and is owned and maintained by ESB Networks.

The Distribution Network traditionally connects generation stations such as wind farms with a maximum export capacity of less than 40MW to the Transmission Network. The Distribution Network is also responsible for supplying electricity to the end user or demand customer, including commercial and domestic customers. The Distribution Network typically operates at lower voltages (10kV, 20kV and 38kV). The Distribution Network is owned, operated and maintained by ESB Networks.

The Project is proposed to connect to the Transmission Network at the existing Sliabh Bawn 110kV Substation that is located approximately 5km southeast of Strokestown, Co. Roscommon (**EIAR Figure 2-11 (Volume 4)**). The proposed GCR 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 and the connection to Sliabh Bawn 110kV substation, will comply with the grid operator's specifications and technical and operational requirements. Detailed drawings are provided where the GCR requires crossing of existing water courses, utility services, public roads and other structures, utilising Open-Dig and Directional Drilling methods, as shown in **Planning Drawing 23604 - 562 to 564 (Part 1)**.

The Climate Action Plan 2025 has reaffirmed the target of achieving 80% of electricity demand being met by renewable sources by 2030. This includes improving the national electricity grid to increase the percentage of variable renewables allowed on the grid, by making the grid stronger and more flexible.

The proposed Project is not proposed to utilise any elements of the existing Distribution Network. Therefore, no likely significant effects are predicted with respect to the Distribution Network and therefore, it has been scoped out for further assessment.

Broadband Infrastructure

In November 2018, the Government of Ireland signed the contracts to launch the National Broadband Plan, with an initiative to deliver high speed broadband to all premises within Ireland.

National Broadband Ireland (NBI) is tasked with being responsible for the design, build and operation of the high-speed broadband network. NBI is delivering high-speed fibre broadband to homes, farms and businesses across Ireland.

The National Broadband Plan has been rolled-out to the homes and businesses surrounding the proposed Project (See **Figure 14-6 Example of NBI rollout Status surrounding the proposed Project**). NBI have utilised existing infrastructure where possible including the Eir civil infrastructure by installing the fibre cables on existing poles, ducts and exchanges. Maps showing the Eir civil infrastructure that is utilised by NBI surrounding the proposed wind farm Site and GCR are shown in **Appendix 14.3 – Eir Civil Engineering Infrastructure Maps for the Site**.

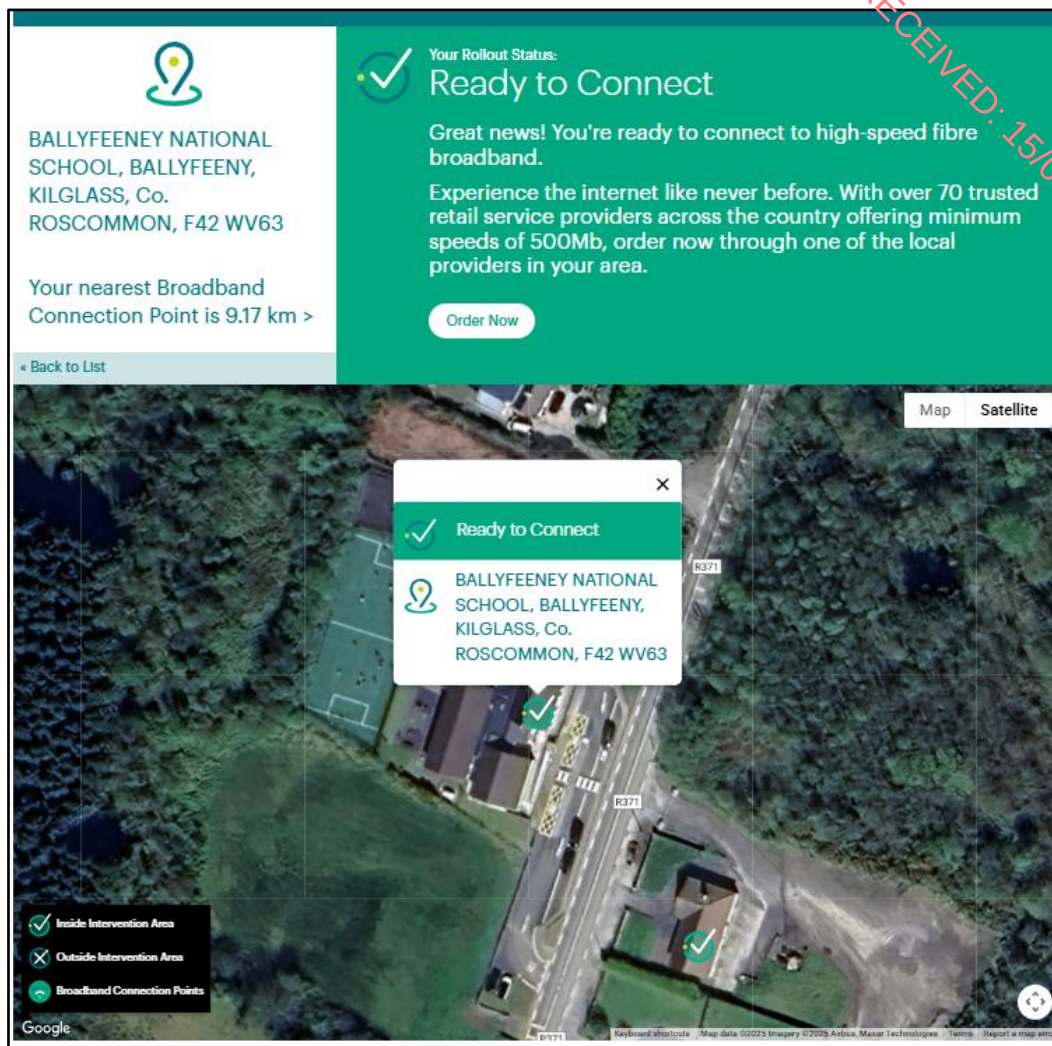


Figure 14-6: Example of NBI rollout Status surrounding the proposed Project

The Broadband Network is not anticipated to be impacted at nodes requiring temporary accommodating works along the TDR and no works are expected along the CDR. No likely significant effects are predicted with respect to the Broadband Network along the TDR and therefore, it has been scoped out for further assessment.

14.4.3 Telecommunications

In order to determine existing telecommunications proximal to the site, a Telecommunications Impact Assessment Report was prepared by Ai Bridges (**Appendix 14.1**). The Report concluded that there are three Telecom Operators with networks in the vicinity of the turbines that require a detailed analysis: Eir, Three Ireland and Vodafone Ireland Network.

Telecommunications mast-sites with network infrastructure that could potentially be affected by the proposed Project were identified and field surveys of these mast-sites was carried out. During the field surveys, radio antennas with bearings in the direction of the proposed Project

were noted. During the consultation process, nineteen telecom operators were contacted, of which thirteen responded. Based on information gathered during field survey assessments and the consultation process, a desktop impact analysis was conducted using radio planning and modelling software to assess potential effects on telecommunication networks. The analysis identified ten licensed microwave radio links traversing the proposed wind farm Site. Of these, four radio links are likely to be impacted by the proposed wind turbine layout, as detailed in **Table 14-4**.

Table 14-4: Microwave radio links in vicinity of proposed Project

Operator	Network Description	Impact of wind farm Site	Mitigation
Eir	Licensed PTP microwave radio links from Ballyfeeny to Edercloon	No Impacts	N/A
Three Ireland	Licensed PTP microwave radio links from Mullaghmacormick to Sliabh Bawn.	Impacted By T01 & T02	Relay the radio link via an existing Telecoms Mast-Sites (e.g. the existing mast-sites at Lissavaddy).
	Licensed PTP microwave radio links from Ballyfeeny to Ballyleague.	No Impacts	N/A
	Licensed PTP microwave radio links from Ballyfeeny to Lissavaddy.	No Impacts	N/A
	Licensed PTP microwave radio links from Ballyfeeny to Strokestown.	No Impacts	N/A
Vodafone	Licensed PTP microwave radio links from Mullaghmacormick to Sliabh Bawn.	Impacted by T01 & T02	Relay the radio link via an existing Telecoms Mast-sites (e.g. the existing mast-sites at Lissavaddy).
	Licensed PTP microwave link from Sliabh Bawn to Ballyfeeny.	Impacted by T01	Route the Vodafone service between Sliabh Bawn and Ballyfeeny via a new telecoms mast located within the

			proposed wind farm site boundary.
	Licenced PTP microwave radio link from Ballyfeeny to Lissawaddy.	No impacts	N/A
	Licenced PTP microwave radio link from Ballyfeeny to Roosky.	Impacted by T02, T04 & T05	Route the Vodafone service between Ballyfeeny and Roosky via a new telecoms mast located within the wind farm site boundary.
	Licenced PTP microwave radio link from Ballyfeeny to Edercloon.	No impacts	N/A

14.4.4 Aviation

The proposed Project is approximately 53km southeast from Ireland West Airport. **Figure 14-7** depicts shows the proposed wind farm site with respect to Ireland West Airport and the IAA radar stations at Dooncarton, Shannon, Woodcock Hill and Dublin Airport.



Figure 14-7: Location of the proposed Project relative to airports proximal (Adapted from Appendix 14.2 Aviation Review Statement)

The Irish Aviation Authority (IAA) has responded to the consultation and provided specific requirements to be addressed in the event that planning permission is granted. Further detail is provided in **Table 14-1**.

14.5 Embedded Mitigation

Through the development of the proposed Project, measures have been adopted as part of the evolution of the design to avoid or reduce adverse impacts on the environment. These measures are referred to as 'embedded mitigation' and are effectively built into the impact assessment. Where additional mitigation measures are proposed, these are detailed after the impact assessment (**Section 14.6**).

Refer to **Chapter 3 – Consideration of Reasonable Alternatives** for a detailed account of primary mitigation relating to material assets. The process included a multi staged assessment which was guided by the 'Methodology for Local Authority Renewable Energy Strategies'

Report from the SEAI (SEAI, 2013) and which included the consideration of environmental effects.

The site selection and wind farm layout design were developed and selected to minimise potential impacts on telecommunications and aviation including micro-siting of turbines where possible to avoid any impacts. **Chapter 3 – Consideration of Reasonable Alternatives** outlines the process of site selection and iterative design to minimise potential impacts.

14.6 Assessment of Effects

14.6.1 Do-Nothing Scenario

Land Use – Agricultural and Forestry

If the proposed Project were not to go ahead, there would be no effect on the existing land use. Commercial forestry operations would continue at the Site as would the existing agricultural use.

Waste

If the proposed Project were not to go ahead, there would be no effect on waste infrastructure.

Utilities

Water Infrastructure

If the proposed Project were not to go ahead, there would be no effect on existing water infrastructure.

Electricity Infrastructure

If the proposed Project were not to go ahead, there would be no offsetting of the fossil fuel mix in the national electricity infrastructure. The proposed Project would not contribute to achieving 80% of electricity demand from renewable sources by 2030. There would be no provision of additional electricity in the local area and the Project would not provide support to help make existing grid infrastructure stronger and more flexible.

Broadband Infrastructure

If the proposed Project were not to go ahead, there would be no effect on existing broadband infrastructure.

Telecommunications

If the proposed Project were not to go ahead, there would be no effect on existing telecommunication operations.

Aviation

If the proposed Project were not to go ahead, there would be no effect on existing aviation operations.

14.6.2 Construction Phase

Waste

During the construction phase, waste streams which cannot be recycled on site and incorporated into the works will be managed, collected, segregated and stored in separate areas at the Temporary Construction Compound and removed off site by licensed waste contractors. Waste management facilities are set-out in **Planning Drawing 23604-570 (Part 1)**.

The municipal waste stream on site will be generated from the Site Canteen and Site Offices. Municipal waste is non-hazardous and will be stored in covered containers such as Wheely Bins to provide protection from wind, rain and animal interference. Numerous containers or Wheely Bins will be provided to facilitate separation of waste streams so that differing waste types can be recycled.

Sanitary provisions for the Temporary Compound will consist of self-contained toilet and wash facilities equipped with integrated foul wastewater holding tanks. These units will be double-lined for environmental protection and will be regularly managed and serviced. Foul wastewater will be periodically removed by pumping into a foul tanker vehicle and transported to a designated sewage treatment facility by a suitably licensed waste collection contractor. An automatic alert system will be installed to monitor the tank levels and notify operators when the tank approaches full capacity. Sanitary waste generated on-site is classified as non-hazardous. All sanitary facilities, including the holding tank, will be fully removed from the site upon completion of the construction works.

Waste fuel, oils and chemicals will be stored for short durations on site in a covered bunded container located on the bunded refuelling area. Subsequently, these will be collected and disposed of by a suitably licensed waste contractor. Where possible, waste fuel, oils and chemicals will be recycled, where this is not possible, they will be treated to ensure it can be disposed of safely and in compliance with EPA requirements.

Waste metals from items such as concrete reinforcing, structural steel and fencing will have commercial value and will be re-used or recycled using a suitably licensed waste contractor.

Further details on waste streams generated during the construction phase are detailed in **Appendix 2.1.3 – Waste Management Plan** and within **Appendix 2.1 – CEMP**.

Significant groundworks are required for the construction of Access Tracks, Turbine Foundations, Onsite Substation together with Internal Cabling required; and the installation of the GCR from the wind farm Site to Sliabh Bawn 110kV Substation. The volume of excavation from construction of the wind farm Site will be approximately 62,731m².

Any materials excavated on site during the construction works (i.e. topsoil / subsoil stripping for track construction, turbine foundations/hardstanding areas) will be stored and re-used on site. As such, off-site disposal of this material is not expected. Excavated materials from all construction activities will be temporarily stockpiled at locations shown on the planning drawings during construction and subsequently reused on site for backfill/re-grading or re-vegetation

Timber waste will be stored separately. Any pallets will be returned to the supplier for reuse. Offcuts/trimmings will be used in formwork where at all possible. A container for waste wood, covered where possible will be located at the compound/other storage areas. This waste will be collected by the waste contractor and will forward it for wood recycling.

The contractor will liaise with the Local Authority on all matters related to the management of excavated soil to ensure full compliance throughout the construction phase. The Environmental Clerk of Works (ECoW) will be responsible for ensuring that all outlined mitigation measures are implemented and adhered to on-site.

The principles of the EU Waste Framework Directive 2008 waste hierarchy will be applied to circumvent and minimise the generation of excavated soil. Every effort will be made to ensure that, where practicable, excavated materials are recovered and reused on-site or in other suitable applications. Disposal to a licensed landfill facility will only be considered after all other options within the waste hierarchy have been assessed and deemed unsuitable.

Any material arising from the construction works within the wind farm site or the GCR that is classified as waste will be managed in accordance with the Waste Management Act 1996 (as amended). This includes the appropriate removal, reuse, recycling, recovery, or disposal of the material in line with relevant legislative requirements. The volume of waste requiring recovery or disposal will determine whether the receiving facility must operate under a Certificate of Registration (COR), waste facility permit, or waste licence.

The Project is expected to generate a variety of both non-hazardous and hazardous waste materials during site excavation and construction activities. In addition to construction related waste, general site housekeeping and packaging, as well as typical municipal waste generated by construction personnel, e.g. food waste, will also contribute to overall waste volumes. These materials will be temporarily stored at the temporary construction compound, pending collection by an appropriately licensed waste contractor. Hazardous wastes, such as fuels, oils and chemicals, will be stored in a bunded area within the Temporary Construction Compound. Waste metals also constitute hazardous waste and thus will be separated and stored in a metal skip prior to being recycled.

Improper management or storage of waste materials has the potential to cause littering or pollution, including contamination of soil and water resources, together with risks to local biodiversity, both within the wind farm Site and its environs. Without appropriate mitigation measures in place, the resulting environmental effects are likely to be **Short-term, Adverse and Moderate**. In EIA terms, the effect is considered as **Not Significant**.

As previously outlined, all waste generated during the construction phase will be transported to appropriately registered, permitted, or licensed waste facilities for processing, including segregation, reuse, recycling, recovery, and/or disposal, as appropriate. There are several permitted waste facilities located within the region and in neighbouring County Longford that are authorised to treat both hazardous and non-hazardous waste (refer to **Tables 5-4 and 5-5 of Appendix 2.1.2 – Waste Management Plan**). While most construction materials can be recycled or recovered, the absence of mitigation measures to reduce waste generation and prioritise reuse, recycling, and recovery practices could place additional pressure on local and regional waste infrastructure. In the absence of mitigation, 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

The proposed Project was designed following the best practice documents and technical standards.

As outlined within **Appendix 2.1 – CEMP**, it is proposed that that non-potable water is tankered onto site and stored in a holding tank for use in the onsite self-contained toilets. The water will be utilised for flushing toilets and cleaning the Temporary Construction Compound.

Potable water will be brought onsite in bottles for use in the canteen facilities.

The self-contained toilets and wash areas will be provided for sanitary provisions with integrated foul wastewater holding and will be managed as follows:

- Low-flush toilet cisterns will be used to reduce the volume of wastewater produced;
- The foul wastewater holding tanks will be double lined;
- These facilities will be managed and serviced regularly;
- Foul water will be removed on a regular basis by pumping into a Foul Tanker Vehicle and disposing of to a designated sewage treatment plant by a suitably licensed foul waste collection contractor;
- An automatic alert system will be used to monitor the holding tank to alert the operator if the tank is nearing full capacity; and
- The sanitary provisions, including the foul wastewater holding tank will be removed from site on completion of the construction works.

Foul water will be removed on a regular basis by pumping into a Foul Tanker Vehicle and disposing of to a designated licensed waste facility.

With regard to Ballyfeeny Water Reservoir, the proposed Project has been designed to avoid any direct interactions during the construction phase. Works associated with the Project will not impact the water supply to or from the reservoir, nor will the works impact the storage capacity within the reservoir. The effect on the Ballyfeeny water reservoir is considered to be **Neutral** and **Not Significant**. In EIA terms, the effect is considered as **Not Significant**.

The GCR has been designed following the best practice documents and technical standards. The underground cable has been designed to avoid impacts on the underground water infrastructure where possible. As the GCR leaves the Onsite Substation it crosses over the L6018 and continues along a private forestry track to site entrance 1 (SE1). This route was chosen to avoid any potential impacts to the 2 water mains located along the L6018 to the Ballyfeeny Water Reservoir. From SE1 to the entrance to Sliabh Bawn 110kV substation a single water main is located within the public road carriageway.

The underground cable for the GCR is typically 600mm wide by 1.24m deep. Separation distances in accordance with Uisce Éireann's standards and specifications will be achieved in all areas. Detailed drawings are provided where the GCR requires crossing of existing water courses, utility services, public roads and other structures, utilising Open-Dig and Directional Drilling methods, as shown in **Planning Drawing 23604 - 562 to 564 (Part 1)**.

The effect on the water mains infrastructure associated with the GCR is considered to be **Short Term, Moderate** and **Not Significant**. In EIA terms, the effect on the existing water Infrastructure is **Not Significant**.

Electricity Infrastructure

Electricity for the construction phase of the proposed Project will be provided by temporary generators. The Project is not anticipated to impact the existing Distribution Network for the construction of the wind farm.

The Grid Connection Route is proposed to connect to the Transmission Network at the existing Sliabh Bawn 110kV substation. Sliabh Bawn 110kV substation is a live station. ESBN safety rules will apply at the substation building. ESBN will be responsible for all works within the existing Sliabh Bawn 110kV substation and routing the grid connection cable from the last joint bay on the R371 to the substation compound. These works would include;

- Installation of additional air insulated switchgear electrical apparatus for transformer to connect to existing busbar within the Sliabh Bawn IPP substation building;
- Installation of 38kV/110kV grid transformer, and associated bund;
- Blast & fire wall between transformer and existing substation building;
- Installation of 3no 38kV distribution bays, approx. 7m in height, each consisting of disconnects, circuit breakers, current & voltage transformers;
- Installation of short section of 38kV underground cable through existing substation compound (to connect new 38kV distribution bays to new grid transformer);
- Installation of approximately 580m of 38kV underground cable from the 38kV distribution bays to connect to the final joint bay on the R371; and
- All associated ground works to facilitate this installation – digging, concrete pours, amendments to existing earth grid.

A temporary grid outage will be required in order to facilitate the connection of the proposed Project to the national electricity grid. The effects to the Transmission Network are considered to be **Short-Term** and **Moderate**. In EIA terms, the effect on the existing electricity infrastructure is **Not Significant**.

Broadband Infrastructure

The fibre network utilises existing Eir civil infrastructure. No Eir infrastructure currently exists within the wind farm Site. The Eir civil infrastructure follows the public road network utilising existing poles and ducts where possible. It is not anticipated that the GCR or the wind farm will impact the Eir civil infrastructure or the Broadband Infrastructure. The effects on the broadband infrastructure are considered to be **Short-term** and **Slight**. In EIA terms, the effect on the broadband infrastructure is considered as **Not Significant**.

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**.

14.6.3 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 as displayed in **Figure 14-8**.

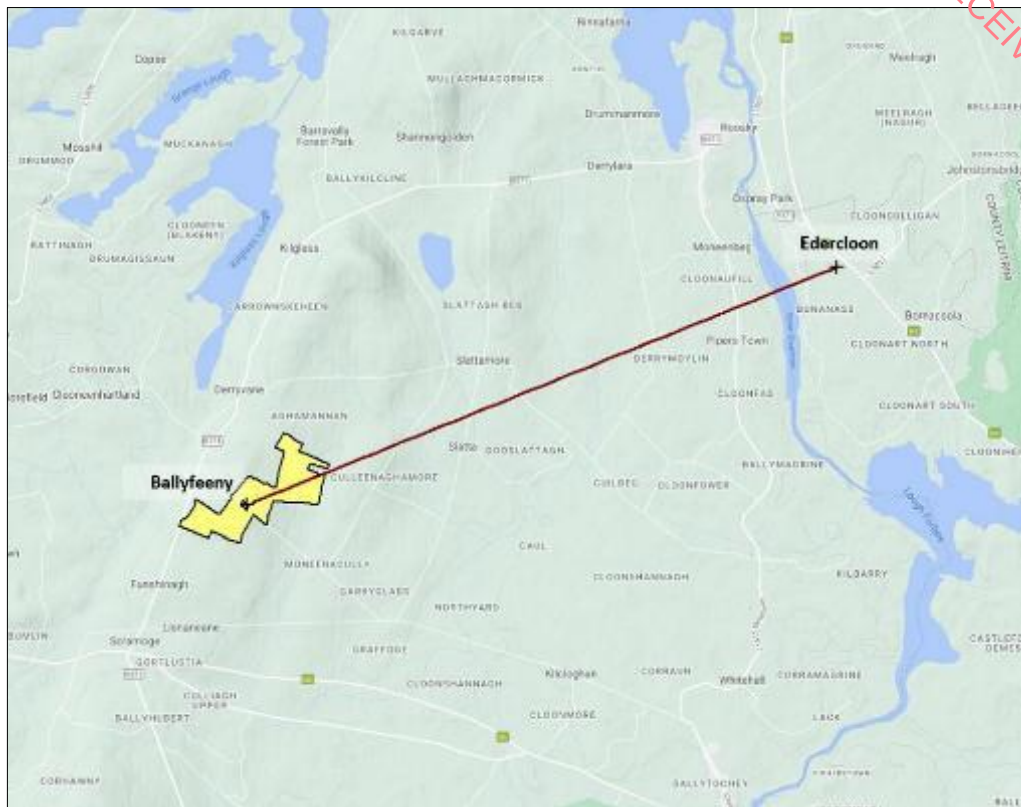


Figure 14-8 Eir Radio Network – Plan View

Figure 14-9 overleaf displays a close-up plan view of the Eir microwave radio link network relative to the proposed wind turbines. Desktop survey analysis indicates that there is a clearance distance of over 30 m between the Fresnel Zone of the radio link and the blade-tip of the nearest turbine (T04). At this distance, there will be no effect on the radio link.



Figure 14-9 Eir Network - Plan View

Table 14-5 shows an analysis summary of the Eir Network

Table 14-5 Eir Network Analysis Summary

Link ID	Link Description	Link Type	Wind farm effects
Eir Link 1	Ballyfeeny to Edercloon	PTP	No effects

The Three Ireland network proximal to proposed Project consists of four PTP microwave radio links. The radio links are displayed in **Figure 14-10**.

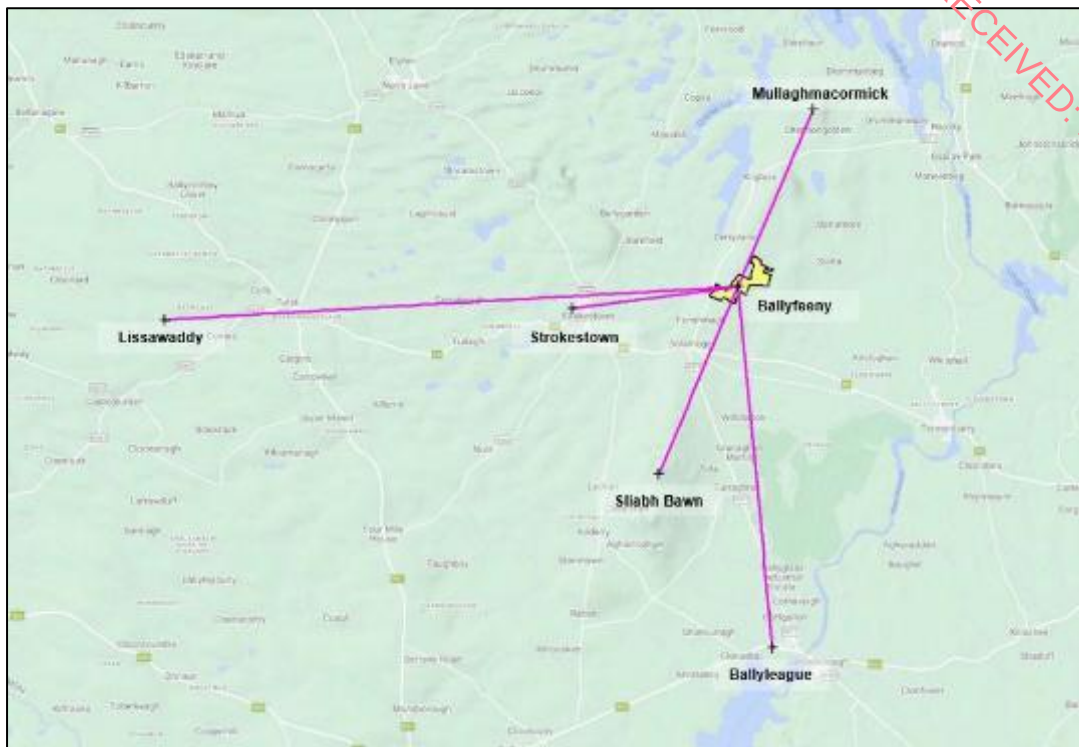
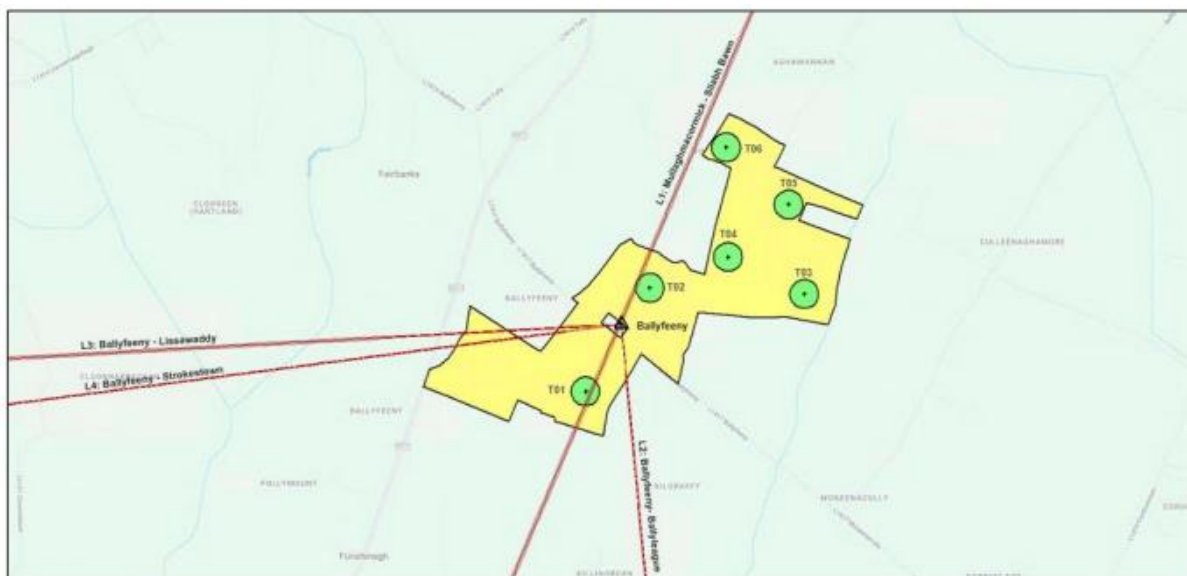


Figure 14-10 Three Ireland Radio Network – Plan View

Figure 14-11 overleaf displays a close-up Plan View of the Three Ireland microwave radio link network relative to the proposed wind turbines. The Plan View indicates that Links 2, 3 and 4 would not be effected by the proposed turbine layout. However, Link 1 (Mullaghmacormick to Slabh Bawn) would be impacted by two turbines (T01 & T02).



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Figure 14-11: Three Ireland Network – Plan View

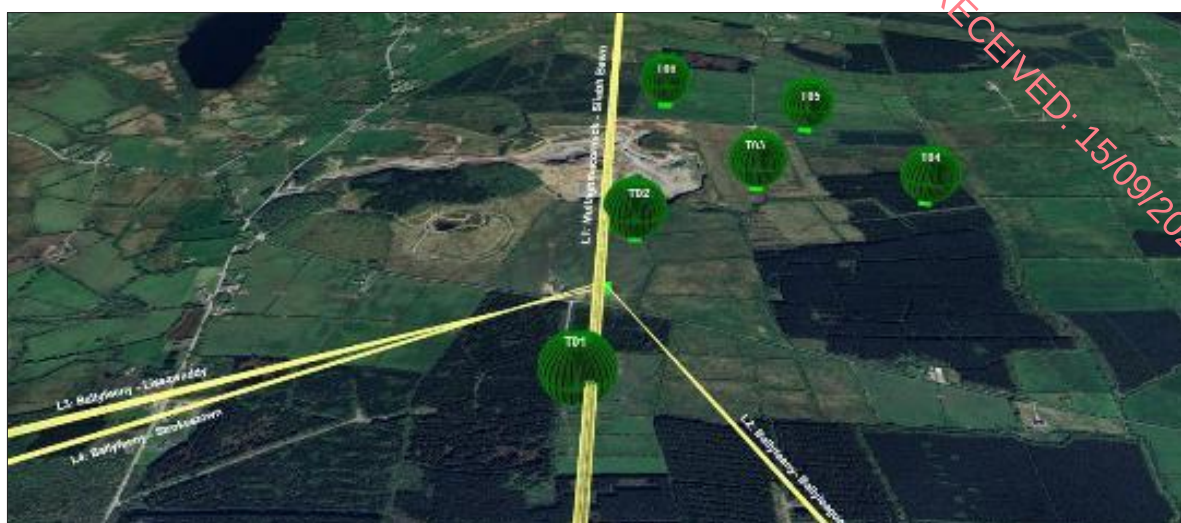


Figure 14-12: Three Ireland Network -3D View

Table 14-6 provides a brief summary of the network analysis for the Three Ireland network in the vicinity of the proposed wind farm Site.

Table 14-6 Three Ireland Network – Analysis Summary

Link ID	Link Description	Link Type	Wind farm effects
Three Ireland Link 1	Mullaghmacormick to Sliabh Bawn	PTP	Impacted by Turbines T01 and T02 (mitigation required as detailed in Section 14.7).
Three Ireland Link 2	Ballyfeeny to Ballyleague	PTP	No impact
Three Ireland Link 3	Ballyfeeny to Lissawaddy	PTP	No impacts
Three Ireland Link 4	Ballyfeeny to Strokestown	PTP	No impacts

The Vodafone network in the vicinity of the proposed wind farm consists of five PTP microwave radio links. A plan view of the Vodafone network and separately a close-up Plan View of the Vodafone network is shown in **Figure 14-13** and **Figure 14-14**, respectively.

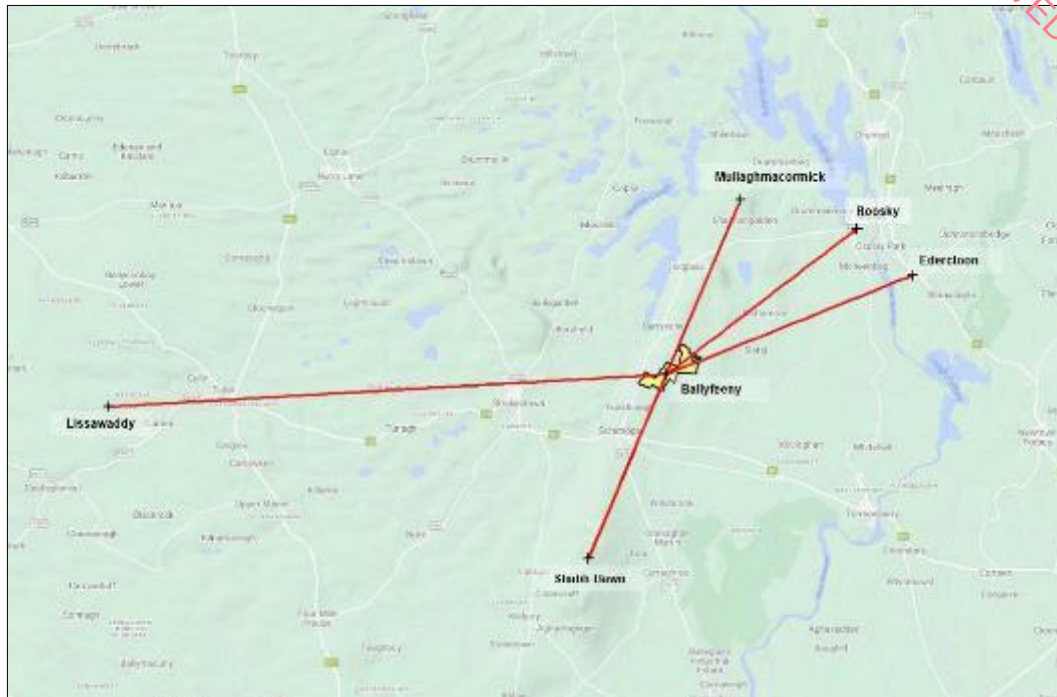


Figure 14-13: Vodafone Ireland Radio Network

Figure 14-14 shows a close-up Plan View of the Vodafone microwave radio link network relative to the proposed wind turbines. The Plan View indicates that Links 1, 2 and 4 would be impacted by the proposed turbine layout.

To further assess the Vodafone network, a 3D analysis was carried out, as displayed in **Figure 14-15**, the results of which confirmed that Links 1, 2 and 4 would be impacted by the proposed turbine layout. Mitigation Measures would be required to offset the impact of the proposed turbines on this radio link.



Figure 14-14: Vodafone Network – Plan View

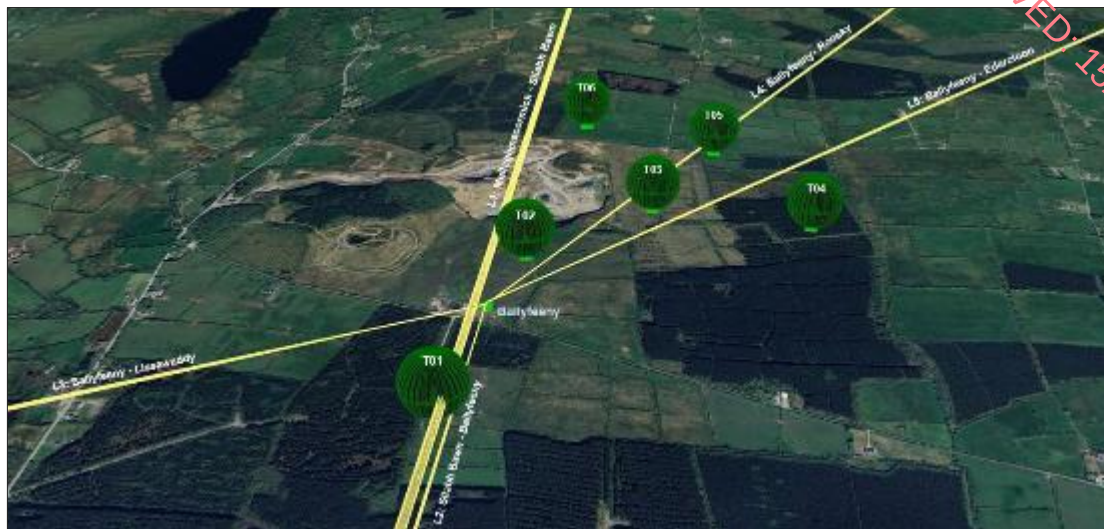


Figure 14-15: Vodafone Network – 3D View

Table 14-7 summarise the network analysis for the Vodafone Ireland Network in the vicinity of the proposed wind farm Site.

Table 14-7: Vodafone Network – Analysis Summary

Link ID	Link Description	Link Type	Wind farm Impacts
Vodafone Link 1	Mullaghmacormick to Sliabh Bawn	PTP	Impacted by T01 and T02
Vodafone Link 2	Sliabh Bawn to Ballyfeeny	PTP	Impacted by T01
Vodafone Link 3	Ballyfeeny to Lissawaddy	PTP	No impact
Vodafone Link 4	Ballyfeeny to Roosky	PTP	Impacted by T01, T03 and T05
Vodafone Link 5	Ballyfeeny to Edercloon	PTP	No impact

In summary, 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. As displayed in **Table 14-3** of **Section 14.3.3** 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

Operational wind farms can pose potential effects to aviation. The rotating blades of wind turbines may interfere with certain aviation activities, especially those that rely on radar systems. Additionally, the location and height of turbines can obstruct flight paths and affect the performance of communications, navigation, and surveillance equipment. According to the Irish Aviation Authority (IAA) Guidance Material Annex 14, “*Structures that extend to a height of 150m or more above ground elevation should be regarded as an obstacle*”. The IAA requires that all structures over 100m in height require lighting of an obstacle to warn aviation traffic. The three Technology Options proposed range from 156m – 160m tip height, and thus aviation warning lighting will be mandated once a planning decision has been made.

The **Aviation Review Statement (Appendix 14.2)** provided an aviation review for the proposed wind farm Site together with impacts, as displayed in **Table 14-8**.

Table 14-8: Aviation Review Summary

Item	Impact	Summary
Annex 14 - Obstacle Limitation Surfaces (OLS)	None	The proposed turbines are located outside the OLS Surfaces for Ireland West Airport.
Annex 15 - Aerodrome Surfaces	None	Turbines at the proposed wind farm would not penetrate the ICAO Annex 15 Aerodrome Surface for Ireland West Airport. All obstacles, if more than 100 meters above terrain for a distance of 45km from center point of Ireland West Airport, need to be registered in the IAA Air Navigation Obstacle Data Set. The IAA may request that the turbines be included in the IAA Aeronautical Electronic Obstacle Data Sets. It should be noted that other existing tall structures nearer to Ireland West Airport (e.g. existing turbines at Sliabh Bawn, Roosky, Largan Hill etc.) are also located within the ICAO Annex 15 Aerodrome Surface and are already listed in the IAA Aeronautical Electronic Obstacle Data Sets.
Building Restricted Areas	None	A review shows that Ballyfeeny is more than 45 km from the BRA for Ireland West Airport. At this distance there would be no impacts due to the proposed wind farm.
Minimum Sector Altitudes (MSA)	None	A review of the Minimum Sector Altitudes (MSA) shows that the proposed wind farm is outside 25 nautical miles from the VOR/DME at Ireland West Airport. Therefore, the MSA of the relevant sector will not be affected and there will be no impact on the published MSA altitude figures.

Instrument Flight Procedures	None	A review shows that the instrument flight procedures for RWY 08 and RWY 26 standard instrument departures are unlikely to be impacted for precision aircraft.
Communication and Navigation Systems	None	As the proposed wind farm is over 50 km from the Localizer and transmitting antenna at Ireland West Airport, it is very unlikely that the proposed development will have any impact on these ATS communications and radio navigational aids.
Radar Surveillance Sensors	None	The proposed wind turbines would be located in Assessment Zone 4 (EuroControl guidelines) for SSR and PSR instruments and a detailed Impact Assessment will not be required.
Flight Inspection and Calibration	None	The annual Flight Inspection Procedures will not be impacted by the proposed wind farm as the proposed site is sufficiently far from the ARP at Ireland West Airport that there would be no impacts. In addition, the Flight Inspection Procedures should already account for existing obstacles.
IAA - Aeronautical Obstacle Warning Light Scheme	None	If permitted, the wind farm should be fitted with Aeronautical Obstacle Warning Lights in accordance with civil aviation industry and regulatory standards. Subject to further consultation with the IAA and DoD.
DoD Aeronautical Safeguarding	None	The proposed wind farm is not located in an IAC restricted area and it is highly unlikely that turbines at the proposed site would have any impact on IAC aviation activity. The DoD have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the IAC. A review of the specified IAC Aeronautical Obstacle Warning Light Scheme is subject to a further consultation with IAA and DoD.
Garda Air Support Unit and Emergency Aeromedical Service	None	An assessment of GASU and EAS operations indicate that they are unlikely to be impacted by the proposed wind farm development.

As can be seen from **Table 14-8** there were no impacts identified on any items as a result of the proposed Project.

As detailed within **Appendix 14.2 – Aviation Review Statement**, in the event of a planning consent, the IAA and IAC are likely to request lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed Project would be considered as an en-route obstacle. The IAA-ANSP will require wind turbine obstacles to be fitted with an Obstacle Warning Light System. As a result, the potential effect on aviation for the operational phase is **Neutral, Moderate** and **Long-term**. In EIA terms, the effect is considered as **Not Significant**.

14.6.4 Decommissioning Phase

Waste

During the decommissioning phase of the Project, the impacts are expected to be similar to those identified for the construction phase. Turbine foundation plinths will be removed to a depth below the existing ground level and restoration of this area to agricultural land or suitable

for forestry replanting. Furthermore, onsite cabling will be removed and buried ducting will be left in place to prevent the need for excessive groundworks. This approach represents the least disruptive method of decommissioning. Since the site will have already been previously altered, the consequential effects are considered **Neutral, Imperceptible, and Long-term**. In EIA terms, the effect is considered as **Not Significant**.

During the decommissioning phase, the relevant components will be removed from site for re-use, recycling or waste disposal. Prior to any work being undertaken on wind turbines, they will be disconnected from the grid by the site operator in conjunction with ESB Networks and Eirgrid. The dismantling and removal of wind turbines of this scale is a specialist operation which will be undertaken by the turbine supplier that completed the installation where possible. It is anticipated that the Onsite Substation will remain in use as part of the ESB network, the Grid Connection Route connecting it to the Sliabh Bawn 110 kV substation will also be retained. Additionally, the proposed telecommunication Relay Tower will be retained onsite after the project decommissioning date is reached together with the associated installed telecommunication equipment. The Relay Tower is not proposed to be decommissioned and will remain in place as it will form part of the telecommunication network in the area.

The assumption in the EIAR is that the Turbine Foundations will remain in-situ as it is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine could result in environmental nuisances such as noise, vibration and dust.

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 reseeded/replanted as agreed at the time with the landowners and the Local Authority.

It is intended that the electrical and fibre optic cabling between the turbines and the Onsite Substation will be removed from the cable ducting during decommissioning. The cabling will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum and recycled. Further detail on decommissioning of the proposed Project is detailed within **Appendix 2.1.4 – DMP**.

Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor. There will be no hazardous waste

generated or the need for complex environmental remediation. Waste generated during the decommissioning phase will likely have a **Moderate, Adverse, Temporary** effect. In EIA terms, the effect is considered as **Not Significant**.

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**.

Electrical 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. If the wind farm is decommissioned fully this will result in the loss of clean renewable electricity being exported from the proposed Project to the national electricity grid following decommissioning. The effect would be **Slight, Positive** and **Long Term**. In EIA terms, the effect is considered to be **Not Significant**.

Broadband 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 broadband 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.

During the decommissioning phase, effects on utilities are deemed as **Slight, Neutral** and **Long Term**. In EIA terms, the effect is considered as **Not Significant**.

Telecommunications

The Relay Tower will remain in place as it will form part of the telecommunication network in the area and will not be decommissioned. Therefore, no likely significant effects are anticipated on the Telecommunications Network during the decommissioning phase.

Aviation

As part of decommissioning, it is proposed to remove the above ground infrastructure associated with the wind turbines. This will include removal of the wind turbines including the blades, hub, nacelle and wind turbine towers and also removal of the above ground section of the Turbine Foundation called the 'plinth'. The requirement for Aviation Lighting will no longer be required during the decommissioning phase.

The proposed Project would no longer be considered as an en-route obstacle. As a result, the likely effect on aviation during the decommissioning phase is considered to be **Neutral, Positive and Long-term**. In EIA terms, the effect is considered as **Not Significant**.

14.7 Mitigation Measures

14.7.1 Waste

In terms of waste, a **WMP** has been prepared for the proposed Project (Refer to **Appendix 2.1.2**). The **WMP** details best practice procedures which will be implemented to manage waste generated as part of the construction phase of the proposed Project. The waste management plan is considered a 'live' document and as such will be reviewed and updated as required during the pre-construction detailed design phase as well as the construction, operation and decommissioning phases.

Updates to the WMP may be required due to changes in legislation or due to changes in waste management best-practices. Updates may also be required to incorporate measures for compliance with any conditions of planning by the Local Authority.

Mitigation measures outlined in the WMP include;

To prevent contamination from fuel, oil, chemical and cementitious materials, the following measures will be adopted:

During concrete pours, the following will be enforced:

- Concrete pours shall not occur during forecasted heavy rainfall, and the pour area must be drained of any water. In case of spills, temporarily block dirty water drains in the immediate area, monitor and adjust the pH levels of water in settlement ponds using CO₂ entrainment if necessary, and clear any spillage immediately, depositing it in the chute wash down area; and
- Delivery trucks, tools, and equipment will be cleaned at designated areas within a controlled site area, with the concrete truck chute cleaning area lined with impermeable

material to protect groundwater from pollution (refer to **Planning Drawing 23604-405**)

– **Part 1;**

For fuel, oils and chemicals

- Ensure all fuels, oils, and chemicals are stored in bunded areas at least 50 meters from watercourses or drainage areas, with a capacity of 110% of the total volume.
- Construct bunded areas in accordance with AS 1940:2004 standards;
- The refuelling of construction machinery and vehicles will be carried out in designated refuelling areas using a prescribed re-fuelling procedure;
- Refuelling and maintenance activities will be prohibited near watercourses or drainage areas to minimise contamination risks;
- Refuelling and maintenance activities will be undertaken on impervious surfaces or bunded trays to prevent spills from seeping into the ground;
- Appropriate spill kits will be readily available and stocked. Spill kits will be maintained on the mobile fuel truck and at numerous locations on the Site; and
- Only mechanically sound vehicles, equipment and machinery on Site will be used on site

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 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;
- The ECoW will notify the appropriate regulatory body such as Roscommon County Council and the EPA, if deemed necessary; and
- A record of all environmental incidents will be kept on file by the ECoW and the Main Contractor.

Ready-mix concrete deliveries to site will be planned in advance and supervised during concrete discharge and vehicle chute washout. Ready-mix concrete mitigation measures including waste mitigation are set out in the Environmental Method Plans (EMP) which are contained in **Appendix B** of the **CEMP (Appendix 2.1)**.

14.7.2 Utilities

In regards to utilities mitigation, ongoing consultation with Uisce Éireann, Gas Networks Ireland, EirGrid, ESBN, and other pertinent local service providers will continue throughout the Project. All works will adhere to any requirements or guidelines issued by these providers. The appointed contractor will be responsible for ensuring that utility services are not disrupted, except where prior agreement has been obtained. As the Project design progresses, coordination and engagement will be maintained between the project team and ESBN, Uisce Éireann, and other relevant service providers within the area.

Mitigation measures through avoidance by design has minimised impacts on the utilities surrounding the proposed Project, including the design of the GCR and TDR.

Best practice procedures will be followed to ensure the protection of the existing utilities and the health and safety of the site operatives. Such measures will include;

- Confirmatory drawings for all existing services will be sought upon consultation with ESB Networks, Uisce Éireann and Eir/NBI;
- All construction workers to be trained on the Health and Safety Authorities (HAS) Code of Practice for Avoiding Danger from Underground Services;

- The Health and Safety Officer for the Project shall implement a safe system of work, including safe digging practices when working on or near existing utility services;
- Immediately prior to construction taking place, the area where excavation is planned will be surveyed by CAT scan (sub-surface survey technique to locate any below-ground utilities) and all existing services will be verified. Temporary warning signs will be erected;
- The as-built location of the installed ducts will be surveyed and recorded using a total station/GPS before the trench is backfilled to record the exact location of the ducts. The co-ordinates will be plotted on as-built record drawings for the Grid Connection cable operational phase and passed to the utility providers to include on the Dial before you Dig maps; and
- Clear and visible temporary safety signage will be erected all around the perimeter of the live work area to visibly warn members of the public of the hazards of ongoing construction works.

14.7.3 Telecommunications

Telecommunications mitigation measures are fully detailed within **Section 6 of Appendix 14.1 – Telecommunications Impact Assessment**. The section outlines the technically viable mitigation measures that are based on industry standard best practice. Mitigation Measures will be implemented to remediate any impacts of the proposed turbines on the Three Ireland and Vodafone Ireland networks. The proposed mitigations measures are based on previous experience of solutions and precedents that have been agreed with telecommunications operators on previous wind farm developments. A protocol agreement would be put in place between the Applicant and the telecoms operator prior to the construction of the proposed wind farm to agree terms such as estate management, operator access, electricity supply, dual redundant electricity supply etc.

A summary of mitigation for each impacted link is as follows:

Three Ireland Network

Three Ireland Link 1 - Relay the radio link via an existing Telecoms Mast: The most technically viable mitigation measure option to offset the potential impact on the Three Ireland Link between Mullaghmacormick and Sliabh Bawn is to relay the radio link via an existing telecoms mast at Lissawaddy to relay the radio link. See **Figure 14-16** below illustrating the

existing telecoms mast and the proposed mitigation solution. The radio link path profile shows clear Line-of-Sight (LOS) and the link budget results would pass the radio availability criteria required by ComReg (see **Appendix 14.1 – Telecommunications Impact Assessment**).



Figure 14-16: Proposed Mitigation solution to relay the radio link between Mullaghmacormick and Sliabh Bawn. (Source Appendix 14.1)

Vodafone Link 1 – Relay the radio link via an existing telecoms mast: To mitigate the impact on the radio link between Mullaghmacormick and Sliabh Bawn the most technically viable mitigation measure option, is considered to be the use of an existing telecoms mast to relay that radio link. See **Figure 14-17** below illustrating the existing telecoms mast and the proposed mitigation solution. The radio link path profile shows clear LOS and the link budget results would pass the radio availability criteria required by ComReg (see **Appendix 14.1 – Telecommunications Impact Assessment**).



Figure 14-17: Proposed Mitigation solution to relay the radio link between Mullaghmacormick and Sliabh Bawn. (Source Appendix 14.1)

Vodafone Link 2 - Route the Vodafone service between Sliabh Bawn and Ballyfeeny via a new telecoms mast located within the wind farm site boundary: The most technically feasible mitigation measure option to mitigate the potential impact on Vodafone Link 2 would be to route the radio service to/from Sliabh Bawn via a new telecoms relay mast installed within the proposed wind farm site boundary. The proposed Project is seeking planning consent as part of this planning application for the construction of a new 33m high, Relay Tower that would facilitate the diversion of this link.

The proposed mitigation solution is shown in **Figure 14-10** and **Planning Drawing 23604-510 (Part 1)**.

A 3D model of the proposed radio link was also generated to ensure that it would not be impacted by the turbine layout. The 3D model (**Figure 14-18**) confirmed that a radio link from the proposed mast site location would not be impacted by the turbine layout. The radio link path profile shows clear LOS and the link budget results would pass the radio availability criteria required by ComReg (see **Appendix 14.1 Telecommunications Impact Assessment**).

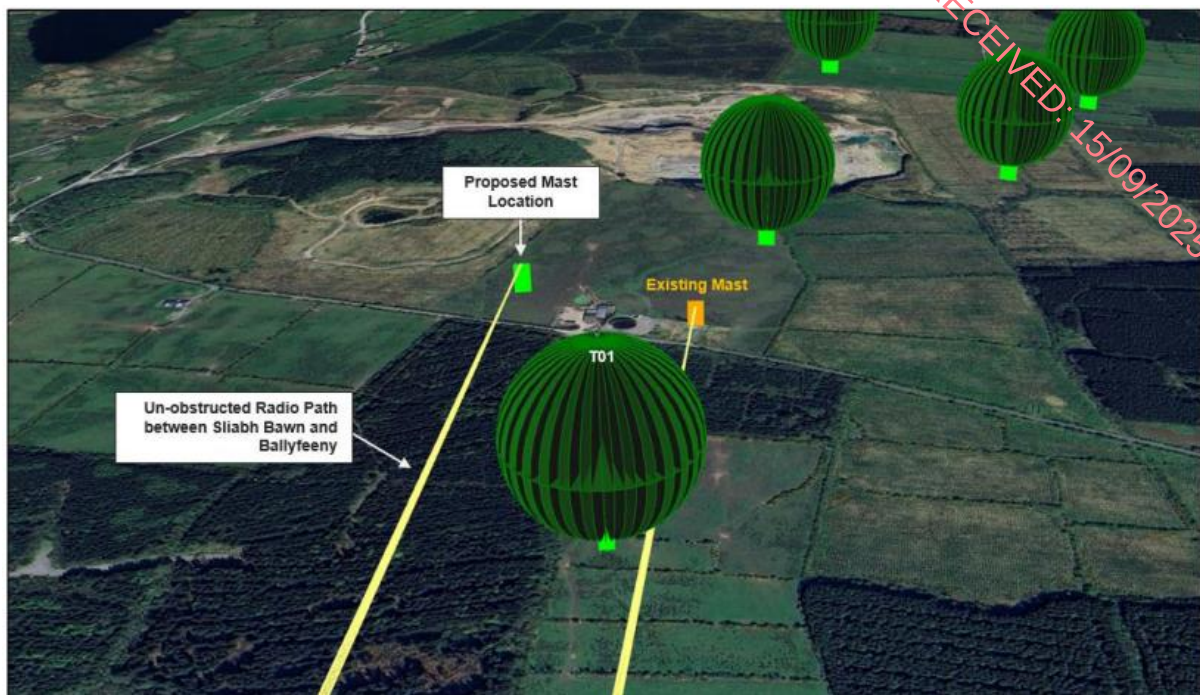


Figure 14-18: 3D View - Sliabh Bawn to New Telecoms Mast at Ballyfeeny (Source Appendix 14.1)

Vodafone Link 4 - Route the Vodafone service between Ballyfeeny and Roosky via a new telecoms mast located within the wind farm site boundary: The most technically feasible mitigation measure option to mitigate the potential impact on Vodafone Link 4 would be to route the radio service to/from Roosky via a new telecoms mast installed within the wind farm site boundary. The proposed Project is seeking planning consent as part of this planning application for the construction of a new 33m high, Relay Tower that would facilitate the diversion of this link. The proposed mitigation solution is shown in **Figure 14-19** and **Planning Drawing 23604-510 (Part 1)**.

A 3D model of the proposed radio link was also generated to ensure that it would not be impacted by the turbine layout. The 3D model (**Figure 14-19**) confirmed that a radio link from the proposed mast site location would not be impacted by the turbine layout. The radio link path profile shows clear LOS and the link budget results would pass the radio availability criteria required by ComReg (see **Appendix 14.1 – Telecommunications Impact Assessment**).

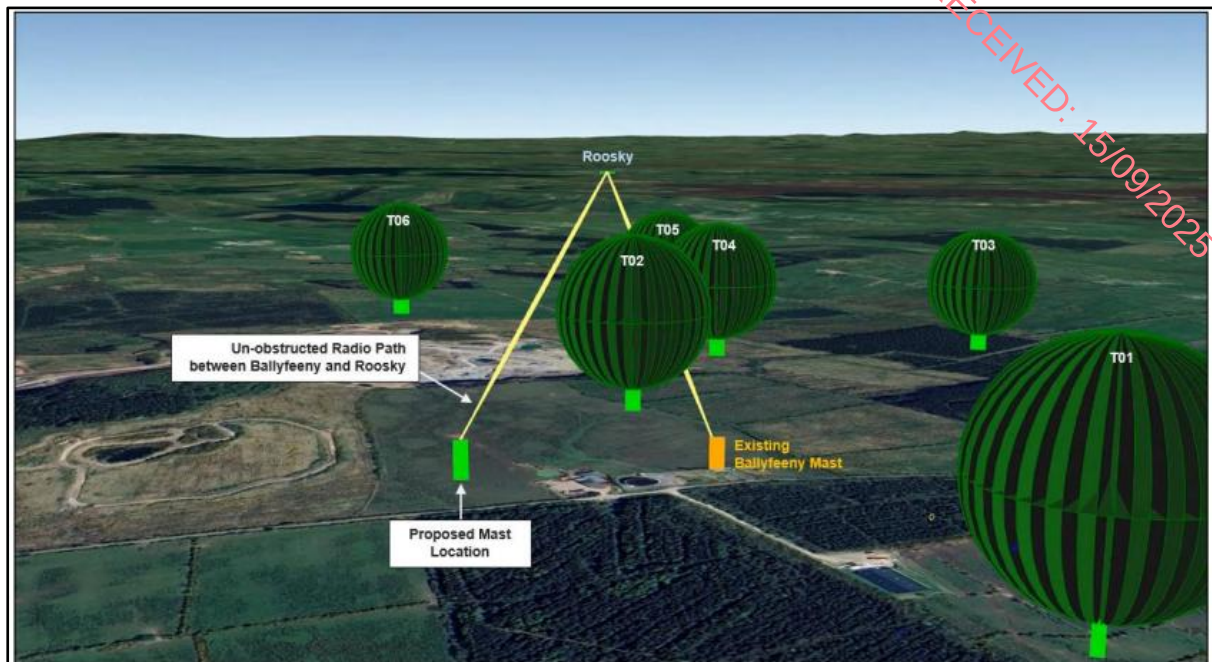


Figure 14-19: 3D View - New Telecoms Mast at Ballyfeeny to Roosky (Source Appendix 14.1)

Based on previous experience and precedents of similar mitigation proposals being proposed and accepted, the most technically feasible mitigation measures are outlined in this report. The proposed measures will offset the potential impacts of the proposed turbines at Ballyfeeny on the existing telecommunications network infrastructure. The Applicant in this instance will be responsible for all costs associated with the mitigation measures set out. A protocol agreement will be put in place between the Applicant and the telecoms operator (Vodafone Ireland and Three Ireland), prior to the construction of the proposed wind farm to agree terms such as estate management, operator access, electricity supply etc.

14.7.4 Aviation

As previously outlined in **Section 14.5.3**, no likely significant effects are predicted during the construction, operation or decommissioning phases. In the event of a planning consent, the IAA and IAC/DoD are likely to request lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed Project would be considered as an en-route obstacle. The wind farm shall be fitted with Aeronautical Obstacle Warning Lights in accordance with civil aviation industry and regulatory standards. Subject to further consultation with the IAA and IAC. As outlined in **Appendix 14.2 – Aviation Review Statement**, the proposed wind farm is not located in an IAC restricted area and it is highly unlikely that turbines at the proposed site would have any impact on IAC aviation activity. The DoD have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the IAC. If permitted, the wind farm should be fitted with Aeronautical Obstacle Warning Lights in

accordance with military aviation industry and regulatory standards. Subject to further consultation with the IAC.

Upon receipt of planning permission for the proposed Project, the Applicant in the interest of aviation safe-guarding will liaise (as noted in the scoping responses contained in **Appendix 1.3 – Scoping Consultation Responses**) with the IAA and the IAC/DoD to;

- Agree an aeronautical obstacle warning light scheme for the wind turbine development that is agreeable to both IAA and IAC/DoD;
- Will provide as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location to IAA and IAC/DoD; and
- Notify the IAA and IAC/DoD of intention to commence crane operations with at least 30 days prior notification of the wind turbine erection.

14.8 Cumulative Effects

A Cumulative Effects Assessment has been carried out in support of this EIAR. Existing and proposed projects within the study area that could potentially contribute to cumulative effects with the Project during the construction, operation, and decommissioning phases have been identified and assessed as part of this assessment as detailed within **Chapter 16 – Cumulative Effects** and **Appendix 16.1 – Long list of other projects for the cumulative effects assessment**. **Appendix 14.1 – Telecommunications Impact Assessment** and **Appendix 14.2 – Aviation Review Statement** have considered existing and proposed wind farm projects within the Study as part of the assessment and have found no likely cumulative effects with existing or proposed wind farm projects.

Even if numerous developments were to proceed concurrently with the Project, there could be potential for short-term, slight, and adverse effects on the material assets as outlined in this chapter. However, it is the responsibility of each developer undertaking a large-scale project to engage with the relevant service providers. Consultation with relevant service provider ensures their proposals do not result in cumulative effects.

In cases where potential effects are identified, each developer is accountable for enforcing appropriate mitigation measures. As a result, with proper planning and coordination, cumulative effects are considered unlikely.

14.9 Residual Effects

14.9.1 Construction Phase

The residual effects after implementation of all mitigation measures for the construction phase of the proposed Project are presented in **Table 14-9**. In EIA terms, the effect on material assets outlined in this chapter are considered to be **Not Significant**.

Table 14-9: Residual Effects during the construction Phase

Material aspect	Assets	Residual Effects	Statement of Significance
Waste		Short-term, Slight, Adverse.	Not Significant in EIA terms.
Utilities		Neutral, Not Significant	Not Significant in EIA terms.
Telecommunications		Neutral, Not Significant	Not Significant in EIA terms.
Aviation		Neutral, Not Significant	Not Significant in EIA terms.

14.9.2 Operational Phase

The residual effects after implementation of all mitigation measures for the operational phase of the proposed Project are presented in **Table 14-10**. In EIA terms, the effect on material assets outlined in this chapter are considered to be **Not Significant**.

Table 14-10: Residual Effect during the operational phase

Material aspect	Assets	Residual Effects	Statement of Significance
Waste		Long-term, Neutral, Imperceptible	Not Significant in EIA terms.
Utilities		Long-term, Neutral to Positive	Not Significant in EIA terms.

Material aspect	Assets	Residual Effects	Statement of Significance
Telecommunications		Long-term, Neutral, Imperceptible	Not Significant in EIA terms.
Aviation		Long-term, Slight, Imperceptible	Not Significant in EIA terms.

14.9.3 Decommissioning Phase

The residual effects after implementation of all mitigation measures for the operational phase of the proposed Project are presented in **Table 14-11**. In EIA terms, the effect on material assets outlined in this chapter are considered to be **Not Significant**.

Table 14-11: Residual Effects during the decommissioning Phase

Material aspect	Assets	Residual Effects	Statement of Significance
Waste		Long-term, Neutral, Imperceptible	Not Significant in EIA terms.
Utilities		No likely significant effects	Not Significant in EIA terms.
Telecommunications		No likely significant effects	Not Significant in EIA terms.
Aviation		Long Term, Positive, Imperceptible	Not Significant in EIA terms.

14.10 Interrelated Effects

Chapter 17 Inter-Related Effects describes any interactions between Material Assets effects on different environmental aspects.

14.11 Summary of Effects

Table 14-12 overleaf displays a Summary of Effects as outlined in **Section 14.5**.

Table 14-12: Summary of Effects

Receptor	Potential Effect	Significance of effect	Additional Mitigation	Residual significance of effect
Construction Phase				
Waste	While most construction materials can be recycled or recovered, the absence of mitigation measures to reduce waste generation and prioritise reuse, recycling, and recovery practices could place additional pressure on local and regional waste infrastructure.	Short-term, Moderate, and Adverse. In EIA terms, the effect is considered as Not Significant.	Detailed in Section 14.7.1	Short-term, Slight, Adverse. In EIA terms, this is Not Significant.
Utilities (Water Infrastructure)	Water Reservoir - Works associated with the Project will not impact the water supply to or from the reservoir, nor will the works impact the storage capacity within the reservoir. Water Mains - Controls will be implemented to manage any potential effects on utilities, as detailed within Section 14.5.2 and within Appendix 2.1 - CEMP	Neutral and Not Significant. In EIA terms, the effect is considered as Not Significant. Short Term, Moderate and Not Significant. In EIA terms, the effect is considered as Not Significant.	Detailed in Section 14.7.2	Neutral, Not Significant. In EIA terms, this is Not Significant.
Utilities (Electricity Infrastructure)	A temporary grid outage will be required in order to facilitate the connection of the proposed Project to the national electricity grid.	Short Term and Moderate. In EIA terms, the effect is considered as Not Significant.		
Utilities (Broadband Infrastructure)	It is not anticipated that the GCR or the wind farm will impact the Eir civil infrastructure or the Broadband Infrastructure.	Short-term and Slight. In EIA terms, the effect is considered as Not Significant.		

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Telecommunications	The construction phase is not expected to cause any electromagnetic interference affecting telecommunications or broadcasting in the area. Additionally, 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.	Neutral and Not Significant. In EIA terms, the effect is considered as Not Significant .	Detailed in Section 14.7.3	Neutral, Not Significant. In EIA terms, this is Not Significant .
Aviation	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	Neutral, Imperceptible and Short-term. In EIA terms, the effect is considered as Not Significant .	Detailed in Section 14.7.4	Neutral, Not Significant. In EIA terms, this is Not Significant .
Operational Phase				
Waste	During the operational phase, the Project is expected to generate minimal amounts of waste during routine inspections and maintenance activities. All waste will be securely stored in a manner that protects it from wind, rain, and wildlife, which can scatter waste materials	Neutral, Imperceptible and Long-term. In EIA terms, the effect is considered as Not Significant .	Detailed in Section 14.7.1	Long-term, Neutral, Imperceptible. In EIA terms, this is Not Significant .
Utilities (Water Infrastructure)	No effects are anticipated on the Ballyfeeny Water Reservoir during construction or operation of the wind farm and grid connection route. In the unlikely event of a cable fault, licensed road	Slight and Long Term. In EIA terms, the effect is considered as Not Significant .	Detailed in Section 14.7.2	Long-term, Neutral to Positive In EIA terms, this is Not Significant .

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	excavation may be required for repairs, with no impact expected on the reservoir.			
Utilities (Electricity Infrastructure)	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	Slight, Positive and Long Term. In EIA terms, the effect is considered as Not Significant.		
Utilities (Broadband Infrastructure)	No likely significant adverse effects are anticipated on the broadband infrastructure during the operational phase	Neutral and Long Term. In EIA terms, the effect is considered as Not Significant.		
Telecommunications	The Telecommunications Impact Assessment (Appendix 14.1) indicated that four radio links (Three Ireland and Vodafone Ireland) would be impacted by the turbines. There are no effects to the remaining six radio links included in the impact assessment	If mitigation measures were not deployed to minimise impacts, the effect on telecommunications would be Long-term, Significant and Adverse. In EIA terms, the effect is deemed as Significant.	Detailed in Section 14.7.3	Long-term, Neutral, Imperceptible. In EIA terms, this is Not Significant.
Aviation	As detailed within Appendix 14.2 – Aviation Review Statement , in the event of a planning consent, the IAA and IAC are likely to request lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed development would be	Neutral, Moderate and Long-term. In EIA terms, the effect is considered as Not Significant.	Detailed in Section 14.7.4	Long-term, Slight, Imperceptible. In EIA terms, this is Not Significant.

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	considered as an en-route obstacle.			
Decommissioning Phase				
Waste	During the decommissioning phase of the Project, the impacts are expected to be similar to those identified for the construction phase. There will be effects on waste infrastructure due to the decommissioning of the proposed Project.	Neutral, Imperceptible, and Long-term. In EIA terms, the effect is considered as Not Significant. Moderate, Adverse, Temporary effect. In EIA terms, the effect is considered as Not Significant.	Detailed in Section 14.7.1	Long-term, Neutral, Imperceptible. In EIA terms, this is Not Significant.
Utilities (Water Infrastructure)	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.	Slight and Long Term. In EIA terms, the effects is considered as Not Significant.	Detailed in Section 14.7.2	No likely Significant effects. In EIA terms, the effect is considered as Not Significant..
Utilities (Electrical Infrastructure)	If the wind farm is decommissioned fully this will result in the loss of clean renewable electricity being exported from the proposed Project to the national electricity grid following decommissioning.	Slight, Positive and Long Term. In EIA terms, the effect is considered to be Not Significant.		
Utilities (Electrical Infrastructure)	Any impacts on the broadband infrastructure will be similar to the operation phase for the ongoing operation and potential fault repairs to the underground cable.	Slight, Neutral and Long Term. In EIA terms, the effect is considered as Not Significant.		

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Telecommunications	No likely significant effects , Not Significant in EIA terms.			
Aviation	The requirement for Aviation Lighting will no longer be required during the decommissioning phase. The proposed Project would no longer be considered as an en-route obstacle.	Neutral, Positive and Long-term. In EIA terms, the effect is considered as Not Significant.	Detailed in Section 14.7.4	Long Term, Positive, Imperceptible. In EIA terms, this is Not Significant

14.12 References

- Department of the Environment, Climate and Communications (DECC), 2021. *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*. Dublin: Government of Ireland.
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