

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED LITTLETON WIND FARM, CO. TIPPERARY

Volume 2 - Main EIAR

Chapter 15 - Material Assets

Prepared for:
Littleton Wind Farm DAC



Date: June 2026

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15. MATERIAL ASSETS

This chapter of the Environmental Impact Assessment Report (EIAR) is divided into three distinct sections, namely Material Assets; Traffic and Transportation; Aviation and Telecommunications, each of which examines the potential effects of the proposed Littleton Wind Farm on the respective specialist topic. Each section within this chapter includes a description of the existing environment, considers the likely effects arising from the Proposed Development during the construction, operation and decommissioning phases, identifies the residual effects, assesses the Proposed Development cumulatively and draws a topic specific conclusion.

15.1.1 Defining the Proposed Development

Throughout this chapter the 'Proposed Development' refers to the elements of the project for which consent is being sought as set out in Chapter 4 - Description of the Proposed Development. This comprises the wind farm site including turbines, internal access tracks, hard standings, permanent meteorological masts, onsite substation, internal electrical and communications cabling, temporary construction compound, drainage infrastructure, grid connection and works involving the Turbine Delivery Route (TDR).

The proposed GC route, whilst assessed as part of this EIAR, will not form part of this planning application. If the Proposed Development is permitted, the GC route will be subject to a separate planning application.

The Proposed Development assessed in this EIAR comprises the following elements:

- The 'Proposed Wind Farm' (also referred to in this EIAR as the '**Site**');
- The 'Proposed Grid Connection' (also referred to in this EIAR as the '**GC**');
- The 'Turbine Delivery Route' (also referred to in this EIAR as the '**TDR**');
- The 'Biodiversity Enhancement and Management Plan Lands' (also referred to in this EIAR as the '**BEMP Lands**');

These key elements will be discussed in each of the three sections outlined above.

This assessment considers the turbine specifications selected for this project as described in Chapter 1 Introduction and Chapter 4 Description of the Proposed Development.

15.2 Statement of Authority

This chapter was completed by a number of specialist engineers and planners from Fehily Timoney and Company under the supervision of Trevor Byrne.

15.2.1 Material Assets

The material assets section of this Chapter was drafted by Anthony Ryan and reviewed by Conor Auld and Trevor Byrne.



Anthony Ryan is a Project Planner at Fehily Timoney and Company, with 4 years working in the Energy and Planning Department. Anthony holds a First-Class Honours Bachelor's Degree (2017), and First-Class Honours Master's (2020) in Planning and Sustainable Development (MPlan) from University College Cork. Anthony has experience working on various renewable energy projects preparing EIAR chapters for wind farms, and has drafted chapters including policy, traffic and transport, air and climate, material assets (utilities), telecommunications and aviation.

Conor Auld is a Principal Planner with over 10 years' experience. Conor holds a MSc in Urban and Rural Design and BSc in Environmental Planning from Queen's University Belfast. Conor also holds an advanced Diploma in Planning and Environmental Law from The Honourable Society of King's Inns. Conor has prepared several EIAR Chapters and assisted in EIAR management for wind farm developments throughout Ireland.

Trevor Byrne is an Associate Director at Fehily Timoney and a chartered member of Engineers Ireland with over 15 years of industry experience and over 10 years' experience in the preparation of EIAR's for large scale renewable energy projects. Trevor holds a Master's degree in Sustainable Energy Systems and a first-class honours degree in Civil and Environmental Engineering. Trevor also holds an Advanced Diploma in Planning and Environmental Law from the Honourable Society of Kings Inns. Throughout his career to date, Trevor has provided technical advisory services through all stages of project delivery from feasibility assessment, impact assessment, design, expert witness, contract administration and construction.

15.2.2 Traffic and Transportation

The traffic and transportation section of this Chapter was drafted by Aoife Hurd and reviewed by Conor Auld and Trevor Byrne.

Aoife Hurd is a Senior Civil Engineer at Fehily Timoney and Company working in the Energy and Planning Department. She holds a First-Class Honours Bachelor's Degree and Master's Degree in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland (EI) and has experience working on residential, infrastructure and renewable energy projects at all stages from concept to construction. Aoife has over 3.5 years' experience providing technical and engineering support to the EIAR teams for a variety of commercial scale renewable energy projects.

Aoife has experience in the preparation of Traffic and Transportation assessments, Air and Climate assessments, as well as other technical chapters associated with EIARs and environmental reports for renewable energy projects ranging from wind farms, solar farms, grid connections, battery energy storage systems and ancillary grid infrastructure projects. She also has experience in the design of renewable energy developments.

15.2.3 Telecommunications and Aviation

The telecommunications and aviation section was prepared by all of the above authors in collaboration with Ai Bridges. The aviation and telecommunications assessments were managed by Kevin Hayes of Ai Bridges. Kevin is a qualified engineer and holds a B. Eng. Hons and M. Eng Hons in Electronics & Communications Engineering with 23 years of experience in network design, deployment of telecommunications systems and extensive working knowledge of software modelling of telecommunications and aviation networks.

Ai Bridges is a leading supplier of telecommunications solutions and software services for the telecommunications industry in the Irish marketplace. Ai Bridges has designed and commissioned telecommunications projects for clients throughout Ireland and abroad and has worked successfully with leading vendors to bring telecommunications software solutions to market for the renewable energy sector.



Ai Bridges has been supplying telecommunications and aviation assessment solutions to the wind farm industry throughout the Republic of Ireland, Northern Ireland and the rest of the UK, since 2007. Aviation, telecommunications and Electromagnetic Interference impact study reports have been undertaken on behalf of wind farm operators on the potential impact on telecommunications networks and transmission networks of proposed wind farm developments. Ai Bridges has also developed a 3D software prediction model that can predict the wind farm development interference impacts on television transmission and aviation networks.

15.3 Relevant Policy and Guidance Documents

As described in detail within EIAR Chapter 2, a review of relevant policy and guidance documents was undertaken for all aspects of the Proposed Development, and to identify specific relevant Policies and Objectives relating to utility services, telecommunication, broadcasting and traffic and transport. The following guidance was adhered to during the assessment of traffic and transport in this EIAR:

- Wind Energy Development Guidelines (WEDGs), Department of the Environment, Heritage and Local Government (DoELHG, 2006).
- Best Practice Guidelines for the Irish Wind Energy Industry, Irish Wind Energy Association (2012).
- RF Measurement Assessment of Potential Wind Farm Interference to Fixed Links and Scanning Telemetry Devices, published by ERA Technology Ltd on behalf of Ofcom (2009).
- Tipperary County Development Plan 2022 - 2028, Tipperary County Council;
- Kilkenny City and County Development Plan 2021 - 2027, Kilkenny City and County Council;
- TII Publication: Traffic and Transport Assessment Guidelines, TII, 2014;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- EPA Guidelines on The Information to Be Contained In Environmental Impact Assessment Reports, EPA, 2022;
- Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017;
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR), Environmental Protection Agency (EPA), 2022;
- TII Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads, TII, 2016;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060, TII, May 2023, and DN-GEO-03031 - Rural Road Link Design May 2023;
- Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017.
- ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines, May 2019.



15.4 Material Assets

15.4.1 Introduction

Material Assets, as defined in EPA (2022) '*Guidelines on the information to be contained in Environmental Impact Assessment Reports*' refer to built services, roads and traffic and waste management. This chapter assesses the following topics:

- Non-renewable Resources - this term refers to resources which cannot be replenished or replaced, with examples including the likes of minerals, aggregates, oil, coal, and gas;
- Renewable Resources - this term refers to natural materials and energy sources that replenish themselves naturally over a short timeframe, examples include wind, water and solar;
- Utilities Infrastructure - this term refers to large-scale physical networks and facilities required for the production, transmission, and distribution of public services including water, sewage, electricity and natural gas;
- Waste management - this term refers to the management of and associated facilities and infrastructure require to manage any substance or object that the holder discards, intends to discard or is required to discard.

Material Assets with respect to natural resources are considered in Chapter 6: Biodiversity, Chapter 8: Lands, Soil and Geology, Chapter 9: Hydrology, Hydrogeology and Water Quality, and Chapter: 10 Air Quality and Climate. Assets of Archaeological, Architectural, and Cultural Heritage are considered in Chapter 14 of Volume 2 of this EIAR.

15.4.2 Assessment Methodology

This section provides a comprehensive overview of the Material Assets of the receiving environment in order to provide an understanding of the potential effects which the Proposed Development may have on renewable and non-renewable resources, and utility infrastructure.

An examination of Material Assets was carried out which includes renewable and non-renewable resources and utility infrastructure. A desktop study established Material Assets of the area such as quarries and peat bogs, in line with Geological Survey Ireland's scoping response as detailed in Chapter 2: Background to the Proposed Development / Need for the Proposed Development (to include Planning and Policy Context and a review of all current relevant legislation). Infrastructure and various telecommunications companies were contacted during the scoping process to identify infrastructure in the area. Potential impacts on the identified Material Assets as a result of the Proposed Development were then examined.



15.4.2.1 *Relevant Policy and Guidance*

This chapter of the EIAR has been completed in accordance with the guidance set out by the Environmental Protection Agency (EPA), in particular, the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, May 2022), The Government of Ireland's Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August, 2018) and the European Union's guidance document: Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report as per Directive 2011/92/EU as amended by 2014/52/EU. The determination of significance of impact is in line with the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, May 2022).

15.4.2.2 *Consultation*

As outlined in Chapter 2: Background to the Proposed Development / Need for the Proposed Development prior to preparing the EIAR, statutory authorities and other relevant bodies were consulted. Key items of relevance to Material Assets, as raised by these parties have been addressed and referenced within this Chapter of the EIAR where relevant.

Private and State utility companies were consulted such as EirGrid, Uisce Éireann (formerly Irish Water), ESB Networks (ESBN), Gas Networks Ireland (GNI), Transport Infrastructure Ireland (TII) and Geological Survey Ireland as well as from the wider community through the scoping process and public consultation. The consultation responses received have been given due consideration in the formation of this chapter. Please refer to Chapter 2, Volume 2 of the EIAR for further details.

15.4.2.3 *Limitations*

No limitations were encountered in the assessment of the potential effect on Material Assets from the Proposed Development.

15.4.3 Baseline Environment

This section provides a comprehensive overview of the Material Assets (renewable and non-renewable resources, and utility infrastructure) of the receiving environment in order to provide an understanding of the potential effects of the Proposed Development.

As part of the scoping and consultation process for the Proposed Development, searches of existing utility services were carried out using a network analysis tool, stakeholder consultation and fieldwork, to identify areas where major assets exist such as high voltage electricity cables or gas mains. Private / State utility companies such as Uisce Éireann (formerly Irish Water), ESB Networks (ESBN), EirGrid and Gas Networks Ireland (GNI) were also consulted during this period.

The Proposed Wind Farm Site boundary extends for approximately 10km from north to south and ranges between 1km (at north end) and 2km (at south end) from east to west. The elevation of the Site ranges from approximately 120-130m altitude above sea level. A large proportion of the Site is regenerating cutaway (heath, scrub, woodland) but includes open areas with large bodies of open water. Areas of remnant high bog occur scattered along the boundaries.

The Site is located on 3 no. bogs, namely Littleton Bog Longford Pass (Popes Bog) and Ballybeg Lanespark Derryvella which covers an area of approximately 1,177ha.



15.4.3.1 Main Wind Farm Site

In relation to Material Assets, and as outlined within section 8.5.5 Economic Geology of Chapter 8: Land, Soils and Geology, the GSI Online Minerals Database accessed via the Public Data Viewer shows no metallic occurrences within the Site. The closest quarry to the site is Maher Quarries Ltd. in Castletown Quarry, Castletown, Thurles, it is approximately 1.5km north-west of the northern boundary of the Site. The second nearest quarry is the Gleeson Quarries is located 4.3km to the south.

The main product from Castletown Quarry and Gleeson Quarries is aggregates for concrete, hardcore, farm drainage, earthworks/fill.

The GSI Aggregates database indicates that there is:

- a moderate to high crushed rock aggregate potential for the west of the Site, and very low to low crushed rock aggregate potential for the east of the Site (Chapter 8, Figure 9-8 within Appendix 9.5); and
- a very low granular aggregate potential within the site, associated with the stream running along the south-eastern boundary of the Site (Chapter 8, Figure 9-9 within Appendix 9.5).

The higher crushed rock potential on the western portion of the site is associated with the rock and rock outcrop identified and described further within Chapter 8: Land, Soils and Geology, which also correlated with the poorer potential on the eastern side, as there is potentially a thicker overburden present which would reduce the crushed rock aggregate potential. Furthermore, the western area is comprised of the Carrigmaclea Formation sandstones, which may provide good quality material though this is subject to rock testing.

Searches of existing utility services were undertaken in April 2026 to identify any major assets within the Site, including high-voltage electricity cables, gas mains and existing water infrastructure.

A 38 kV overhead line was identified during the desktop assessment in the southern section of the Site near Access Points 2 and 3. This line relates to historic works on the Site and will be decommissioned subsequently.

Records from Uisce Éireann indicate the presence of an existing watermain traversing the Site along the L-4114, adjacent to Access Points 4 and 5. A further watermain runs along the southern boundary of the Site on the L-2201 local road.

It should be noted that utility service records obtained through desktop assessment are indicative only. Prior to construction, the exact locations of existing services will be confirmed using appropriate methods such as cable detection tools, ground-penetrating radar and slit trenches. Please refer to the CEMP in Appendix 4.1, Volume 3 of the EIAR for further information.

No other major utility services were identified within the Site during the desktop assessment.

15.4.3.2 Grid Connection

Searches of existing utility services were undertaken in April 2026 to identify any major assets along the Grid Connection (GC) route, including high-voltage electricity cables, gas mains and existing water infrastructure.

Gas Networks Ireland (GNI) records indicate that the GC route along the R694 regional road will intersect an existing High-Pressure Gas Transmission Pipeline.



In addition, ESB Networks records show that the proposed GC route crosses an existing 38 kV underground cable approximately 65 m east of Longfordpass Bridge.

Uisce Éireann records identify multiple existing watermain and sewer assets along the GC route, including sections where the proposed alignment runs adjacent to or crosses water supply infrastructure. These assets vary in location along the route and will require detailed confirmation during the pre-construction phase.

It should be noted that all utility service records obtained through desktop assessment are indicative only. Prior to construction, the precise locations and depths of existing services will be verified using appropriate methods such as cable detection tools, ground-penetrating radar and slit trenches. Further details on crossing methods and detailed description of the construction methodologies along the proposed GC route can be found in the CEMP in Appendix 4.1, Volume 3 of the EIAR.

The final locations of the proposed cable routes in the public roads and in the verge along the public road will be within the area indicated and assessed in this EIAR and will minimise conflicts with other services.

Connection works within the Ballyragget substation property boundary will be carried out by the network operator in accordance with a future grid connection offer. The accompanying figures contained in Volume 4 of this EIAR shows the route which has been assessed in this EIAR. These works shown do not form part of the statutory development description for planning permission but represent an informed view of the proposed future works at this time and may change depending on a future grid connection offer which will consider all the relevant circumstances at that time.

15.4.3.3 Turbine Delivery Route

No significant renewable and non-renewable resources have been identified in proximity to TDR node upgrades.

The delivery of turbine components to the Site will require temporary accommodation works along the TDR (as set out in Chapter 4: Description of the Proposed Development which will include the requirement to remove lighting columns, road signs, and vegetation clearance. Such works will be agreed and carried out by the service provider in advance of turbine delivery.

15.4.4 Material Assets - Potential Effects

15.4.4.1 Do-Nothing Scenario

The do-nothing scenario describes a situation whereby the Proposed Development does not proceed (i.e the existing environment remains as is). Please note that irrespective of the consenting of the Proposed Wind Farm the remaining measures outlined in the Rehabilitation Plans, i.e. monitoring of the Littleton, Longfordpass and Lanespark Phase 1 measures and enhanced Phase 2 measures at nearby Ballybeg and Derryvella bogs, will continue to be implemented by BnM in agreement with the EPA. Please see Appendix 2.1 (Volume 3 of the EIAR) and Section 2.2.1 of Chapter 2 of the EIAR for further detail.



As such, in the absence of renewable energy development, it is possible that there will likely be a continuance of excessive greenhouse gas emissions and consumption of fossil fuels. The opportunity to harness the wind energy capacity of the site would be lost, further constraining the State from achieving its renewable energy targets of 80% by 2030. During the operational lifetime of the Proposed Development, the c. 68.2MW generated by the Proposed Development is projected to displace c. 6,868 tonnes of CO₂ emissions annually, directly supporting the NECP's decarbonisation targets and contribute to Ireland meet its challenging climate change and decarbonisation targets as set out within the NECP. Therefore, in the *Do-Nothing Scenario*, the net displacement of c. between 79,638 tonnes of CO₂ per annum as a result of the operational phase of the Proposed Development will not be achieved.

15.4.4.2 Construction Phase Effects

15.4.4.2.1 Non-renewable Resources

The construction of the Proposed Development will impact on natural resources such as aggregates which will be sourced from batching plants and quarries in proximity to the site. Access to the Site shall be taken from the public road network at 6 no. points. These are a combination of existing bog operations accesses which shall be upgraded and proposed access points to be created to facilitate the construction and operation of the proposed wind farm (as detailed in Chapter 4 - Description of the Proposed Development and Section 15.5 of this Chapter).

Existing tracks have been used where possible, and the layout was designed to minimise the length of new track required. This is a positive with regards to the projects and will reduce the requirement for stone material.

15.4.4.2.2 Renewable Resources

The Proposed Development is intended to capture the renewable wind resource at the site. There will be no negative effects on the renewable energy resource of the receiving environment as this project represents a net provider of renewable electricity, with a net displacement of c. between 6,868 tonnes of CO₂ per annum as a result of the Proposed Development.

It is considered that the Proposed Development will have an overall long-term positive impact in terms of carbon reduction and climate change. It will assist Ireland in meeting its target of producing 80% of electricity from renewable sources by 2030, as set out in the latest Climate Action Plan 2024 (CAP24).

15.4.4.2.3 Utilities Infrastructure

Any works required to remove above-ground utility infrastructure as part of the Proposed Development are described within Appendix 4.2 of this EIAR which includes the Turbine Delivery Route Survey Report. This report details where any overhead utilities, poles, lighting columns, bollards and signage will require temporary removal and sets out where tree removal and wall removal will be required at certain points along the route to accommodate the delivery of wind turbine components.



Table 15-1: TDR Temporary Accommodation Works between M8 and Site (Load Route Survey, Pell Frischmann, January 2026)

TDR Node Reference	Location	Summary Description of Proposed Temporary Accommodation Works
18	M8 / R693 Roundabout	Removal of two lighting columns and road signs and vegetation clearance to facilitate over sail. Load bearing surface to be laid.
19	R693 / R639 Roundabout	Removal of lighting columns, road signs and tree clearance and laying of load bearing surfacing.
20	R639 Splitter Island	Removal of traffic calming bollards and a load bearing surface to be laid.

The removal of overhead utility infrastructure has the potential to cause a brief to temporary non-significant negative impact on nearby dwellings and commercial/industrial activities along the route.

Lighting columns will require temporary removal at various points along the TDR. This is expected to have a temporary non-significant negative impact on utility infrastructure. The TDR Report details the locations and extent of the accommodation works required.

There is potential for turbine delivery to negatively impact on major road infrastructure if unmitigated. Turbine delivery could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed. Potential impact on road infrastructure is detailed in Section 15.3 Traffic & Transportation of this report.

Potential effects on Telecommunications are discussed in Section 15.1.1 of this chapter.

The construction of the cable trenches along public roads will have a temporary, slight, negative impact on the roads concerned during construction, with some roads likely to require re-surfacing.

Importation of materials and equipment for the Littleton Wind Farm will also increase shipping traffic at the ports being used and increase freight on the motorway, national primary routes and regional road network.



15.4.4.2.4 Waste

Large construction projects require appropriate waste management to avoid the excessive generation and inappropriate segregation of construction waste and associated negative impacts on waste management facilities and infrastructure. In alignment with the principles of the Circular Economy, this project will prioritise the prevention and minimisation of waste, as demonstrated across all relevant chapters, including soil, waste, and the Construction Environmental Management Plan (CEMP). Excess materials generated during site activities will, where feasible, be treated as by-products rather than waste, in accordance with Article 27 of the European Union (Waste Directive) Regulations 2011 (as amended). EPA Guidance on the Waste Framework Directive confirms that uncontaminated soil and stone that is certain to be used in construction at the same project site from where it was excavated is not regulated as waste¹. The EPA 'Guidance on Soil and Stone By-products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011 (Version 3, published June 2019)'¹This approach ensures that materials removed off-site are reused whenever possible, supporting sustainable resource management. The Circular Economy and Miscellaneous Provisions Act 2022 further reinforces the requirement to treat excavated soil and material as non-waste by-products, provided they meet the necessary criteria. Where reuse is not feasible, materials will be recycled or otherwise managed responsibly. Additionally, any materials containing invasive species will be appropriately handled and transported to authorised facilities. The potential future use of Article 28 notified materials, which meet end-of-waste criteria, will also be considered, subject to timely decisions from the Environmental Protection Agency (EPA). Please refer to accompanying Chapter 8 – Land, Soils, Geology, and Chapter 9 - Hydrology, Hydrogeology and Water Quality for further details.

15.4.4.3 Operation Phase Effects

15.4.4.3.1 Non-renewable Resources

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

A setback distance has been imposed between the proposed wind turbines and the existing overhead lines. No impact on existing major utility infrastructure is expected at the wind farm site during the operational phase. There is also potential for broadcasting to be affected at receivers close to the wind farm site during the operational phase, i.e. nearby dwellings.

15.4.4.3.2 Renewable Resources

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

¹ https://www.epa.ie/publications/licensing--permitting/waste/Guidance_on_Soil_and_Stone_By_Product.pdf



15.4.4.3.3 Utilities Infrastructure

The Proposed Development will have no significant impact on existing telecommunications signals during the operational phase of the project. The grid connection is not expected to impact on telecommunications during the operational phase. Impacts on overhead lines as a result of turbine delivery is only associated with the construction phase. There is potential that setback may require brief disruption in the unlikely event that a turbine component requires replacement - in this case the turbine delivery route is required to be used during the operational phase. This would result in a brief slight negative impact to telecommunications services along the TDR.

15.4.4.3.4 Waste

Significant volumes of waste are not expected to be produced during the operation phase of the Proposed Development. If maintenance works are required at the wind farm site, grid route or TDR during the operational phase, a CEMP will be in place, and waste management procedures as set out in section 15.5.4.5 will be followed. Any waste produced during the operational phase of the wind farm will have an imperceptible impact on the receiving environment.

15.4.4.4 Decommissioning Phase Effects

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

15.4.4.4.1 Non-renewable Resources

There will be no significant negative impacts on non-renewable resources during the decommissioning phase. Decommissioning works will include removal of above ground structures including the turbines and met masts. Turbine foundations and access tracks will be left in situ. The proposed on-site substation building will be taken in charge of by EirGrid / ESB which will have a long-term slight positive impact on electricity infrastructure provision in the area. Similarly, the underground grid cable will remain in situ and will become a part of the national grid resulting in a long-term slight positive impact on electricity infrastructure provision in the area.

15.4.4.4.2 Renewable Resources

The decommissioning phase will have no negative effects on the renewable energy resource of the receiving environment as this project

15.4.4.4.3 Utilities Infrastructure

There is potential for brief disconnection of overhead lines during the decommissioning phase if large turbine components are required to be removed from the wind farm site. This has potential to cause a brief slight negative impact to telecommunication services where overhead lines require disconnection.

No likely negative impacts on utility infrastructure are expected during the decommissioning phase.

15.4.4.4.4 Waste

Waste will be produced as a result of the decommissioning activities.



The CEMP in Appendix 4.1 will be implemented during the decommissioning phase and waste management procedures as set out in the waste management plan will be followed. Decommissioned turbine components will be reused and recycled where possible and all non-reusable or recyclable materials will be disposed of in a licenced waste facility.

Licensed waste facilities have been identified in Section 15.1.1.1 Waste Management of this report, however, decommissioning is expected to take place 35-years from commissioning of the proposed wind farm and therefore it is uncertain if the identified facilities will remain operational at this time. Through the use of a waste management plan, similar to that as detailed in the CEMP contained in Appendix 4.1, waste produced during the decommissioning phase will have an imperceptible impact on the receiving environment. Waste produced during the decommissioning phase will likely have a slight negative impact on the capacity of the licenced waste facilities used at the time of decommissioning.

15.4.5 Material Assets - Mitigation Measures

Existing services along the proposed grid connection cable route have been predicted through a desktop study and will be confirmed in the pre-construction surveys prior to construction. This will minimise the impact in terms of disruption or damage to existing utilities. It is not intended to divert existing services but instead, where possible, the cable will be laid above or below existing services. Communication with service providers will be maintained for the duration of the construction works where required.

Non-renewable resources of general construction fill will be sourced locally and will be excavated from on-site borrow pits insofar as possible to minimise transportation distances, reducing CO2 emissions.

Where services and street furniture are required to be removed temporarily to accommodate turbine delivery, residents and business in proximity to the works will be informed in advance.

The comprehensive turbine delivery procedure which will be implemented between the Port of Entry and the wind farm site will include safety procedures and Garda escort in accordance with the Traffic Management Plan contained in Appendix 4.1.

The procedure will avoid impact on the roads involved with the TDR including the M8, R639, R693, and unidentified local roads leading to the site. It is likely that turbine delivery will take place outside of regular travelling/commuting hours to avoid potential traffic impacts on major routes.

A Construction Waste Management Plan (Appendix 4.1) has been prepared for the proposed Littleton Wind Farm in line with "*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*" (2006) as published by the Department of the Environment, Community and Local Government and supported by the Southern Region Waste Management Plan 2015-2021.

The Waste Management Plan will be finalised in accordance with the CEMP following the appointment of the contractor for the main construction works and will take cognisance of any newly published waste management policy.

15.4.6 Material Assets - Residual Effects

Non-renewable resources such as aggregates and cement are required onsite during the construction phase. This will result in a permanent negative imperceptible residual impact on non-renewable resources.

The Proposed Development will result in a long-term slight positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation over the lifetime of the Proposed Development.



The proposed on-site substation and underground grid route cable will be taken in charge of by EirGrid or ESB following decommissioning, providing a long-term slight positive residual impact on electricity infrastructure in the area.

Residual waste from the construction, operation and decommissioning phases will be disposed of in a licensed waste facility. This will result in a permanent slight negative impact to capacity of licenced waste facilities in the area of the Proposed Development.

15.4.7 Material Assets - Cumulative Effects

As part of the cumulative impact assessment included throughout this EIAR, planned, proposed, consented and existing developments/projects in the area of the wind farm site, grid route and TDR were considered for potential cumulative impacts on the receiving environment. Projects and proposed developments within 20km of the wind farm site were considered for the purpose of this assessment. Projects and proposed developments were also identified within the GC route and TDR corridor which falls within the wind farm 20km radius.

The list of all projects considered for the cumulative assessment are included in Appendix 1.2 of Volume 3 of this EIAR. Each of the projects listed in Appendix 1.2 were considered with respect to potential cumulative impacts on Material Assets. Projects where cumulative impacts were not likely to occur were discounted from the impact assessment as detailed below.

Development in the planning system as listed in Appendix 1.2 within the vicinity of the wind farm site, grid connection and TDR consisting of housing and agricultural developments were identified for potential cumulative assessment, however, these developments are small in scale and will have an imperceptible cumulative impact with the construction and operation of the proposed wind farm, in relation to population, human health and Material Assets due to the lack of interaction. Developments in the planning system within the vicinity of the wind farm site, GC route and TDR consisting of one-off housing and agricultural developments were identified for potential cumulative assessment, however, these developments are small in scale and will have an imperceptible cumulative impact with the construction and operation of the proposed wind farm, in relation to Material Assets.

This is due to the significant setback of the proposed wind farm from nearby planned, proposed and existing projects and the brief to temporary nature of the proposed construction works associated with the GC route and TDR. Therefore, potential cumulative impacts associated with small scale development were considered to be imperceptible.

The electricity generating capacity of the Proposed Development, in combination with the consented solar farms and existing wind farms in proximity to the subject Site, will have a long-term significant positive cumulative impact on utility infrastructure and renewable energy resource in the greater area and will have a positive impact on national renewable energy resources as well as reduction in requirements for the use of non-renewable fossil fuels. This will increase national savings on fossil fuel imports.

These quarries can provide aggregates for both road construction and concrete. The location of these licensed quarries and the haul routes to the Proposed Development are shown in Figure 15.2 Volume 4 of the EIAR. Consideration has been made to keep loads on the highest road class for most of the route to minimise traffic disruption.

There is also likely to be indirect cumulative impacts in terms of demands placed on local quarries for aggregate and concrete required during the construction phase of the Proposed Development. These quarries can provide aggregates for both road construction and concrete.



As outlined further below within Section 15.3 Traffic and Transportation, consideration has been given to the location of these licensed quarries and the haul routes to minimise traffic disruption, with a moderate negative impact on non-renewable stone resources expected.

15.5 Traffic and Transportation

15.5.1 Introduction

This section of the EIAR evaluates the Proposed Development in the context of the traffic and transportation within the study area. The assessment examines potential effects and identifies mitigations for construction, operation and decommissioning of the Proposed Development.

15.5.1.1 *Study Area*

The Wind Farm Site is located within the jurisdiction of Tipperary County Council. The closest settlements to the Site are Urlingford (ca. 5 km to the north-east), Gortnahoe (ca. 2.5 km to the east), Twomileborris (ca. 2 km to the west), Littleton (ca. 2.5 km to the west) and New Birmingham (ca. 2 km to the east). Refer to Figure 4.1, contained within Volume 4 of the EIAR, for the location of the Proposed Development.

The Biodiversity Enhancement and Management Plan (BEMP) Lands are contained within the Wind Farm Site.

The TDR travels from the port of entry of Foynes to Junction 4 of the M8 Motorway to the Proposed Wind Farm Site entrance on the R639 at Longford Pass. The TDR passes through the townlands of Islands, Mountfinn, Urlingford, Fennor, Graiguepadeen, and Longford Pass North and Longford Pass East.

The proposed GC route will exit north of the Proposed Wind Farm Site along the Local Road L4114 and traverse the following townlands within County Tipperary: Longfordpass East, Graiguepadeen, Longfordpass North, Fennor and Longfordpass South. The cable then enters County Kilkenny, and traverses the following townland within the public road, terminating at the Ballyragget 110kV Substation: Freshford Lots, Borrisnoe, Killawardy, Clomantagh Upper, Acragar, Moneenaun, Urlingford, Kilrush, Glenreagh, Kilduff, Borrisnafarney, Barnane, Sweethill, Ridge, Balief Lower, Bohernarude, Kilmacuddy, Killoskehan, Cloncannon, Grange, Moatpark, Barna, Ballybeg, Parksgrove, Baunaniska, Ballyconra, Stook, Graigueswood, Clone, Borrisbeg, Borrismore, Gortagarry, Clomantagh (Mt. Garret), Mountfinn, Barnagrotty, Balief Upper, Clomantagh Lower, Tobernapeastia, Darbyshill, Monabrika, Aghnameadle and Blakefield.

The study area for this Chapter comprises elements of the existing or future transportation network that could potentially be impacted by activities associated with the construction, operation and decommissioning of the Littleton Wind Farm, ('Study Area').

The transport network comprising the study area is presented in Volume 4, Figure 15.1.

15.5.2 Assessment Methodology

The assessment methodology complies with the Environmental Impact Assessment (EIA) Directive ([2011/92/EU](#) as amended by [2014/52/EU](#)) and the Tipperary County Development Plan 2022 – 2028 and has been carried out in line with best practice. Regard has been had to TII publications, and other relevant guidance listed in section 15.5.2.1 of this chapter. The details of the Proposed Development are considered in relation to the construction, operation and decommissioning phases of the project.



The likely traffic that will be generated by each phase of the Proposed Development is estimated to identify potential disruptions to existing road users within the study area. Based on the project construction methodologies described in Chapter 4 and the CEMP (Appendix 4.1), an estimate of the number of vehicles generated by the Proposed Development was calculated. These estimates are used to assess the impact on the road network in numerical terms.

Site visits took place on the 23rd of July 2025 and 10th of November 2025 to assess potential site access locations along the public road network that could facilitate site entrances. Site access points were assessed for suitability in the context of both TII and Tipperary County Council requirements for both geometric design and visibility. Potential disruption as a result of road, or lane closures as a result of works along public roads were also assessed. Traffic count data was taken from the TII Database and Traffinomics Ltd., conducted traffic surveys on the roads where no TII data was available. Traffic surveys were conducted for 7 days between the 27th of September - 4th of October 2023.

No road safety issues were identified as part of the traffic and transport assessment, and the proposed access arrangements comply with the relevant TII standards. Other than the standard mitigation measures required for the construction and operation of the access points, no additional safety concerns arise. Therefore, the Proposed Development does not require a Road Safety Audit under TII guidance.

The potential for soiling or damage to public road infrastructure through poor construction practices as well as potential health and safety hazards through poor traffic management are also identified where applicable.

The effects of the Proposed Development on the existing transport network are considered and described in terms of quality, duration and significance. Mitigation measures are proposed followed by identification of potential residual effects. The potential for cumulative effects from other developments was also assessed.

15.5.2.1 Relevant Guidance

The following guidance was adhered to during the assessment of traffic and transport in this EIAR:

- Tipperary County Development Plan 2022-2028, Tipperary County Council;
- TII Publication: Traffic and Transport Assessment Guidelines, TII, 2014;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- EPA Guidelines on The Information to Be Contained in Environmental Impact Assessment Reports, EPA, 2022;
- Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017;
- TII Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads, TII, 2016;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060, TII, May 2023, and [DN-GEO-03031 - Rural Road Link Design](#) May 2023;
- TII Specification for Road Works - Drainage and Service Ducts CC-SPW-00500, September 2024;
- Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017;
- ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines, May 2019.
- Kilkenny City and County Development Plan 2021-2027, Kilkenny County Council;
- Interim Guidance to Road Authorities regarding the proposed placement of Medium or High Voltage electricity assets, including ducts, cables, and associated infrastructure under public roads, Government of Ireland, 2025.



15.5.2.2 Sources of Information

The assessment is informed by a combination of field surveys, automatic traffic counter (ATC) data, desktop studies of potential haulage routes and local roads department consultation conducted by FT Engineers as detailed below:

- Open-source TII traffic counter information and private traffic count data carried out for historical impact assessments, accessed in October 2025;
- Ordinance survey, Google aerial and street view mapping, accessed October 2025;
- Tipperary County Council Planning Enquiry System (ePlan), accessed October 2025;
- Traffic count data was obtained from 7-day traffic count surveys conducted between the 27th of September - 4th of October 2023;
- Project construction methodologies;
- Site Layout Plans;
- Ordinance survey Ireland, Tailte Eireann, Google aerial and street view mapping;
- Abnormal Indivisible Load (AIL) Route Survey Report for the Turbine Delivery Route carried out by Pell Frischmann, January 2026.

The above sources of information have been used to identify the study area and transport routes to be assessed.

15.5.2.3 Consultation

Transport Infrastructure Ireland (TII) were consulted as part of the EIAR scoping process along with a wide range of key stakeholders and statutory consultees, as outlined in Chapter 2. An email was received from TII on the 20th of September 2021 including general guidance and recommendations for the preparation of an EIAR, which may affect the national road network.

Tipperary County Council (TCC) Roads Department were consulted during the EIAR scoping phase and through a subsequent virtual meeting on the 8th of December 2021. The purpose of the consultation meeting was to deliver a presentation of the proposed haul routes, the turbine delivery route, road upgrades, and construction entrances to the Area Engineer for comment and feedback. Any recommendations received by the roads department would then be implemented to the design and application in advance of the submission to the Local Authority.

Kilkenny County Council (KCC) Roads Department were consulted as part of the EIAR scoping process in relation to the grid connection route within their jurisdiction.

An Garda Síochána were also consulted during the EIAR scoping phase. No response was received.

15.5.3 Receiving Environment

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of roads throughout Ireland is outlined in the below table:



Table 15-2: Road Categories

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120km/per hour) roads predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageway, with some that are dual carriageway. Generally high speed (100km/per hour) roads that facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting towns, serving medium to large geographical areas and link to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These roads generally receive more frequent maintenance criteria than Local Roads and therefore tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.

The transport network comprising the study area is presented in Volume 4, Figure 15.1.

Motorways

The nearest motorway to the Littleton site is the M8 which connects Cork City to the M7 between Urlingford and Portlaoise. The M8 Motorway forms a large part of the Turbine Delivery Route (TDR) and departs at Junction 4 to join the R693 regional road. The road is the arterial route for traffic connecting Cork to Dublin. The M8 runs along the western boundary of the site before it cuts through the northern section of the site. The AADT for the M8 in 2024² according to TII automatic traffic counter data was approximately 15,388 with approximately 12.4% of this total comprised of HGV traffic.

The M9 is located approximately 30km southeast of the proposed wind farm site. The M9 is the primary artery between Waterford and Dublin, joining the M7 between Naas and Newbridge. The AADT for the M9 in 2024 according to TII automatic traffic counter data was approximately 13,013 with approximately 8.7% of this total comprised of HGV traffic.

The M7, located approximately 23km north of the proposed site, is utilised for the TDR which departs at Junction 19 of the M7 Motorway to join the M8. The M7 is a crucial transport corridor, connecting Dublin and Limerick. It is part of the larger National Primary Route (N7), which extends from Dublin to Limerick and further south. The AADT for the M7 in 2024 according to TII automatic traffic counter data was approximately 11,865 with approximately 10.7% of this total comprised of HGV traffic.

The Grid Connection (GC) route does not utilise the motorway network. There are no other motorways located in proximity to the proposed Wind Farm Site.

² Most recent full year of data available representing normal traffic conditions.



National Roads

The N24 is the nearest national primary route located approximately 27km to the south of the proposed Wind Farm Site. The N24 serves as a link between Limerick City and Waterford City. The AADT for the N24 in 2024 according to TII automatic traffic counter data was 8,207 with approximately 10.3% of this total accounting for HGV traffic.

The N75 is the nearest national secondary road located approximately 3km to the west of the proposed Site, and links Thurles and Twomileborris Co. Tipperary. The AADT for the N75 in 2024 according to TII automatic traffic counter data was 4,986 with approximately 3% of this total comprised of HGV traffic.

The N62 is a national secondary route which connects Athlone to Thurles and is located approximately 5km west of the proposed Site. The AADT for the N62 in 2024 according to TII automatic traffic counter data was 9,261 with 5% of this total comprising of HGV traffic.

The N76 is a national secondary route which connects Kilkenny to Clonmel and is located approximately 25km to the east of the proposed Site. The AADT for the N76 in 2024 according to TII automatic traffic counter data was 5,985 with approximately 6.1% of this total comprised of HGV traffic.

The N69 national secondary road forms part of the TDR which connects Foynes to the N18 Limerick Southern Ring Road at Junction 2. The N69 is approximately 85km to the west of the Site. The AADT for the N69 in 2024 according to TII automatic traffic counter data was 6,617 with 8.6% of this total comprised of HGV traffic.

The TDR travels along the N18 Limerick Southern Ring Road for approximately 3.8km before merging with the M7 Motorway.

The N77 national secondary road forms a short section of the GC route (approximately 930m).

Regional Roads

The R639, which forms part of the GC route and the TDR (approximately 4.6km), serves as a vital regional road linking the N8 near Glanmire, Co. Cork, to the N77 at Durrow, Co. Laois. Running in the southwest direction, it passes approximately 1km west of the site and crosses the northern section of the development. The AADT for the R639 in 2023 according to the procured Automatic Traffic Count data is shown in Table 15-3.

The R689 connects Clonmel Co. Tipperary to Urlingford Co. Kilkenny. This road is approximately 2.2km from the site, running parallel to the eastern boundary.

The R691 connects Cashel in Co. Tipperary to Callan, Co. Kilkenny and is located approximately 2.5km to the south of the proposed Site.

The R693 regional road forms a large part of the GC route before joining the R694 and a short section of the TDR (approximately 680m). The AADT for the R693 in 2023 according to the procured Automatic Traffic Count data is shown in Table 15-3.

The proposed GC route travels along a large part of the R694 regional road which is approximately 18km to the northeast of the Site.

Local Roads

The L2201 local secondary road is a single lane local road which travels along the southern boundary of the site. This road links Ballymoreen to Ballinunty. Vehicles will utilise this road to gain access to the southern section of the site during the construction stage.



The L4153 local road at Derryhogan is a single carriageway secondary local road. It is proposed to have an existing bog operations vehicular access road crossing point on this road. The AADT for the L4153 in 2023 according to the procured Automatic Traffic Count data is shown in Table 15-3.

The L4114 Longford Pass local road traverses the northern section of the site. It branches off the R689 and runs for approximately 4.1km before joining the R689 again. This is a single carriageway secondary local road and forms part of the proposed grid connection and TDR. The AADT for the L4114 in 2023 according to the procured Automatic Traffic Count data is shown in Table 15-3.

The TDR also traverses a short section of the L6188 (approximately 760m connecting Foynes Port to the N69) and L2101 (approximately 88m connecting the R639 to the L4114).

Other Transport Network Infrastructure Within the Study Area

The Littleton Labyrinth is an existing amenity route developed by Tipperary County Council which provides a shared walking and cycling route connecting the village of Horse and Jockey to Lough Derryvilla. From Horse and Jockey, it follows a mixture of public roads and the Derrynaflan greenway before joining 7.2km of newly constructed trail along the former Bord na Móna railway line between Derrynaflan and Derryvilla. The route overlaps the proposed Wind Farm Site between the Former Bord na Mona Factory trailhead and Lough Derryvilla.

The Midlands Trail Network amenity routes are proposed by Fáilte Ireland and BnM with Decision to Grant received 20th August 2025. The proposed trails link the Littleton Labyrinth and creates two new stretches of shared walking and cycling routes through the BnM peatlands, namely, between the Former Bord na Mona Factory, Lanespark and the L2111 road towards Littleton and between Lough Derryvilla and the L2111 towards New Birmingham.

The Suir Blueway, located in Co. Tipperary approximately 30km to the southwest of the Site, runs for 53km in an east-west direction from Carrick-on-Suir to Cahir via Clonmel. The route consists of a walking/ cycling trail for 21km which runs from Carrick-on-Suir to Clonmel.

The Site is situated approximately 11km to the east of the Dublin - Cork InterCity railway line with several stations located nearby including Thurles, Templemore, and Ballybrophy station.

Thurles station in Co. Tipperary is located approximately 5.8 km to the east (straight line distance) from the Site and serves as a key stop on the Dublin - Cork InterCity line, providing frequent services to Dublin, Cork, and connections to Limerick and Waterford.

Templemore station in Co. Tipperary, located approximately 16km to the northwest (straight line distance) of the Site, also lies on the Dublin - Cork InterCity line.

Ballybrophy station in Co. Laois is situated approximately 24km to the northeast (straight line distance) from the Site and serves as a key junction for the Dublin - Cork InterCity line and acts as an interchange for the Dublin - Limerick line via Nenagh.

15.5.3.1 Existing Environment Traffic Volumes

Existing traffic volumes on roads in the study area are shown in Table 15-3 below. These values are taken from TII Data and from Road Surveys conducted by Traffinomics Ltd during September of 2023.



Table 15-3: Baseline Traffic Volumes (2024)³

Road	Baseline AADT		
	HGV	LGV	AADT
M08 - TMU M08 035.0 N	1,908	13,480	15,388
N75 - TMU N75 000.0 E	150	4,836	4,986
L4101 - (Google Maps Ref: 52.62872, -7.75011)	75	1,766	1,841
L4153 - (Google Maps Ref: 52.63681, -7.72672)	15	706	721
R639 - (Google Maps Ref: 52.64309, -7.73116)	221	2,497	2,718
L4114 - (Google Maps Ref: 52.68945, -7.64888)	2	64	66
R639 - (Google Maps Ref: 52.7253, -7.57499)	328	4,275	4,603
R693 - (Google Maps Ref: 52.729587, -7.456081)	230	4,285	4,514
L1811 - (Google Maps Ref: 52.75662, -7.39266)	8	126	134

The AADT figures presented in the table above will be projected to a proposed construction commencement year of 2029 from 2024 source data in Section 15.5.6 of this Chapter, in accordance with NRA Project Appraisal Guidelines for National Roads: Unit 5.5 Link-Based Traffic Growth Forecasting, 2011 and TII Project Appraisal Guidelines for National Roads: Unit 5.3 – Travel Demand Projections, 2021.

15.5.3.2 Road Safety and Collisions

A review of available road-safety data from 2022 - 2024 was undertaken for the road network surrounding the Proposed Development. No recent collision data is available from An Garda Síochána or the Road Safety Authority at a suitable level of detail. Therefore, the assessment is based on Transport Infrastructure Ireland (TII) collision-rate data⁴.

TII utilises collision data to rank the safety of the national road network and identify high collision locations. Road segments are ranked at a Risk Level from 1 to 4, where Risk Level 1 represents the lowest relative risk and Risk Level 4 represents the highest. This provides an indicative measure of relative safety performance across the national road network. The TII dataset also includes counts of Material Damage Only Collisions and Injury Collisions, based on incidents reported to An Garda Síochána.

Please refer to Figure 15.3, within Volume 4 of the EIAR, for the risk classifications of the national roads within the vicinity of the Site (M8, N75, N62). Regional and local roads are not included in the TII collision-rate dataset and therefore are not part of this assessment.

³ Data sourced from TII Traffic Data: <https://trafficdata.tii.ie/publicmultinodemap.asp>

⁴ [Transport Infrastructure Ireland - Data Portal](#)



15.5.4 Proposed Development

A large infrastructural project of this nature will generate additional traffic on the existing road network as a result of the construction, operation and decommissioning. A detailed description of the Proposed Development assessed in this EIAR is provided in Chapter 4, Volume 2.

The following sections describe the Proposed Development in the context of the existing traffic conditions and transportation network.

15.5.4.1 *Construction Programming*

As described in Chapter 4, the construction of the Proposed Development in its entirety is expected to take 24 months. Therefore, a 24-month construction programme was assumed for construction traffic generation movement calculations as part of this assessment to assess for worst case as it would generate the highest peak volume of traffic (i.e. an accelerated construction programme).

An indicative construction programme upon which vehicle trip distribution calculations are based is presented in Chapter 4, Volume 2 and in the CEMP, Appendix 4.1, Volume 3 of the EIAR.

15.5.4.2 *Main Wind Farm Site*

The Proposed Wind Farm will consist of 11 no. wind turbine generators (WTG's), 1 no. permanent onsite 110 kV electrical substation compound and associated infrastructure. In addition, 1 no. on-site construction borrow pit is proposed. There are 6 no. dedicated peat and spoil deposition areas, 4 no. temporary construction compounds, and 1 no. permanent meteorological mast along with ancillary civil, drainage and electrical infrastructure. The Site also contains Biodiversity Enhancement and Management Plan (BEMP) Lands and recreational amenity trails.

15.5.4.3 *Site Access*

Access to the proposed Wind Farm Site shall be taken from the public road network at 6 no. points. These are a combination of existing bog operations accesses which shall be upgraded and proposed access points to be created to facilitate the construction and operation of the proposed wind farm. The individual access points are summarised as follows:

- 1 no. site access point (Access Point 1) in the south of the Site from the Local Road L-2201 to Lanespark at Ballybeg comprising the re-use and upgrading of an existing bog operations rail line and vehicular access crossing point. This access point shall be used during the construction phase only for general construction traffic;
- 2 no. access points (Access Point 2 and 3) between Lanespark and Littleton Bog from the Local Road L-4153 at Derryhogan comprising the re-use and upgrading of an existing bog operations vehicular access road crossing point. These access points shall form a public road crossing. This shall be used as a crossing point for turbine components, and during the construction and operation phases of the Proposed Development;



- 2 no. access points (Access Point 4 and 5) within Littleton Bog off the Local Road L-4114 at Longfordpass North comprising the creation of two new access points on opposite sides of the public road. These access points shall form a public road crossing with the northern of these acting as a crossover point for HGVs, oversized loads and component deliveries only. The southern access point off the L-4114 local road shall be used during the construction and operation phases of the Proposed Development and will be the main access for day-to-day operations of the wind farm;
- 1 no. access point (Access Point 6) in the north of the site from the R639 at Longfordpass North comprising the creation of a new access point. This shall act as the primary access point to the site for the delivery of large turbine components and shall be used during the construction and operation phases of the Proposed Development. Access shall be via left turn only. It will not be used for general construction or operations traffic.

Table 15-4 to Table 15-6 show the exact nature of the proposed accesses.

Table 15-4: Component Deliveries / Oversized Loads / HGVs

Access number	Road	Entrance	Exit	Notes
Access 1	L4101	X	X	No access or egress for component deliveries permitted.
Access 2	Unnamed local road at Derryhogan	✓	✓	No left or right turn, crossover to Access 3 permitted.
Access 3	Unnamed local road at Derryhogan	✓	✓	No left or right turn, crossover to Access 2 permitted.
Access 4	Unnamed local road at Longfordpass North	✓	✓	No left or right turn, crossover to Access 5 permitted.
Access 5	Unnamed local road at Longfordpass North	✓	✓	No left or right turn, crossover to Access 4 permitted.
Access 6	R639	✓	✓	Access will be via a left turn only



Table 15-5: General Construction Traffic (excluding Component Deliveries / Oversized Loads / HGVs)

Access Number	Road	Entrance	Exit	Notes
Access 1	L4101	✓	✓	Construction vehicles permitted to enter and exit, both left and right turns permitted.
Access 2	Unnamed local road at Derryhogan	✓	✓	No left or right turn, crossover to Access 3 permitted.
Access 3	Unnamed local road at Derryhogan	✓	✓	Construction vehicles permitted to enter and exit, both left and right turns permitted.
Access 4	Unnamed local road at Longfordpass North	✓	✓	No left or right turn, crossover to Access 5 permitted.
Access 5	Unnamed local road at Longfordpass North	X	X	No access or egress for general construction traffic permitted.
Access 6	R639	X	X	No access or egress for general construction traffic permitted.

Table 15-6: General Operations Traffic

Access Number	Road	Entrance	Exit	Notes
Access 1	L4101	X	X	No access or egress for general operations traffic permitted.
Access 2	Unnamed local road at Derryhogan	✓	✓	General operations vehicles permitted to enter and exit, both left and right turns permitted. No oversized loads to enter.
Access 3	Unnamed local road at Derryhogan	✓	✓	General operations vehicles permitted to enter and exit, both left and right turns permitted. No oversized loads to enter.
Access 4	Unnamed local road at Longfordpass North	✓	✓	General operations vehicles permitted to enter and exit, both left and right turns permitted.
Access 5	Unnamed local road at Longfordpass North	X	X	No access or egress for general operations traffic permitted.
Access 6	R639	X	X	No access or egress for general operations traffic permitted.

The layout of the site access points is presented in Figures 4.2 to 4.4, Volume 4, and on the planning application site layout plan drawings.



The access points have been selected with consideration for safety of public road users and construction staff and to ensure they can be constructed to comply with the requirements of both Tipperary County Council and TII design requirements for direct accesses (DN-GEO-03060).

An assessment of the existing geometry and sightlines from these entrances was carried out in September 2025 with existing visibility and site entrance coordinates presented in Table 15-7. Each of the access points are described in detail below.

15.5.4.3.1 Entrance Assessment

Site visits took place on the 23rd of July 2025 and 10th of November 2025 to assess potential site access locations along the public road network that could facilitate site entrances.

Entrance sightlines are required to be designed and constructed in accordance with the TII guidelines, TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060 (TII, 2023).

To comply with the TII access design standards, a sightline distance of 120m and 215m is required in both directions for roads with 60km/hr and 100km/hr speed limits respectively. Roadside visibility in both directions was assessed for the proposed entrance and alternative options with results presented in Table 15-7 where references "right" and "left" relate to the view from the site entrance junction as the driver looks out onto the public road.

No road safety issues were identified as part of the traffic and transport assessment, and the proposed access arrangements comply with the relevant TII standards. Other than the standard mitigation measures required for the construction and operation of the access points, no additional safety concerns arise. Therefore, the development does not require a Road Safety Audit under TII guidance.

The layout of the existing entrance sightlines can be found on planning application site layout drawings, Series No. 0103.

Table 15-7: Existing Sightlines at Proposed Entrance Locations

Access Point No.	Road	Coordinates (ITM)	Y (m) at X=0m		Y (m) at X=3m	
			Right	Left	Right	Left
1	L2201	619956.2, 659765.2	>160	>160	>160	>160
2	L4153	621233.9, 659332.6	>160	>160	24	86
3	L4153	621237.7, 659323.7	>160	36	105	27
4	L4114	623067.6, 653030.8	>160	>160	< 160	< 160
5	L4114	623070.2, 653026.8	>160	>160	< 160	< 160
6	R639 (100km/h speed limit)	622857.2, 651538.7	198	67	157	44



Access Point 1:

Access point 1 is located near the southern boundary of the Site along the L2201 local road which connects Ballymoreen to Ballinunty.

Existing visibility is currently very good and achieves 160 m in both directions at 'X' = 3 m. The road is in good condition with road markings present and an even surface with no potholes noted. The major road width was measured to be 7.2m.

This location is considered capable of complying with TII design standards for a direct access.

Access Point 2:

Access point 2 is a proposed crossing point across the Site, and it is located along the L4153 local road, which runs from Littleton to New Birmingham.

Existing visibility is currently good at 'X' = 0m and achieves 160m in both directions. However, at 'X' = 3m, existing visibility is not enough to achieve 160m in either direction. Please refer to the planning application site layout drawings (Series No. 0103) for the indicative visibility splays. Any obstructions within the visibility splays are to be removed and set back at a minimum of 1m behind the sightline.

Following the accommodation works, hedgerow maintenance would be required periodically in both directions to ensure the desired sightlines are maintained.

The road is in fair condition. There are no road markings present and no potholes were noted. The width of the road is 8m. There is no verge along this road.

This location is considered capable of complying with TII design standards for a direct access with appropriate mitigation measures implemented.

Access Point 3:

Access point 3 is a proposed crossing point across the Site, and it is located along L4153 local road, which runs from Littleton to New Birmingham.

At 'X' = 0m, visibility to the right meets the required 160m. To the left, however, and at 'X' = 3m in both directions, the existing visibility is insufficient, and further works are required to meet standards.

Please refer to the planning application site layout drawings (Series No. 0103) for the indicative visibility splays. Any obstructions within the visibility splays are to be removed and set back at a minimum of 1m behind the sightline.

Following the accommodation works, hedgerow maintenance would be required periodically in both directions to ensure the desired sightlines are maintained.

The road is in fair condition. There are no road markings present and no potholes were noted. The width of the road is 8m. There is no verge along this road.

This location is considered capable of complying with TII design standards for a direct access with appropriate mitigation measures implemented.



Access Point 4:

Access point 4 is a proposed crossing point across the Site. It is located along the L4114 local road through Longford Pass, which joins the R639.

Existing visibility is currently very good and achieves 160 m in both directions at 'X' = 0 m. However, at 'X' = 3 m existing visibility is not enough to achieve 160 m. Please refer to the planning application site layout drawings (Series No. 0103) for the indicative visibility splays. Any obstructions within the visibility splays are to be removed and set back at a minimum of 1m behind the sightline.

Following the accommodation works, hedgerow maintenance would be required periodically in both directions to ensure the desired sightlines are maintained.

The width and condition of the existing local road carriageway is generally poor, however access point 4 is proposed as a crossing point for HGVs, oversized loads and component deliveries only. Outside of the crossing point, the L4114 local road shall be used during the construction and operation phases of the Proposed Development for light vehicles only (no component deliveries, oversized loads, HGV) and will be the main access for day-to-day operations of the wind farm. The road width is approximately 3.2m. There are no road markings present, and the road surface is uneven with rutting noted during the site visit.

This location is considered capable of complying with TII design standards for a direct access with appropriate mitigation measures implemented.

Access Point 5:

Access point 5 is a proposed crossing point across the site. It is located along the L4114 local road through Longford Pass, which joins the R639.

Existing visibility is currently very good and achieves 160 m in both directions at 'X' = 0 m. However, at 'X' = 3 m existing visibility is not enough to achieve 160 m. Please refer to the planning application site layout drawings (Series No. 0103) for the indicative visibility splays. Any obstructions within the visibility splays are to be removed and set back at a minimum of 1m behind the sightline.

Following the accommodation works, hedgerow maintenance would be required periodically in both directions to ensure the desired sightlines are maintained.

The road width is approximately 3.2m. The road carriageway is in poor condition with minor rutting present, however access point 5 is proposed as a crossing point for HGVs, oversized loads and component deliveries only. Outside of the crossing point, the L4114 local road shall be used during the construction and operation phases of the Proposed Development for light vehicles only (no component deliveries, oversized loads, HGV) and will be the main access for day-to-day operations of the wind farm. There are no road markings present, and the road surface is uneven.

It was observed that there is a ditch at this access point approximately 2m setback from the road edge.

This location is considered capable of complying with TII design standards for a direct access with appropriate mitigation measures implemented.



Access Point 6:

Access point 6 is a site entrance point located near the northern boundary of the site along the R639 regional road which stretches from Durrow, Co. Laois to Cork. The speed limit along this road is 100 km/h therefore the desired sightline for this entrance is 215m. This is the TDR access point; loads will approach the site from the north-east along the R639.

Existing visibility is currently poor and does not achieve 215m at 'X' = 0 m or at 'X' = 3 m due to the presence of trees and hedgerow. Please refer to the planning application site layout drawings (Series No. 0103) for the indicative visibility splays. Any obstructions within the visibility splays are to be removed and set back at a minimum of 1m behind the sightline.

Hedgerow maintenance would be required periodically in both directions to ensure the desired sightlines are maintained.

The TDR will approach the Site from the right. The delivery will be controlled and will most likely occur during the night with minimal traffic on the road.

The road is in good condition with road markings present and an even surface with no potholes noted. The major road width was measured to be 9.5 m. The width of the hard shoulder is 2.7 m.

It is considered that this location can comply with TII design standards for a direct access with additional works.

15.5.4.4 Haul Route and Turbine Delivery Route

This section presents the routes taken to reach the entrances for construction deliveries, and infrastructure components. In constructing the wind farm, materials and plant will be delivered to the site. The routes will include some of the surrounding road network which will need to cater for the additional traffic associated with the Proposed Development.

Traffic associated with the construction phase include:

- HGVs carrying aggregates, pipes and other materials associated with construction of the internal access tracks, hard standings and drainage infrastructure;
- HGVs (Concrete wagons) carrying concrete for turbine foundations and substation foundations;
- HGVs carrying building materials for the substation and related electrical equipment, cabling, etc.;
- HGVs carrying plant and fuel;
- HGVs exporting site waste;
- Cranes and associated elements for the main crane for erecting the turbines;
- Additional large components associated with wind turbines;
- Private cars and vans for the commuting workforce.



15.5.4.4.1 Turbine Delivery Route

Pell Frischmann were commissioned by Fehily Timoney to undertake a study of the delivery route for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Littleton Wind Farm. The Route Survey Report (RSR) has been prepared to help inform the EIAR on the issues associated with the development of the Site regarding off-site transport and access for AIL traffic and includes a detailed swept path analysis (SPA).

The report identifies the key issues associated with AIL deliveries and identifies remedial works, either in the form of physical works or as traffic management interventions that will be required to accommodate the predicted loads. A copy of this report is contained in Appendix 4.2, Volume 3. The worst-case components from a Vestas V162 turbine was assessed. Please refer to Appendix 4.2 for the component details.

Turbine blades will be carried on a Dolly Clamp trailer to reduce the need for mitigation in constrained sections of the route. Towers will be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame trailer.

The proposed Turbine Delivery Route (TDR) is presented in Figure 4.4, Volume 4 of the EIAR. A substation transformer unit will be transported to site which will be categorised as an abnormal load. As a result, an abnormal load permit will be sought for this movement. Multiple transformers have already been delivered to EirGrid substations in the area without any impact on the structures along the road network.

The proposed route to site is summarised as follows:

- Loads will exit the Port of Entry (PoE) of Foynes Port and join the N69 heading east;
- At Limerick, they will join the N18 heading northeast and merge onto the M7;
- Loads will exit at Junction 17 Portlaoise Interchange and perform a U-turn to re-join the M7 heading southwest;
- They will merge onto the M8 and continue southwest;
- At the M8 Junction 4 East Roundabout loads will turn left to join the R693;
- At the following roundabout loads will turn right onto the R639 then drive through Urlingford;
- To the southwest of Urlingford loads will turn left at the proposed site entrance.

15.5.4.4.1.1 Temporary Accommodation Works

Due to their abnormal size, blades and towers will be delivered at night to avoid disruption to peak day time traffic. The turbine blades will be the longest components to be transported from the port to site. In some cases, accommodation works are required along the TDR such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening. Any accommodation works within the public road corridor will be carried out in advance of the turbine deliveries in agreement with the local authority and subject to a road opening license. A traffic management plan will be agreed with Tipperary County Council in advance of any such works.

The development will be constructed to ensure that all temporary/permanent works within the road curtilage of the national roads will be as per the Purple Book (Guidelines for Managing Openings in Public Roads, 2017). If any damage to existing footpaths or cycle lanes occurs during the delivery of components, these sections will be replaced by the awarded civils contractor as per The Purple Book (Guidelines for Managing Openings in Public Roads 2017 (SD12 Footways: Concrete Permanent Reinstatement)).



Key elements of the temporary accommodation works for the delivery of turbines between the M8 and site are summarised in Table 15-8. Please refer to Appendix 4.2, Volume 3, for further details and the locations of accommodation works.

Table 15-8: TDR Temporary Accommodation Works between M8 and Site (Load Route Survey, Pell Frischmann, January 2026)

TDR Node Reference	Location	Summary Description of Proposed Temporary Accommodation Works
18	M8 / R693 Roundabout	Removal of two lighting columns and road signs and vegetation clearance to facilitate over sail. Load bearing surface to be laid.
19	R693 / R639 Roundabout	Removal of lighting columns, road signs and tree clearance and laying of load bearing surfacing.
20	R639 Splitter Island	Removal of traffic calming bollards and a load bearing surface to be laid.

15.5.4.4.1.2 Crossings and Structures along the TDR

There are a number of existing watercourse crossings along the TDR that will be crossed by oversized loads associated with the delivery of turbine components.

It was determined that no structural modifications are required, and that the bridges are suitable for turbine delivery vehicles to traverse it.

15.5.4.4.2 Haul Routes

For this development, 3 no. haul routes are proposed for the deliveries of construction materials from quarries using HGVs such as concrete and aggregates. Indicative haul routes for the Proposed Development are shown in Figure 15.2, Volume 4 of the EIAR.

The licenced quarries which are proposed to be utilised for the construction of the Proposed Development include:

- Maher Quarries Ltd., located in Thurles, Co. Tipperary, approximately 3.45km north-west of the Site
- Gleeson Quarries, located in Thurles, Co. Tipperary, approximately 4.7km south of the Site
- Roadstone Quarry Killough, located in Thurles, Co. Tipperary, approximately 9.5km south-west of the Site

These quarries can provide aggregates for both road construction and concrete. The location of these licensed quarries and the haul routes to the Proposed Development are shown in Figure 15.2, Volume 4 of the EIAR. Consideration has been made to keep loads on the highest road class for most of the route to minimise traffic disruption.



15.5.4.5 Waste Management

Authorised waste management facilities have been identified in the greater County Tipperary area as listed on the Local Authority Waste Facility Register by the National Waste Collection Permit Office. The authorised waste facilities utilised during the construction and decommissioning of the proposed development will depend on the contractors appointed and will depend on the capacity of the various facilities at the time of construction and decommissioning. A list of existing licensed waste facilities in proximity to the wind farm site is presented in Table 15-9 below. These facilities were identified at the time of the preparation of this EIAR.

Table 15-9: Licensed Waste Facilities in the Vicinity of Littleton Wind Farm, Co. Tipperary

Licensed Waste Facility	Location	Straight Line Distance from Site (km)	Type of Waste
Pride Point Ltd.	Monakeeba, Mill Road, Thurles, Co. Tipperary, E41 YR79	~9.2 northwest	Concrete, bricks, packaging, tiles and ceramics, iron and steel, mixed metals, soils and stones.
Killeenyarda Construction Ltd.	Cabragh Business Park Ballycurrane Thurles, Co. Tipperary	~11.3 east	Mixture of concrete, bricks, tiles and ceramics, wood, mixed metals, mixed construction and demolition wastes, plastics, biodegradable waste, mixed municipal waste, bulky waste.
Roadstone Quarry Killough	Gaile, Holycross Co. Tipperary, E41 T622	~13.3 northwest	Concrete, bricks, tiles and ceramics.
Clonmel Waste Disposal Ltd.	Lawlesstown Clonmel Co. Tipperary	~26.3 south	Soil and stones, mixed construction and demolition wastes, bulky waste, sawdust, shavings, cuttings, wood, particle board and veneer, metals.

15.5.4.6 Grid Connection

This section summarises the information regarding the grid connection. For a more detailed description, see Chapter 4, Volume 2 and Figure 4.3, Volume 4 for the overall layout of the GC route.

15.5.4.6.1 On-Site Electrical Substation and Grid Connection Route

A new onsite electricity substation will be constructed within the Site as shown in Chapter 4, Volume 2 of the EIAR. This will provide a connection point between the wind farm and the national grid via underground 110kV cabling to the existing Ballyragget 110kV substation within the townland of Ballyragget, Co. Kilkenny. The substation compound will also contain external electrical and ancillary infrastructure.

The substation transformer and other large electrical components will follow the designated TDR. The TDR accommodation works will also facilitate the delivery of these components.

The proposed GC route will be 30.9 km in length, with 28.4 km to be constructed within the existing road corridor. Refer to Figure 4.3, Volume 4 for the overall layout of the GC route.



Connection works from the onsite substation at Littleton Bog to Ballyragget substation will involve the installation of ducting, joint bays and ancillary infrastructure and the subsequent running of cables along the existing road network. This will require delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches and road surfaces.

The ducts will be installed, and the trench reinstated in accordance with landowners, EirGrid, and Tipperary County Council specifications. The electrical cabling/fibre cable will be pulled through the installed ducts. Construction methodologies implemented and materials used will ensure that the GC route is installed in accordance with the requirements and specifications of EirGrid.

It is expected that full road closures will be put in place to facilitate cabling works in combination with lane closures, partial road closures and stop/go systems. This will enable the works to be completed as quickly and as safely as possible, with minimal disruption time for residents of the area. These works shall be undertaken on a rolling basis with short sections closed for short periods before moving onto the next section.

Enforcement of traffic management procedures will include temporary traffic lights/ flag men in place during proposed ducting works. Should the need for weekend or night works be required this will be adhered to by the build contractor and agreed with in writing prior to such works taking place. Road closures will be subject to the applicable statutory licensing processes as implemented by the Local Authority. Road closures will be facilitated by the existing network of roads in the area.

15.5.4.6.2 Access to Grid Connection Infrastructure

Construction and operational access to the GC infrastructure shall be via the Proposed Wind Farm internal access tracks and Access Point No. 4 on the L4114. Please refer to the planning application site layout plan drawings for the access point to the GC infrastructure.

15.5.4.6.3 Internal Network Cable

Electricity generated from wind turbines will be collected at high voltage (33kV) by an internal circuit of buried cables. This circuit will be terminated at the proposed onsite substation. The underground cable will be installed within the wind farm boundary. This cabling will require delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches and road surfaces. Excavated material will be stored adjacent to the trench and incorporated into the backfilling where possible. Should there be any excess material it will be removed offsite to a licensed facility.

15.5.4.6.4 Trench Details

The proposed trench and ducting will be installed at a sufficient depth so as not to conflict with the drainage for the public roadway. The ducting will be installed in line with EirGrid specification and design reviewed with all relevant stakeholders prior to obtaining a road opening license. Any improvements required to facilitate development will be identified prior to works. The ducting will be placed and designed in such a position to ensure that future routine network improvements such as pavement overlay and strengthening, installation of new verge-side signs and other road furniture are not impacted by the cable trench.

All materials used in the reinstatement of trenches will comply with the requirements of the Department of Transport guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads and the TII Specifications for Road Works.

It is proposed that all roads will be reinstated expeditiously on completion of the construction works. Roads will be reinstated to their pre-works condition or better and to the satisfaction of the Local Authority.



Details for trench excavation, backfilling and road surface reinstatement methodologies are contained in the CEMP Appendix 4.1 and in Chapter 4 and will be designed and constructed in accordance with EirGrid specifications⁶.

15.5.4.6.5 Joint Bays

Joint bays are pre-cast concrete chambers where individual lengths of cables are joined to form one continuous cable. A joint bay is constructed in a pit. The bay is 6m x 2.5m x 2.1m deep. A reinforced precast concrete slab is laid in the bay to accommodate the jointing enclosure.

Suitable joint bay locations along the grid connection route have been identified and assessed as part of the EIAR.

It is expected that 70 no. joint bays will be required for the grid connection. Of these, 67 no. joint bays shall be located in public roads with 3 no. located on private lands. The locations of joint bays are shown on Figure 4.3, Volume 4 of the EIAR.

Further details of joint bay construction can be found in the Chapter 4, Volume 2 and in the CEMP in Appendix 4.1, Volume 3 of the EIAR.

15.5.4.6.6 Crossings

The GC cable route contains 11 no. watercourse crossings, 10 no. of which are EPA mapped. These are listed in Table 15-10 below.

Table 15-10: Grid Connection Watercourse Crossings

Watercourse	Coordinates ITM	Existing Crossing Details	Proposed Crossing
Black River	624884, 660459	Existing Road Bridge	HDD
Goul River	627557, 662814	Existing road bridge Double large diameter culvert	HDD
Ardreagh Stream	628129, 663283	Existing road bridge Double box culvert	HDD
Borrisbeg Stream	630026, 663573	Existing road bridge Possibly single masonry arch	HDD
Borrisbeg Stream	631586, 663278	Existing road bridge Box culvert	HDD
EPA Mapped	635357, 663902	No watercourse visible, EPA mapped.	Crossing below road
Gorteenahilla Stream	640307, 664969	Single arch bridge	HDD
Not EPA Mapped	640626, 665400	Existing road bridge Single Arch bridge	HDD

⁶ <https://www.eirgridgroup.com/customer-and-industry/general-customer-information/transmission-policies-and/>



Watercourse	Coordinates ITM	Existing Crossing Details	Proposed Crossing
Lismaine Stream	642120, 667578	Existing road bridge Box culvert	HDD
Lisdowney Stream	643572, 668666	Existing road bridge Bottomless box culvert	HDD
River Nore	643930, 671951	No existing crossing	HDD

Please refer to Volume 2 Chapter 9, Hydrology, Hydrogeology and Water Quality for a full description and assessment of all other drain and minor crossings. Further details on watercourse crossing methods and detailed description of the construction methodologies along the proposed GC cable route can be found in the CEMP in Appendix 4.1, Volume 3 of the EIAR.

15.5.5 Assessment of Likely Significant Effects

Likely effects of the Proposed Development are outlined below, these are categorised in relation to the construction phase, operational phase and decommissioning of the Proposed Development. The Do-nothing Scenario is also detailed.

15.5.5.1 *Do-Nothing Scenario*

If the Proposed Development is not constructed, there will be no change to the current road network and existing traffic patterns within the study area. Please note that irrespective of the consenting of the Proposed Wind Farm the remaining measures outlined in the Rehabilitation Plans, i.e. monitoring of the Littleton, Longfordpass and Lanespark Phase 1 measures and enhanced Phase 2 measures at nearby Ballybeg and Derryvella bogs, will continue to be implemented by BnM in agreement with the EPA. Please see Appendix 2.1 (Volume 3 of the EIAR) and Section 2.2.1 of Chapter 2 of the EIAR for further detail.

15.5.5.2 *Construction*

15.5.5.2.1 *Wind Farm Site*

The construction activities associated with the Proposed Development will lead to additional construction related traffic on the existing public road network over the duration of the construction works. These effects will include:

- Heavy Goods Vehicles (HGVs) transporting materials to and from the site, including road making materials, concrete, building materials, drainage/ducting materials, cabling, electrical components and excavated material;
- HGVs transporting conventional earthworks machinery such as excavators, dumper trucks and rollers;
- Fuel trucks transporting fuel for plant to each site compound during the construction phase;
- Light Goods Vehicles (LGVs) such as cars, 4x4s and vans used by the workers and supervisory staff involved in the construction works;
- Oversized loads including turbine components (more details below).



Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

Construction of the met mast will take place over a number of days. Construction traffic will consist of a small number of truck movements for delivery of mast sections and construction plant and crew.

15.5.5.2.2 Grid Connection

Cable Works

The traffic impact associated with the GC cable works will fall into two main categories, the construction traffic related impacts and the road/lane closure related impacts.

The proposed GC route is shown on Figure 4.3, Volume 4 of the EIAR.

Construction Traffic Related Impacts

The cable route construction works will involve constantly moving the working area as the cable installation works progress. Grid works within the public road corridor and private electrical network cabling are estimated to take approximately 18 months. The trenching and cabling works at the crossing points will be managed by a Stop/Go system without the need to close the road. Cable trenches can be excavated and covered using trench covers to maintain traffic flow.

Cabling and trenching works within the public road corridor are described in detail in the Traffic Management Plan. These works will lead to additional traffic associated with the cable route construction.

Road/Lane Closure Related Impacts

The grid connection construction works will require a combination of temporary road closures with traffic diversions and temporary lane closures along the proposed route.

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

The grid connection cable works by its nature will be isolated to a relatively small works area which will move daily. Impacts associated with the works will be experienced on the road network in the immediate vicinity to the works area.

Off-line sections of the proposed grid connection through private lands will not generate an impact to existing traffic flows.



Temporary road closures will be required at specific locations for the installation of joint bays and cable pulling and jointing operations at later dates. These activities are isolated and carried out in under a day at each location. Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users.
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

These effects are short term in duration and slight in significance and considered likely during the construction stage. The likelihood of significant effects is slight.

15.5.5.2.3 Turbine Delivery Route

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

Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company. Turbine deliveries will also be escorted by An Garda Síochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimised. As described in Section 15.5.4.1.1, accommodation works are required along the turbine delivery route such as hedge or tree cutting, removal of street furniture, removal of vegetation, relocation of lampposts, signage and temporary local road widening through the laying of compacted load bearing aggregate to verges and roundabouts.

The impact of the construction of the proposed temporary accommodation works will be the increase in construction-related traffic on the local road network. This will have several potential effects, including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles in the public road in the vicinity of the works areas;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing public road infrastructure.

These effects are short term in duration and slight in significance and considered likely during the construction stage. The likelihood of significant effects is slight.



15.5.5.3 Operation

Traffic associated with the operational phase of the Proposed Development will be associated with the wind farm owner/operator and grid network operator personnel visiting the substation, and maintenance staff. There will also be a limited infrequent attendance by routine environmental monitoring/compliance staff.

- **Routine Operational Traffic:** This includes vehicles for routine maintenance, environmental monitoring, and visits by the wind farm and grid network operators. The proposed substation has been designed in accordance with network operator requirements with welfare facilities. However, they will not require full time operational staff and will be largely automated with occasional visits from maintenance teams.
- **Non-Routine/Unplanned Traffic:** This is for emergency repairs or major component replacements, such as a turbine blade. This impact would involve the mobilisation of large plant like a crane and construction personnel. Unforeseen or unplanned events such as emergency turbine repair works could potentially require the mobilisation of construction plant and personnel to site. The replacement of a large turbine component such as a blade will require a crane and the re-installation of some TDR temporary accommodation requirements.

A cable fault along the grid connection could potentially require temporary road works for intrusive investigations and repair. The above unplanned events are extremely unlikely to occur.

The significance of the effects is directly tied to their likelihood and magnitude for the operational phase. The routine operational traffic is minimal, and the effects are considered not significant. The number of vehicles is very low, and the frequency is infrequent, so no meaningful change to the existing road network's function is expected.

For non-routine traffic, while the effects of a major repair could be significant in isolation (e.g., a large crane temporarily blocking a road), these events are extremely unlikely to occur.

Therefore, the likelihood of significant effects from the operational phase is negligible. The vast majority of traffic is minor, and the events that could cause significant effects are unlikely that they do not pose a credible risk to the road network.

15.5.5.4 Decommissioning

On decommissioning, cranes will disassemble the above ground turbine components which will be removed off site for recycling. All the major component parts are bolted together, so this is a relatively straightforward process.

The foundation pedestals will be covered over and allowed to re-vegetate naturally. Leaving the turbine foundations in situ is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine would result in environmental impacts such as noise dust and vibration.

It is proposed that all the internal site access tracks, recreational amenity trails, and turbine hard standings will be left in place subject to agreement with the planning authority at the time of decommissioning. These will continue to be used for recreation. Turbine hardstandings will be covered over with topsoil previously stripped and used for landscaping purposes during the construction stage and left to revegetate naturally. The recreational trails and associated signage will be left in situ.

The temporary accommodation requirements along the TDR will not be required for the decommissioning phase as turbine components can be dismantled on site and removed using standard HGVs.



Grid connection infrastructure including the on-site substation and ancillary electrical equipment will form part of the national grid and will be left in situ.

While some minor, temporary effects like localised noise and traffic will occur, these are not considered significant in the context of the Proposed Development's overall lifecycle and the mitigation measures proposed.

The likelihood of significant effects from the decommissioning phase is considered low. This phase is of short-term duration, expected to take no longer than six months to complete. The associated traffic impact will be significantly less than the construction phase due to a considerably lower number of vehicle movements.

Leaving the turbine foundations in place avoids the most significant potential environmental effects, such as major noise, vibration, and dust generation. Furthermore, the decision to leave the hardstandings and access tracks for future use and to allow the turbine hardstanding areas to naturally revegetate will limit overall environmental disturbance and facilitate a positive transition for the site's future use. The decommissioning plan will ensure the site is left in an environmentally enhanced state for future generations.

The decommissioning phase of the Proposed Development is described in Chapter 4, Volume 2 of this EIAR.

15.5.6 Traffic Assessment

It is estimated that the construction period for the Proposed Development will last up to 24 months. The development will be divided into a number of phases for the purposes of construction programming. Construction will be phased based on the main activities underway during a given period and to minimise the level of impact of the construction on the local road network, residents and the wider community.

It is expected that construction works will commence with mobilisation and site set up, upgrading of existing site tracks and the construction of some new site access tracks. Drainage infrastructure will be constructed in parallel with the access tracks. This will be followed by the construction of the turbine hardstanding areas, foundations and the turbine delivery route accommodation works. Met mast construction will also take place at this time, followed by turbine installation. In parallel with these works the on-site electrical works i.e., the sub-station and internal cable network will be completed. The grid connection works are to be done over a 16-month period in parallel with the site works. Construction will be finalised with landscaping and demobilisation.

It is envisaged that the wind farm and substation works will be completed within 18 months of the construction programme and HGV traffic to and from the site after this point will start to decrease.

15.5.6.1 *Construction Phase*

The estimated construction phase traffic generated by the Proposed Development on the surrounding road network has been calculated by estimating the number of vehicles required for each phase of the Proposed Development (construction, operation and decommissioning). The number of vehicles is then converted to the equivalent two-way trips, whereby every vehicle will generate two trips, one to and one from the Site.

To assess the effect of the additional construction related traffic on the existing road network it is first required to estimate the amount of construction traffic that will be generated (trip generation) as a result of the Proposed Development.



This assessment was done by estimating the amount of traffic, in the form of heavy goods vehicles (HGV) and light goods vehicles (LGV) that will be generated during the construction phase and then distributing it over the duration of the construction programme. In determining the number of 'trips' the estimated number of HGV vehicles was multiplied by a factor of 2 to account for a single trip 'in' and a corresponding single trip 'out'. This is best practice and in line with relevant guidelines outlined in Section 15.5.2.1.

In the case of LGVs, the estimated number of vehicles was multiplied by 2.5 to account for some additional LGV movements e.g. some workers taking lunch breaks in the local area. The analysis allowed for a total number of trips per month to be calculated. This could be translated to annual average trips per day (AADT).

Some key assumptions taken when preparing the trip generation estimates include:

- An average ready mix concrete truck carries a load of approximately 8m³ of concrete;
- An average tipper truck carries approximately 10m³ of soil/rock/aggregate;
- A construction period of 24 months is expected based on the nature and scale of the proposed works;
- It has been assumed that cable trenching works associated with the construction of the grid connection and internal cabling works is expected to take 18 months to complete and will be carried out in parallel with the wind farm construction where practical;
- It is expected following intrusive site investigations that site won material from the 1 no. on-site construction borrow pit will provide sufficient aggregates for general and engineering fill purposes and that surface coarse aggregates will be imported from local quarries. More detail on material volumes can be found in Chapter 8 - Land, Soils and Geology, Volume 2 of the EIAR;
- A total of 6 no. peat deposition areas has been identified on Site which will accommodate the level of peat being extracted and will not require the export of peat and spoil from the Site. Please refer to Chapter 8 - Land, Soils and Geology, Volume 2 of the EIAR for further details;
- It has been assumed that engineering fill and CL804 capping aggregate will be imported for the formation of wind turbine foundations per turbine, wind turbine hardstanding areas per turbine, and access tracks. For details of volumes required, please refer to Chapter 8, Volume 2 of the EIAR.

The equipment for the site, comprising wind turbines, electrical skids, cables, fencing and site offices will be delivered to site on HGVs. These will be similar in size and nature to those which already use this local road network for the purposes of agricultural deliveries (such as fertilizer and feedstocks) to the local farms in the area.

The construction phase for the Proposed Development will result in additional traffic on the roads travelling to the development, in particular the L4153 and L4114. This additional traffic will include the following:

- Construction worker vehicles;
- Vehicles carrying conventional earthworks equipment such as an excavator, roller, road paving equipment, heavy goods vehicles (HGVs), forklifts and a petrol/diesel powered generator;
- Delivery vehicles carrying conventional construction materials, e.g. aggregate;
- HGVs carrying turbine blades and columns; and,
- Delivery vehicles carrying electrical cabling, electrical skids (containing inverters, transformers and switchgear) and electrical equipment for the on-site transformer compound.



It is estimated that construction phase for the Proposed Development will lead to 13,777 additional HGV trips (two-way) over the duration of the construction works which is expected to last 24 months (i.e. approx. 3,204 trips per week.)

Calculations of HGV movements associated with the construction of the Proposed Development indicate an average daily increase of 22 HGV trips per day. This increases to a peak of 64 HGV trips per day during the peak month which occurs in month 7 of the programme for HGV traffic.

An average workforce of 40 no. site staff is anticipated, increasing to 60 during peak periods. This is estimated to give rise to an average increase in LGV traffic of 60 no. trips per working day and rising to 77 no. during peak construction periods which occurs in months 7 - 10 inclusive of the programme for LGV traffic. The combined HGV and LGV average daily increase are 83 vehicles per day and rising to 140 vehicles per day during peak construction periods occurring in month 7 of the construction programme.

The results of traffic calculations for the Proposed Development are shown in the Tables and Figures below.

The predicted baseline AADT during the estimated construction year of 2029 for the surrounding road network is shown in Table 15-11. Table 15-12 and Table 15-13 show the HGV and LGV average and peak construction traffic impacts respectively.



Table 15-11: Predicted Baseline AADT Volumes with Combined HGV and LGV Construction Traffic

Location	Predicted Baseline AADT During Construction Start 2029	Average Daily Trips Generated by Development (Combined)	Predicted Combined LGV & HGV AADT During Construction	Average Daily Trips Generated by Development (Combined) Peak Construction Months	Predicted Combined LGV & HGV Peak AADT During Construction
M08 - TMU M08 035.0 N	16,520	2	16,522	13	16,533
L4101 - (Google Maps Ref:52.62872, -7.75011)	1,961	75	2,036	119	2,036
L4153 - (Google Maps Ref: 52.63681, -7.72672)	766	75	841	119	841
R639 - (Google Maps Ref:52.64309, -7.73116)	2,906	75	2,981	119	2,981
L4114 - (Google Maps Ref:52.68945, -7.64888)	70	7	77	11	77
R639 - (Google Maps Ref: 52.7253, -7.57499)	4,917	83	4,999	140	4,999
R693 - (Google Maps Ref: 52.729587, -7.456081)	4,813	26	4,839	39	4,839
L1811 - (Google Maps Ref: 52.75662, -7.39266)	143	7	150	10	150



Table 15-12: Predicted AADT Volumes with Average HGV and LGV Construction Traffic

Location	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development	Predicted HGV AADT During Construction	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development	Predicted LGV AADT During Construction
M08 - TMU M08 035.0 N	2,218	1	2,219	14,301	1	14,303
L4101 - (Google Maps Ref:52.62872, -7.75011)	87	15	102	1,874	60	1,934
L4153 - (Google Maps Ref: 52.63681, -7.72672)	17	15	32	749	60	810
R639 - (Google Maps Ref:52.64309, -7.73116)	257	15	272	2,649	60	2,709
L4114 - (Google Maps Ref:52.68945, -7.64888)	2	3	6	68	4	72
R639 - (Google Maps Ref: 52.7253, -7.57499)	381	22	403	4,536	60	4,596
R693 - (Google Maps Ref: 52.729587, -7.456081)	267	22	289	4,546	4	4,550
L1811 - (Google Maps Ref: 52.75662, -7.39266)	9	3	12	133	4	137



Table 15-13: Predicted AADT Volumes with Peak HGV and LGV Construction Traffic

Location	HGV AADT Pre-Development	Peak Daily HGV Trips Generated by Development	Predicted HGV AADT and Development Peak HGV's During Construction Year (2029)	LGV AADT Pre-Development	Peak Daily LGV Trips Generated by Development	Predicted LGV AADT and Development Peak LGV's During Construction Year (2029)
M08 - TMU M08 035.0 N	2,218	8	2,227	14,301	5	14,306
L4101 - (Google Maps Ref:52.62872, -7.75011)	87	42	130	1,874	77	1,950
L4153 - (Google Maps Ref: 52.63681, -7.72672)	17	42	59	749	77	826
R639 - (Google Maps Ref:52.64309, -7.73116)	257	42	299	2,649	77	2,726
L4114 - (Google Maps Ref:52.68945, -7.64888)	2	5	7	68	6	74
R639 - (Google Maps Ref: 52.7253, -7.57499)	381	64	445	4,536	77	4,612
R693 - (Google Maps Ref: 52.729587, -7.456081)	267	33	300	4,546	6	4,552
L1811 - (Google Maps Ref: 52.75662, -7.39266)	9	4	14	133	6	139

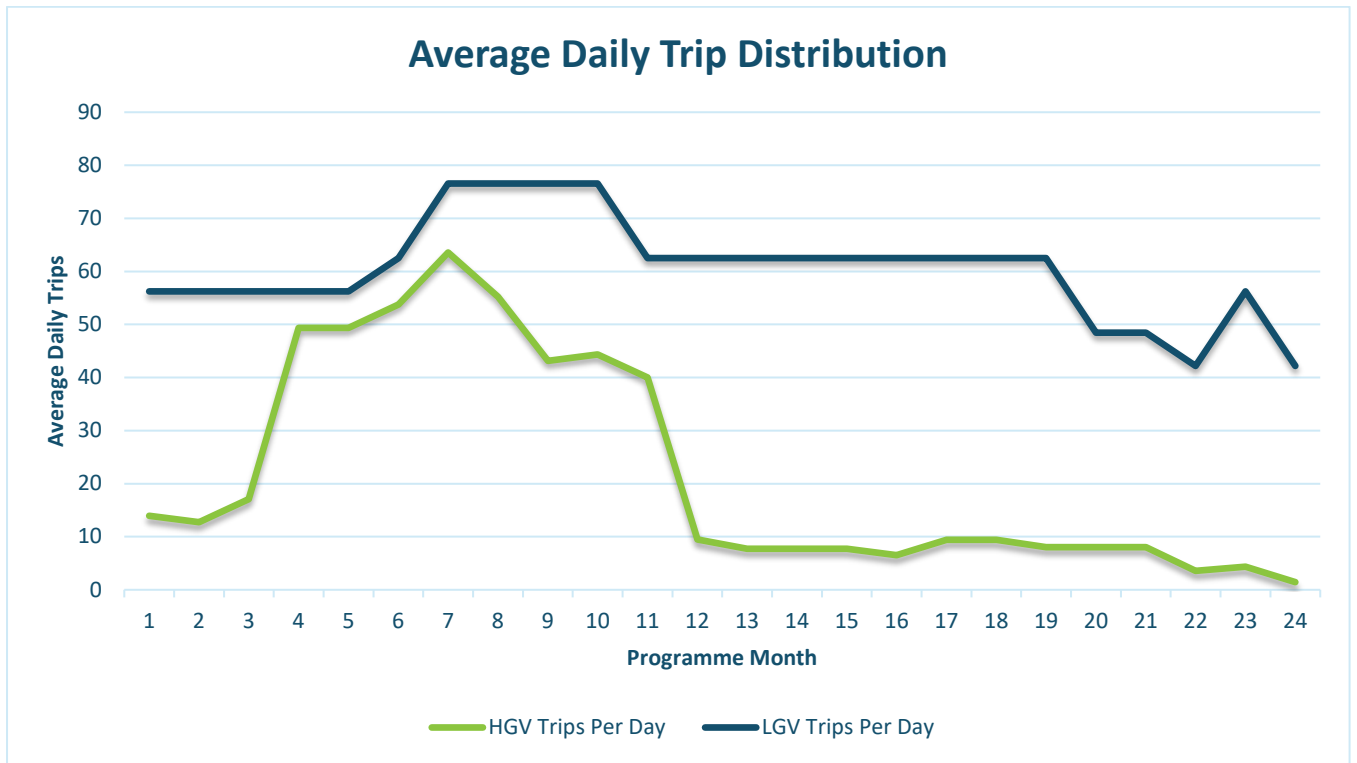


Plate 15-1: Estimated Average Daily Trip Distribution

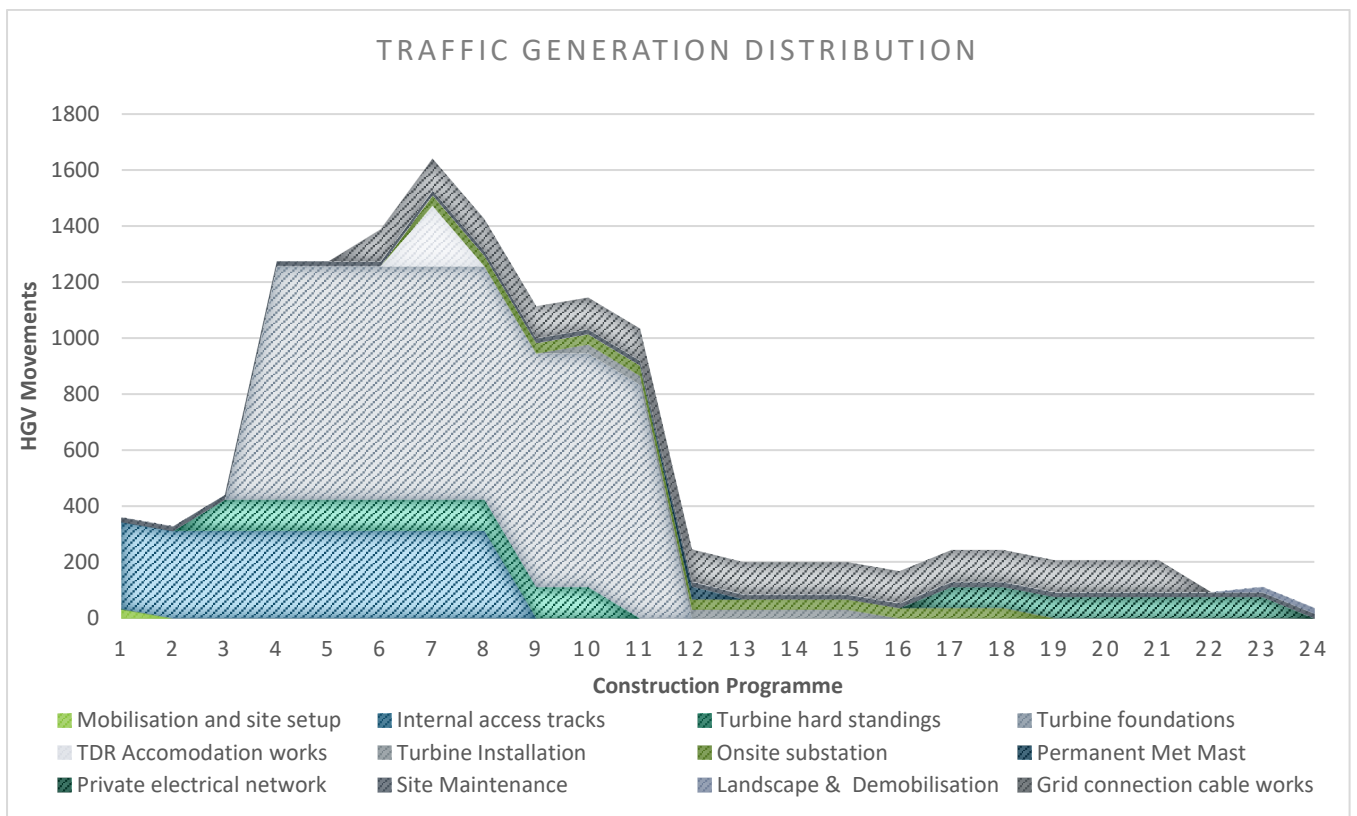


Plate 15-2: Estimated Cumulative HGV Traffic Distribution - Overall Proposed Development



For all traffic count data presented in this Chapter, annual data available for 2023 and 2024 was applied to the haul route road network. These values are taken from TII Data (TII, 2024). For the other roads presented in this assessment, which were not available from TII, traffic count data was received from a traffic survey completed by Traffinomics Ltd. in September/October 2023.

A projected yearly traffic growth factor, taken from the Project Appraisal Guidelines for National Roads Unit 5.3⁷ (Tipperary Central Growth Rate), was applied to the AADT data to estimate the AADT for the time of construction. For the purposes of this assessment the construction start date is set as 2029.

The estimated traffic volume calculations indicate that there are modest percentage increases across the surrounding road network. The R639 regional road shows increases of 2.6% and 1.7% at two separate locations, while the L4114 local road records the highest increase at 10.6%. Other local roads such as the L4153 (9.8%), L1811 (5.0%), and L4101 (3.8%) also show measurable increases. The M8 Motorway, which forms part of the national road network, registers a relatively low increase of 0.01% as it is only impacted by TDR HGV traffic.

While the percentage increases on the local road network are higher than those observed on the regional, and motorway roads, this is largely due to the very low baseline volumes of HGVs currently using these routes. As a result, even a small number of additional construction vehicles can give the impression of a significant short-term impact, when in reality the effect is minimal. The local road network is expected to continue operating well within carrying capacity throughout the construction period.

Traffic volumes observed on the L4114, R693 (Google Maps Ref: 52.729587, -7.456081), and L1811 are primarily associated with the construction of the GC route rather than the wind farm construction. Please refer to Figure 4.3, Volume 4 for the GC route layout and Figure 15.2 for the proposed construction haul routes.

Therefore, effects on the receiving environment associated with the construction phase of the Proposed Development are considered to be neutral in terms of quality, long-term in duration and imperceptible in significance.

15.5.6.2 Operational Phase

The trip generation for the Proposed Development once operational is anticipated to be minimal as both the wind farm and substations will be operated remotely as described in Section 15.5.5.3.

In addition to the above operational traffic, a network of trails is proposed utilising a combination of the internal wind farm access tracks and approximately 4.0km of new dedicated amenity tracks for community use. To support public access, a car park comprising 15 standard parking spaces, 3 accessible spaces, a designated bus parking area, and bicycle racks, is proposed adjacent to the site entrance at R639 Longfordpass North. This will generate some operational phase traffic primarily in the form of private cars which will access the proposed car park via the R639 access point. However, the trip generation for the proposed recreational amenity trails once operational is anticipated to be minimal.

Recreational amenity trails proposed for the Proposed Development are depicted in Figures 4.2 to 4.4, Volume 4, and on the planning application site layout plan drawings.

Effects on the receiving environment associated with the operation phase of the Proposed Development are considered to be neutral in terms of quality, long-term in duration and imperceptible in significance.

⁷ [PE-PAG-02017](#)



For unforeseen or unplanned works, it is predicted that negative or adverse effects on the receiving environment will be temporary in duration and slight in significance without appropriate mitigation.

15.5.6.3 Decommissioning

Effects associated with the decommissioning of the Proposed Development will be similar in nature to the construction stage but of a much lower magnitude primarily due to the following key reasons:

- Wind farm access tracks will be left in-situ;
- The grid connection will form part of the grid network and will be left in place;
- Wind turbine components will be dismantled on site and can be removed on standard HGV's eliminating the requirement for temporary accommodation requirements needed at construction stage.

Negative or adverse effects on the receiving environment associated with decommissioning works at the main wind farm site are considered to be temporary in duration and slight in significance without appropriate mitigation.

Infrastructure associated with the grid connection will form part of the national transmission and distribution system and will be left in-situ. Therefore, no impacts are envisaged upon decommissioning of the grid connection, and no mitigation is required.

Negative or adverse effects on the receiving environment associated with the turbine delivery route are considered to be temporary in duration and slight in significance without appropriate mitigation.

15.5.7 Mitigation Measures

15.5.7.1 Construction

15.5.7.1.1 Main Wind Farm Site

A Preliminary Traffic Management Plan (TMP) has been completed and is found in the Construction Environmental Management Plan, located in Appendix 4.1, Volume 3 of the EIAR. The TMP will be agreed with the road's authority and An Garda Síochána prior to commencing construction.

The contractor will be responsible for the implementation of all agreements between the developer and Tipperary County Council with the objective that the transportation needs for the Proposed Development will have a minimal impact on the road network and local communities. All vehicles hauling materials to and from the site shall only use agreed transport routes.

One (1 no.) on-site construction borrow pit is proposed as a mitigation measure to reduce construction traffic effects. By sourcing stone and fill material directly within the Site, the need to import material from external quarries will be significantly reduced. This in turn will lower HGV movements and construction traffic.

Further detail is provided in Appendix 8.1 – Spoil and Peat Management Plan in Volume 3 and in Chapter 8 – Land, Soils and Geology, Volume 2.



15.5.7.1.2 Grid Connection Works

Mitigation measures that will be implemented in full for the grid connection works include:

- **Road Opening:** The road works associated with cable trenching works will be completed in line with the requirements of a road opening license as agreed with the local authority.
- **Route Proofing:** In advance of the cabling works an assessment will be carried out to define the precise alignment of the cable route within the corridor which has been assessed. This will include slit trenching with the aim of minimising the construction impacts and avoiding existing services in the road.
- **Road Cleanliness:** Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. Road sweeping vehicles will be used, when necessary, to ensure that the public road network remains clean.
- **Temporary Trench Reinstatement:** Trenches on public roads, once backfilled, will be temporarily reinstated to the satisfaction of the Local Authority.
- **Trench Reinstatement:** Trench reinstatement will be carried out in accordance with the Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017 and in agreement with the local authority roads department.

15.5.7.1.3 Turbine Component Delivery Mitigation

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

Mitigation measures proposed for the turbine delivery route also include:

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



15.5.7.2 Operation

For each site access location, hedgerow trimming shall be carried out to the right and left of the proposed entrance in compliance with the Wildlife Act 1976 as amended, to achieve required minimum visibility in both directions. Hedgerows shall be maintained by the Proposed Development owner to ensure required visibility throughout the operational phase of the Proposed Development as part of the scheme's operation and maintenance arrangements.

The operational wind farm will be monitored remotely which will remove the need for site access on a frequent basis.

No mitigation measures are required for the operation of recreational amenity trails.

15.5.7.3 Decommissioning

The traffic impact associated with the decommissioning phase will be significantly less than the construction phase.

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no impacts are envisaged upon decommissioning of the Proposed Development, and no mitigation is required.

Mitigation measures adopted for project decommissioning will be in line with those identified for the construction phase of the Proposed Development.

All decommissioning works will be carried out in accordance with a decommissioning plan to be agreed with the planning authority in advance of the decommissioning works. Traffic management measures identified will be included in the decommissioning plan for the wind farm.

15.5.8 Residual Effects

The implementation of mitigation measures outlined in Section 15.5.7 will ensure that residual effects are minimised throughout the duration of the proposed activities.

15.5.8.1 Construction

Negative or adverse effects on the receiving environment associated with the construction works on the main wind farm site are considered to be short-term in duration and slight in significance following mitigation.

Negative or adverse effects on the receiving environment associated with the turbine delivery route are considered to be temporary in duration and slight following mitigation.

Negative or adverse effects on the receiving environment associated with the construction of the grid connection are considered to be short-term in duration and slight to moderate in significance following mitigation.

15.5.8.2 Operation

The trip generation for the Proposed Development once operational is anticipated to be minimal.



Effects on the receiving environment associated with the operation phase of the Proposed Development are considered to be neutral in terms of quality, long-term in duration and imperceptible in significance.

For unforeseen or unplanned works such as emergency turbine repair works described in Section 15.5.5.3, it is considered that negative or adverse effects on the receiving environment will be temporary in duration and not significant to slight following appropriate mitigation.

15.5.8.3 Decommissioning

Negative or adverse effects on the receiving environment associated with decommissioning works at the wind farm site will be temporary in duration and not significant following mitigation.

Negative or adverse effects on the receiving environment associated with the turbine delivery route will be temporary in duration and not significant following mitigation.

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no effects are likely during decommissioning of the Proposed Development, and no mitigation is required.



Table 15-14: Summary of Pre-Mitigation and Residual Post-Mitigation Effects

Phase	Project Element	Main Receiving Environment	Description of Potential Effect - Pre-Mitigation			Description of Potential Effect - Residual Post-Mitigation		
			Duration	Quality	Significance	Duration	Quality	Significance
Construction	Wind Farm	M8, R639, R693, and surrounding local road network	Short-term	Negative/Adverse	Slight - Moderate	Short-term	Negative/Adverse	Slight
	Turbine Delivery Route	M8, R639, R693, and surrounding local road network	Temporary	Negative/Adverse	Slight - Moderate	Temporary	Negative/Adverse	Slight
	Grid Connection Route	L4114, R639, R693, R694, N77 and surrounding local road network	Short-term	Negative/Adverse	Slight - Moderate	Short-term	Negative/Adverse	Slight
Operation	Wind Farm	M8, R639, R693, and surrounding local road network	Long-term	Neutral	Imperceptible	Long-term	Neutral	Imperceptible
	Turbine Delivery Route	M8, R639, R693, and surrounding local road network	Long-term	Neutral	Imperceptible	Long-term	Neutral	Imperceptible
	Grid Connection Route	L4114, R639, R693, R694, N77 and	Long-term	Neutral	Imperceptible	Long-term	Neutral	Imperceptible



Phase	Project Element	Main Receiving Environment	Description of Potential Effect - Pre-Mitigation			Description of Potential Effect - Residual Post-Mitigation		
			Duration	Quality	Significance	Duration	Quality	Significance
		surrounding local road network						
Decommissioning	Wind Farm	M8, R639, R693, and surrounding local road network	Temporary	Negative/Adverse	Slight	Temporary	Negative/Adverse	Not significant
	Turbine Delivery Route	M8, R639, R693, and surrounding local road network	Temporary	Negative/Adverse	Slight	Temporary	Negative/Adverse	Not significant
	Grid Connection Route	L4114, R639, R693, R694, N77 and surrounding local road network	N/A	N/A	N/A	N/A	N/A	N/A
Unplanned Events (i.e. Accidents)	Wind Farm	M8, R639, R693, and surrounding local road network	Temporary	Negative/Adverse	Slight	Temporary	Negative/Adverse	Not significant - Slight
	Turbine Delivery Route	M8, R639, R693, and surrounding local road network	Temporary	Negative/Adverse	Slight	Temporary	Negative/Adverse	Not significant - Slight



Phase	Project Element	Main Receiving Environment	Description of Potential Effect - Pre-Mitigation			Description of Potential Effect - Residual Post-Mitigation		
			Duration	Quality	Significance	Duration	Quality	Significance
	Grid Connection Route	L4114, R639, R693, R694, N77 and surrounding local road network	Temporary	Negative/Adverse	Slight	Temporary	Negative/Adverse	Not significant - Slight



15.5.9 Cumulative Effects

All known existing and proposed developments that could potentially generate cumulative effects with the Proposed Development in relation to traffic and transportation during construction, operation and decommissioning were identified and examined as part of this assessment.

The following criteria were considered when assessing cumulative traffic effects.

Scale of Traffic Volumes: This refers to the volume of traffic generated by each development (e.g., small, medium, or large).

Project Status: This considers the current phase of the development, which indicates the level of traffic impact. For example, in the case of wind farm development, the construction phase typically results in significantly higher traffic movements than the operational phase.

The specific criteria applied to different project types are detailed in Table 15-15 below.

Table 15-15: Cumulative Traffic Effects Classification

Type	Scale	Phase
Wind farm	- Small (1-4 WTGs) - Medium (5-8 WTGs) - Large (9+ WTGs)	Construction Operation Decommissioning
Solar farm	- Small (up to 5 MWp TIC) - Medium (5 - 15 MWp TIC) - Large (15+ MWp TIC)	Construction Operation Decommissioning
Commercial/Industrial	- Small - < 50 HGVs AADT - Large - > 50 HGVs AADT	Construction Operation Decommissioning
Roads Project		Construction Operation Decommissioning
Large Residential		Construction Operation Decommissioning

Based on their proximity and scale, the developments with the potential for significant cumulative effects on the Proposed Development are shown in Table 15-16.

The greatest potential for potential significant adverse effects is related to a scenario where the construction phases of these developments coincide. No significant effects are anticipated if the construction of one development coincides with the operational or decommissioning phases of another.



Table 15-16 provides details of the projects within the study area that were considered for cumulative effects. The existing developments and planning applications listed in Table 15-16 were obtained from a planning search on the An Coimisiún Pleanála, Tipperary County Council and Kilkenny County Council Planning Website, accessed in November 2025. The search included developments lodged within the last 10 years within 20km of the Site.

Further details on existing and proposed projects assessed in the EIAR for cumulative effects are contained in Chapter 1, Volume 2 of the EIAR.

Table 15-16: Existing and Proposed Projects Assessed for Cumulative Effects

Development Name	Planning Reference	Distance and Direction from Proposed Site	Status	Scale
Knockroe Wind Farm, Co. Tipperary	TCC Ref. 211502	~13.2km southeast of Site	Granted (27/10/2022)	Small
Brittas Wind Farm, Co. Tipperary	ACP Ref. 321454	~12.1km northwest of Site	Granted (02/04/2026)	Large
Briskalagh Renewable Energy Development, Co. Kilkenny	KCC Ref. 2560003 (ACP Ref. 322154-25)	~15.5km east of Site	Planning	Medium
Kyleballyoughter Wind Farm, Co. Kilkenny	KCC Ref. 16666	~11.3km southeast of Site	Granted (27/03/2017)	Small
Farranrory Wind Farm, Co. Tipperary	TCC Ref. 20972 which was subsequently amended by TCC Ref. 2360803	~10.1km east of Site	Granted (30/03/2021)	Large
Farranrory Wind Farm Transport Route, Co. Tipperary	TCC Ref. 2460514	~2.5km south of Site	Granted (12/03/2025)	Small
Proposed 38kV Underground Grid Connection to Connect to the Previously Consented Farranrory Wind Farm, Co. Tipperary	KCC Ref. 21627	~10.1km east of Site	Granted (26/09/2022)	Medium
Midlands Trail Network, Co. Tipperary	ACP Ref. 323662-25	~0.02km (on Ballybeg bog)	Appealed (3rd Party)	Small
Killough Solar Farm, Co. Tipperary	TCC Ref. 2560003 (ACP Ref. 323453-22)	~9.0km west of Site	Granted (28/07/2025)	Large

Knockroe Wind Farm, Co. Tipperary.

Knockroe Wind Farm in Co. Tipperary consists of 7 wind turbines of approximately 5MW with combined output of approximately 35MW and associated works. The development is located approximately 13.2km southeast of the Littleton Wind Farm and it has been granted planning permission on the 27th of October 2022.



According to Knockroe Wind Farm planning application, the construction stage is anticipated to take 12 months. It is estimated that during construction, there will be approximately 2,541 delivery loads to the wind farm site and 2,491 delivery loads for the grid connection, giving a total of 5,032 delivery loads, including the 64 abnormal loads. Based on 12 months (assumed 48 working weeks) and a 5.5 day working week, equates to an average of 73 vehicle movements per day, which will split roughly 50:50 between the wind farm site and grid route connection.

The proposed Knockroe Wind Farm does not share a common GCR, TDR or haul route with the Little Wind Farm, therefore, cumulative effects during the construction phase are not expected.

The wind farm does not generate any perceptible levels of traffic during operation as it is remotely operated. It is considered that no cumulative effects will be created as a result of this development during the operation or decommissioning phases of the Littleton Wind Farm.

Brittas Wind Farm, Co. Tipperary

Brittas Wind Farm located in Co. Tipperary consists of 10 wind turbines, a 110kV electrical substation and associated ancillary works. The site is located 12.1km northwest of Littleton Wind Farm.

Construction of Brittas Wind Farm is expected to take 18 months. The project shares a portion of the turbine delivery route (TDR) with Littleton Wind Farm, from Foynes Port to Junction 17 on the M7 motorway, where the Littleton route then diverges. It is estimated that during construction, there will be 8,846 delivery loads including a total of 100 delivery vehicles which will be required for the components of the 10 turbines over a period of 3 months.

Considering this, should the construction programmes align, appropriate mitigation measures should be implemented whereby both developers and Local Authorities coordinate project programmes to avoid any unnecessary disruptions to the road network. Any temporary accommodation works for abnormal deliveries could be kept in place for both developments to further prevent road network disruption.

The Brittas Wind Farm does not share a common GCR with the Littleton Wind Farm, therefore, cumulative effects are not expected from the GCR.

The Brittas Wind Farm identifies 6 no. potential quarries for the supply of construction materials, which overlap with the quarries identified for Littleton Wind Farm. Therefore, there may be a shared portion of the haul route between both projects should they source material from Maher Quarries Ltd. in Thurles, Gleeson Quarries in Thurles or Roadstone Quarry in Killough. The Brittas Wind Farm EIAR also states that the project will utilise a borrow pit to source stone and gravel which would reduce the need for importing external aggregate and reduce the cumulative effect on the surrounding road network.

Potential negative cumulative effects on the road network are anticipated to have a temporary impact and slight to moderate in significance during the construction phase.

The wind farm does not generate any perceptible levels of traffic during operation as it is remotely operated. In the highly unlikely event of a significant turbine component replacement during the Littleton Wind Farm operational phase, this will involve a small number of HGV trips and potential abnormal load deliveries along the TDR route over a short period of time.

It is considered that no cumulative impact will be created as a result of this development during the operation or decommissioning phases of the Littleton Wind Farm.



Briskalagh Renewable Energy Development, Co. Kilkenny

The Briskalagh Renewable Energy Development is located approximately 15.5km east of the Proposed Development, immediately north of the R695 regional road. The Briskalagh Renewable Energy Development will consist of 7 no. wind turbines, and all ancillary works and apparatus.

The Briskalagh Renewable Energy Development shares a portion of the grid connection route with Littleton Wind Farm along the R694 and N77. The Littleton Wind Farm cabling route travels north along the R694 for 8.6km and then follows the N77 for 1.1km.

The construction period for the proposed grid connection for Briskalagh Renewable Energy Development will take 11 months. It is estimated that during construction there will be approximately 4,010 HGV loads to the wind farm site and 4,212 delivery loads for the grid connection, giving a total of 8,222 delivery loads, including 56 abnormal loads for the wind farm over 12 months and 255 working days.

In the unlikely scenario whereby both grid connections are constructed at the same time, appropriate mitigation measures should be implemented such as the coordination of project programmes between both developers and Local Authorities, road reinstatement and collaboration on design. Should such a scenario arise where the construction of both grid connections overlap, this could create a moderate to significant short-term negative effect on road users on and in the vicinity of the grid connection works.

The Briskalagh Renewable Energy Development does not share construction haul routes or the turbine delivery route with Littleton Wind Farm; therefore, cumulative effects are not expected from the transport of construction materials or the delivery of abnormal loads.

The potential negative cumulative effects on the road network are anticipated to have a temporary impact and moderate to slight in significance during the construction phase of Littleton Wind Farm.

It is considered that no cumulative impact will be created as a result of this development during the operation or decommissioning phases of the Littleton Wind Farm.

Kyleballyoughter Wind Farm, Co. Kilkenny

Kyleballyoughter Wind Farm consists of planning permission for two wind turbines with a hub height up to 80m and a maximum blade tip height up to 121m, a grid control building, underground cabling, together with associated access roads and site works. The wind farm site is located in the townlands of Rathmacan, Kyleballyoughter and Courtstown approximately 11.3km southeast of the Littleton Wind Farm site.

A period of 10 was granted to construct the development in 2017; it is likely that if the development is to be constructed it will occur during the year of 2026. It is therefore not possible that construction will coincide with Littleton wind farm. There will be no risk of overlap with Littleton in terms of the respective development's construction phases. Therefore, the cumulative impact will be negligible.

Farranrory Wind Farm, Co. Tipperary

Farranrory Wind Farm is located 11.3km southeast of the Littleton Wind Farm. It consists of 9 wind turbines with a hub height up to 150m and associated foundations and hardstand areas. The development was granted planning permission in 2020.

The Farranrory Wind Farm will utilise the R691 as part of the haul route which coincides with the Littleton Wind Farm haul route. In the event of construction occurring at the same time as Littleton Wind Farm, the applicant is committed to phasing construction activities appropriately to avoid major traffic disruption on the road network.



During the construction of Farranrory Wind Farm, there will be approximately 1,640 loads delivered to the site, which equates to 110 loads per month or an average of 5/6 loads per day. This will occur over 12 months.

It is considered that the construction of Farranrory Wind Farm will create a temporary and slight effect, therefore, the cumulative effect created as a result will be minimal during the construction of Littleton Wind Farm.

It is considered that no cumulative effect will be created as a result of Farranrory Wind Farm during the operation or decommissioning phases of the Littleton Wind Farm.

Farranrory Wind Farm Transport Route, Co. Tipperary

A further development relevant to the cumulative assessment is the proposed road improvement scheme along a 9.7 km section of the R691, extending from the Tipperary-Kilkenny County boundary westwards towards Ballingarry.

This application seeks permission for targeted modifications at several locations along the R691 to facilitate the delivery of turbine components to the previously consented Farranrory Wind Farm (Pl. Ref. 20/972), comprising nine turbines. As the Proposed Development will also utilise the R691 as part of its haul route, there is potential for overlap in construction related HGV activity. However, the road improvement works are limited in scale, linear in nature, and of short duration, and once completed will enhance the capacity of the R691 to accommodate abnormal loads.

On this basis, cumulative effects are anticipated to have a temporary impact and slight in significance during the construction phase.

Farranrory Grid Connection, Co. Tipperary

Another consideration for the cumulative assessment is the development of the proposed 38kV underground connection to connect to the previously consented Farranrory Wind Farm. The development has been granted planning permission and is located 10.1km east of Littleton.

The proposed grid connection traverses over R638, then joins the R694 before continuing along the N77 to join Ballyragget substation. With the Littleton Wind Farm grid connection also connecting to the Ballyragget substation and overlap of a short section of the grid connection route, there is potential for a moderate to significant short-term negative effect on road users on and in the vicinity of the grid connection works. In the unlikely scenario whereby both grid connections are constructed at the same time, appropriate mitigation measures should be implemented such as the coordination of project programmes between both developers and Local Authorities, road reinstatement and collaboration on design.

The grid connection will take 9-12 months to construct, and according to the planning documents for Farranrory Grid Connection, it is anticipated that there will be no potential for significant effects on the road network as a result of this development.

The potential negative cumulative effects on the road network are anticipated to have a temporary effect and moderate to slight in significance during the construction phase of Littleton Wind Farm.

It is considered that no cumulative effect will be created as a result of this development during the operation or decommissioning phases of the Littleton Wind Farm.



Midlands Trail Network, Co. Tipperary

The Midlands Trail Network development consists of a 5km shared walking and cycling trail, along with car parking facilities and all other ancillary and associated site works. It is located 0.02km from Littleton Wind Farm on Ballybeg Bog.

The Midlands Trail Network is situated on the regional road R639, which forms a large part of the grid connection route for Littleton. Construction of the Midlands Trail Network is expected to commence in 2026 and last for 26 weeks. As a result, it is unlikely that construction works will commence in conjunction with Littleton Wind Farm.

During operation, the Midlands Trail Network development is expected to generate 0.825 daily trips during the week and 2.726 during the weekend. On this basis, it is considered that no significant cumulative effect will be created as a result of this development during construction of the Littleton Wind Farm development.

Killough Solar Farm, Co. Tipperary

Killough Solar Farm consists of 745,168 sq. metres of solar photovoltaic panels on ground mounted steel frames, as well as all ancillary works. The development has been granted planning permission and is located 9km west of Littleton Wind Farm.

Construction of the Killough Solar Farm is estimated to begin in 2027, and it is expected to take 18 months, with works on the grid connection estimated to take 2 months. The construction phase will result in 9,720 additional HGV trips. It is likely that construction will begin prior to Littleton Wind Farm, however, in the scenario where construction periods coincide, the applicant will appropriately phase construction activities to prevent traffic disruption.

The Killough Solar Farm does not share a common GCR with the Littleton Wind Farm, therefore, cumulative effects are not expected from the GCR.

Potential negative cumulative effects on the road network are anticipated to have a temporary effect and slight in significance during the construction phase.

It is considered that no cumulative impact will be created as a result of this development during the operation or decommissioning phases of the Littleton Wind Farm.

15.5.10 Conclusion

There are no likely significant effects on the receiving environment as a result of the construction, operation and decommissioning of the Proposed Development.

The Proposed Development is likely to result in a slight to moderate short-term negative impact on the existing road network during the construction phase if adequate mitigation measures are not implemented.

Following implementation of mitigation measures outlined herein, residual effects during the construction phase will be reduced and are not expected to exceed 'slight to moderate' in significance.

Effects during operation and decommissioning are considered imperceptible to not significant.

The provision of recreational amenity trails within the proposed Wind Farm Site will result in a long-term positive effect by enhancing public active travel network infrastructure within the local area.



There are no significant cumulative effects expected on the receiving environment as a result of other existing or Proposed Development.

The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and incorporated into the construction stage CEMP and TMP for the Proposed Development.

A TMP is contained in the Construction Environmental Management Plan (CEMP) which is included in Appendix 4.1, Volume 3 of this EIAR. In the event planning permission is granted for the Proposed Development, the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.

Aviation

15.6.1 Introduction

This section of the chapter examines the potential impacts of the proposed Littleton Wind Farm on aviation systems in the vicinity of the Proposed Development.

15.6.2 Methodology

To assess the potential effects of the Proposed Development on aviation, Ai Bridges prepared an aviation review of both civil and defence aviation, contained within Appendices 15.2 and 15.3 of Volume 3 respectively.

The methodology used by Ai Bridges within the Littleton Wind Farm Civil Aviation Review and Department of Defence – Irish Air Corps Aviation Review Statements involved an assessment and consideration of the following to identify potential interactions, and recommended mitigations and determined the likely residual effects;

- 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 and Navigation Systems
- Radar Surveillance Sensors
- Flight Inspection and Calibration
- IAA - Aeronautical Obstacle Warning Light Scheme
- Private Airfields (VFR Flying)
- Garda Air Support Unit (GASU)
- Department of Defence Aeronautical Safeguarding
- Emergency Aeromedical Service (EAS)



15.6.3 Limitations

No limitations were encountered in the assessment of the potential effect on aviation from the Proposed Development.

15.6.4 Baseline Environment

As described within Appendices 15.2 and 15.3 of Volume 3 of this EIAR, wind turbines such as those associated with the Proposed Development have the potential to affect aviation communication and navigational systems and signal types, such as tower-to-tower microwave communication links, and airborne and ground radar systems. Interference with radar systems occurs when wind turbines are located close to an airport, or directly in line with the instrument landing approach.

A due-diligence survey was carried out on the private airfields / helipads in the vicinity of Littleton. It was found that there are two private unlicensed air fields within 10 km of the proposed wind farm site, Lickfinn and Moyne. The proposed wind farm is sufficiently far from each aviation installation that there would be no impact due to the proposed wind turbines. Pilots flying to/from these aviation installations would also be required by law to fly by Visual Flight Rules (VFR) and in accordance with the IAA Rules of The Air. The Rules of the Air state, it is the pilot's legal responsibility to be aware of and avoid any obstacles in his/her flight path and therefore he/she would be required to be aware of wind turbines if flying to/from the airfield in question. This can be achieved by prudent flight planning by the VFR pilot prior to flight.

15.6.5 Assessment of Likely Significant Effects

15.6.5.1 *Do-Nothing Scenario*

If the Proposed Development at Littleton were not to proceed, it is unlikely there would be any changes to the existing aviation operations in the area. Please note that irrespective of the consenting of the Proposed Wind Farm the remaining measures outlined in the Rehabilitation Plans, i.e. monitoring of the Littleton, Longfordpass and Lanespark Phase 1 measures and enhanced Phase 2 measures at nearby Ballybeg and Derryvella bogs, will continue to be implemented by BnM in agreement with the EPA. Please see Appendix 2.1 (Volume 3 of the EIAR) and Section 2.2.1 of Chapter 2 of the EIAR for further detail.

15.6.5.2 *Construction Phase Effects*

Turbines and structures over 90m are required to be shown on aviation charts to aid aerial navigation from aviation centres such as airports and local airfields. Additionally, consultation was done with the Irish Aviation Authority (IAA) and the Irish Air Corps (IAC) to ensure the Proposed Development had no impact with assets such as air navigation safety, airports, radar and aircraft guidance systems.

The Proposed Development is not considered to have any impact on Emergency Aeromedical Service (EAS).

A review of GASU operations indicates that they are unlikely to be impacted by the proposed wind farm development.

It is unlikely that the Flight Inspection Procedures will be impacted as the proposed wind farm is sufficiently far from the airport runways and the flight inspection procedures should already account for the existing obstacles (e.g. terrain and existing wind farms).



For Radar Surveillance Systems, EUROCONTROL Guidelines require a 16 km safe distance from the surveillance radar system (SSR), for a “Zone 4 - No Assessment” condition. It has been highlighted in the analysis that turbines located at the proposed farm would be located at a distance of over 65 km from the radar stations at Shannon, Woodcock Hill and Dublin Airport and in Assessment Zone 4 of the EUROCONTROL Guidelines. As turbines at the proposed development would be located in Assessment Zone 4, a detailed impact assessment on Radar Surveillance Systems will not be required by the IAA.

As the proposed wind farm is approximately 61 km from the Localizer and transmitting antennas at Waterford Airport, it is very unlikely that wind turbines at the proposed development will have any impact on these ATS communications and radio navigational aids.

There are 6 published Instrument Flight Procedures for flights to/from Waterford Airport. Due to the distance of the proposed wind farm from the airport, and as there are existing obstacles nearer to the airport than the proposed development, there should be no impacts to these flight procedures.

The Minimum Sector Altitudes (MSA) is the lowest altitude which may be used to provide a minimum obstacle clearance of 1000 ft above all obstacles within a sector of 25 nautical miles (46 km) from the NDB at Waterford Airport. As the proposed wind farm is located outside the MSA Sectors for Waterford Airport, there should be no impact on the published MSA altitudes.

A review shows that the proposed wind farm is over 55 km from the Building Restricted Area surfaces at Waterford Airport. At this distance there will be no impacts to the BRAs due to wind turbines at Littleton.

Should the proposed wind farm be permitted, the turbines would be outside 45 km of Waterford Airport’s ARP and would not cause an impact on the Annex 15 Aerodrome Surface. However, the proposed turbines would be required to be included in the IAA Electronic Air Navigation Obstacle Dataset.

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 Waterford Airport.

Following consultation with the Irish Aviation Authority, consultation requests were submitted to Air Navigation Ireland, and the Department of Defence. No response was received from either.

Any temporary accommodation works associated with the TDR or works along the GC route will not affect aviation interests in the area.

15.6.5.3 Operational Phase Effects

The nearest of the Air Corps restricted areas to the proposed wind farm is the low-level flight route around the M8 motorway. The proposed wind farm site is partially located within the restricted area (3NM) around the M8. As some of the proposed turbines at Littleton would be located inside the restricted area, the Irish Air Corps may raise concerns in relation to the proposed development.

The Irish Air Corps position on wind farms / tall structures are outlined in the paper which was published in 2014: “Air Corps Wind Farm/ Tall Structures Position Paper”. In the position paper the Irish Air Corps outlines restricted areas where they would object to the installation of wind turbines /tall structures. The areas defined by the Air Corps have been mapped and analysis shows that the proposed wind farm site is partially located within a critical low level flying route (i.e. within 3 NM of the M8 motorway).



Although a section of the proposed wind farm site is located within 3 NM of the M8 motorway, it should be noted that low-level flight manoeuvres overhead the M8 are subject to the given operational requirements which would consider high terrain to the southeast of the motorway, as part of the pilot's route plan. Any change to the existing obstacle baseline (i.e. introduction of obstacles such as wind turbines, would likely require a detailed technical assessment by the Irish Air Corps).

As outlined in the Littleton Wind Farm Aviation Review Statement, there are other existing tall structures (obstacles) in the vicinity of the Proposed Development, notably the operational wind farms at Kill Hills, Lisdowney and Lisheen II

The Littleton Wind Farm Aviation Review Statement also states further technical assessments and consultations may be required on certain aspects of the Proposed Development in relation to aviation, with a summary shown in Table 15-17, below.

Table 15-17: Littleton Wind Farm Aviation Review Statement

Reltem	Impact	Summary
Annex 14 - Obstacle Limitation Surfaces (OLS)	None	The proposed turbines are located outside the OLS Surfaces for Waterford Airport.
Annex 15 - Aerodrome Surfaces	None	Turbines at the proposed wind farm would not penetrate the ICAO Annex 15 Aerodrome Surface for Waterford Airport. All obstacles, if more than 100 meters above terrain for a distance of 45km from centre point of Waterford 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 Waterford Airport (e.g. existing turbines at Foyle, Ballybay, An Cnoc, Ballincurry, Kill Hill, Ballymartin and Rahora 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 Littleton is over 55 km from the BRAs for Waterford 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 NDB at Waterford 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 proposed wind farm is sufficiently far from Waterford Airport that it is highly unlikely that there would be any impacts to instrument flight procedures for flights to/from the airport for precision aircraft.
Communications and Navigation Systems	None	As the proposed wind farm is approximately 61 km from the Localizer and transmitting antenna at Waterford Airport, it is very unlikely that the proposed development will have any impact on these ATS communications and radio navigational aids.



Reltem	Impact	Summary
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	A review of the Flight Inspection Procedures indicates that there will be no impact due to the proposed wind farm development.
Aeronautical Obstacle Warning Light Scheme	None	It is likely that all civil aviation stakeholders (IAA, ANSP and Airport Authorities) would request that the wind farm, if permitted, would be fitted with Aeronautical Obstacle Warning Lights in accordance with industry standards. The developer would agree to implement an aviation lighting scheme.
Private Airfields	None	An assessment of private airfields in the vicinity of Littleton indicates that there will be no impact due to the proposed development.
Garda Air Support Unit	None	An assessment of GASU operations indicates that they are unlikely to be impacted by the proposed wind farm development.
DoD / IAC Safeguarding	Observation	The proposed wind farm is partially located within the low-flying restricted area along the M8 motorway (i.e. IAC low-level flight route), and the Irish Air Corps may raise concerns in relation to the proposed wind farm development. Summary points have been provided for consideration for the Department of Defence and the Irish Air Corps. A description of the existing operational wind farm obstacles and terrain obstacle environment has been provided This includes the Bregaun Hills, 7km to the southeast, of the motorway and the Spa Hills, 15km to the north-east, of the proposed development. This additional information has been presented for consideration.
Aeronautical Obstacle Warning Light Scheme	Observation	The Department of Defence (DoD) aviation lighting requirements are for illumination 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. there is an additional requirement that Obstacle lighting may be incandescent and if LED or other lighting types are used should be a type visible to Night Vision equipment. The DoD also require that obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light. The developer of the proposed wind farm development would agree to implement an aviation lighting scheme.
Emergency Aeromedical Service (EAS)	None	A review of EAS operations indicates that they are unlikely to be impacted by the proposed wind farm development.

15.6.5.4 Decommissioning Phase

During the decommissioning phase, the turbines will be dismantled and removed from the site, with no likely effects on aviation during the decommissioning phase.



15.6.6 Mitigation Measures

In line with standard practice for wind farm developments, the coordinates and elevations for turbines will be supplied to the IAA at the end of the construction phase. An aeronautical obstacle lighting scheme will be agreed with IAA in line with IAA's consultation response and applied to the proposed turbines. Should the Proposed Development get Planning consent, the turbine locations would be added to aviation flight charts and clearly marked as en-route obstacles.

15.6.7 Cumulative Impacts

As outlined in the Littleton Wind Farm Aviation Review Statement (appendix 15-2 and 15-3), there are other existing tall structures (obstacles) in the vicinity of the Proposed Development, notably the operational wind farms at Kill Hills, Lisdowney and Lisheen II. It is unlikely that the Air Navigation Service Provider (ANSP) at Waterford Airport will require a detailed assessment on the possible impact of the proposed wind farm on the flight procedures.

15.6.8 Residual Effects

While further technical assessments and consultations may be required on certain aspects of the Proposed Development in relation to aviation, many of the effects identified are outlined within the Littleton Wind Farm Civil Aviation Review and Department of Defence – Irish Air Corps Aviation Review Statements (Appendices 15-2 and 15-3), with the effects identified within the Statements showing no residual effects on aviation as a result of the Proposed Development.

15.7 **Telecommunications and Broadcasting**

15.7.1 Assessment Methodology - Telecommunications

There are three primary stages in preparing and compiling a Telecommunications Study are:

- Telecom Operator Consultations
- Field Surveys
- Desktop Survey Network Modelling and Analysis

A summary of each of these stages is provided below.

15.7.1.1.1 **Telecom Operator Consultations**

Consultations are commenced with relevant telecom operators, who are requested to raise any concerns they have regarding the impact of the proposed wind farm on their networks. The consultation process is used to assist in identifying telecoms infrastructure that could be impacted by the Proposed Development.



15.7.1.1.2 Telecommunications Field Surveys

Field surveys of telecom mast-sites in the vicinity of the proposed wind farm are undertaken. Field surveys were undertaken, and the co-ordinates of communication masts are recorded. During the field surveys of the communication sites, approximations of antenna size, bearing and height are made for the antennas installed on each of the masts surveyed.

15.7.1.1.3 Telecommunications Desktop Survey Network Modelling and Analysis

A desktop survey is carried out to plot the wind turbines in a radio planning tool. The radio planning tool uses GIS and terrain mapping databases to enable accurate modelling. A selection of mast-site coordinates is then obtained and inputs from various operators \ service providers are converted from ITM / IG (Easting and Northing in meters) to degrees minutes seconds format and then imported into the radio planning tool. This provides a means of graphically showing telecommunications sites in the vicinity relative to the proposed wind farm at Littleton.

15.7.2 Limitations

No limitations were encountered in the assessment of the potential effect on telecommunications and broadcasting from the Proposed Development.

15.7.3 Existing Environment

The Telecommunications assessment found that there are fifteen radio links in the vicinity of the proposed wind farm site. A description of each of these radio links is provided in Table 15.18 below.

Table 15-18: Existing Environment – Telecommunications (Radio links in vicinity of proposed wind farm site)

Operator	Link Description
Eir	PTP microwave radio link from Glengoogle to Thurles
	PTP microwave radio link from Curraheen to Glengoole
	PTP microwave radio link from Thurles to Kilbrannel
	PTP microwave radio link from Rosoulty to Glengoole
Enet	PTP microwave radio link from Ballyspellan to Centenary, Ballyduff
	PTP microwave radio link from Templemore Garda to Garransilly, Urlingford
ESB	PTP UHF radio link from Thurles 110kV to Glengoole 38kV
Three	PTP microwave radio link from Killenaule Quarry (Kilbrannel) to AQS Tipperary
	PTP microwave radio link from Ballyspellan to Leigh
	PTP microwave radio link from Littleton to Ballyspellan
Vodafone	PTP microwave radio link from Glengoole to Leigh, Twomileborris
	PTP microwave radio link from Glengoole to Thurles
	PTP microwave radio link from Glengoole to Ballymurreen



Operator	Link Description
	PTP microwave radio link from Glengoole to Laghtseefin, Glencarbry
	PTP microwave radio link from Glengoole to Garranacanty

Additional detail regarding the existing telecommunications environment can be found in Appendix 15.1.

15.7.4 Potential Effects

15.7.4.1 *Do-Nothing Scenario*

If the Proposed Development does not proceed, there would be no change to Aeronautical or Telecoms operations as well as electricity and water infrastructure, and waste services in the study area. Please note that irrespective of the consenting of the Proposed Wind Farm the remaining measures outlined in the Rehabilitation Plans, i.e. monitoring of the Littleton, Longfordpass and Lanespark Phase 1 measures and enhanced Phase 2 measures at nearby Ballybeg and Derryvella bogs, will continue to be implemented by BnM in agreement with the EPA. Please see Appendix 2.1 (Volume 3 of the EIAR) and Section 2.2.1 of Chapter 2 of the EIAR for further detail.

15.7.4.2 *Construction Phase*

15.7.4.2.1 Construction Phase - Telecommunications

During the construction phase there may be some crane-operations that could lead to radio link-paths being partially obstructed. This could lead to some radio signal degradation; however, any impacts are not expected to be significant and would be temporary in nature and interference conditions would be highly unlikely.

15.7.4.3 *Operational Phase*

15.7.4.4 *Operational Phase - Telecommunications*

Results from telecom operator consultations and desktop survey analysis indicate that there are fifteen radio links in the vicinity of the proposed wind farm. These radio links are listed below in Table 15.19, the detail of which is included in Appendix 15.1.

Each of the radio links have been modelled in 3D using radio planning software and plotted relative to the location of the proposed turbines. The clearance distance between the critical Fresnel Zone (cross-sectional surface area of the radio waveform that cannot be obstructed for reliable link operation i.e. 99.995% availability required) of each radio link and the blade-tip of the nearest turbine has been calculated and is also shown in Table 15.19. The clearance calculations indicate that the proposed turbines would not obstruct any of the radio links (i.e. no impacts).



Table 15-19: Impacts to Telecommunications

Operator	Radio Link Description	Nearest Turbine	Fresnel Zone (F1) Clearance Distance to Blade-tip of Turbine	Effect of Wind Farm
Eir	Glengoole to Thurles	T09	> 100 m	No Effect
	Curraheen to Glengoole	T11	65.9 m	No Effect
	Thurles to Kilbrannel	T11	> 100 m	No Effect
	Rosoulty to Glengoole	T09	> 100 m	No Effect
Enet	Ballyspellan to Centenary, Ballyduff	T01	> 1 km	No Effect
Enet	Templemore Garda to Garransilly, Urlingford	T01	> 1 km	No Effect
ESB	Thurles 110kV to Glengoole 38kV (UHF)	T07	> 500 m	No Effect
Three	Killenaule Quarry (Kilbrannel) to AQS Tipperary	T07	> 100 m	No Effect
Three	Ballyspellan to Leigh	T01	> 100 m	No Effect
Three	Littleton to Ballyspellan	T03	> 100 m	No Effect
Vodafone	Glengoole to Leigh, Twomileborris	T05	> 100 m	No Effect
Vodafone	Glengoole to Thurles	T09	> 100 m	No Effect
Vodafone	Glengoole to Ballymurreen	T09	> 100 m	No Effect
Vodafone	Glengoole to Laghtseefin, Glencarbry	T11	58.4 m	No Effect
Vodafone	Glengoole to Garranacanty	T11	> 100 m	No Effect

The detailed network analysis can be found in Appendix 15.1.

15.7.4.5 Decommissioning Phase

Any effects on telecommunication networks due to the proposed development during the decommissioning phase are expected to be negligible.

15.7.5 Mitigation Measures

The findings from field and desktop surveys indicate that no telecommunications networks will be impacted by the proposed development and mitigation measures will not be required.



15.7.6 Residual Effects

Based on the detailed Telecommunications technical assessments carried out, and included in Appendix 15.1, , any residual effects on telecommunication networks due to the proposed development are expected to be negligible.

15.7.7 Cumulative Effects

Based on the detailed Telecommunications technical assessments carried out, and included in Appendix 15.1, , any cumulative effects on telecommunications networks due the proposed development are expected to be negligible.

15.7.8 Summary

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



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