

## 15 TRAFFIC AND TRANSPORT

### 15.1 INTRODUCTION

#### 15.1.1 Background and Objectives

This chapter assesses the potential traffic and transport effects of the Development, describes the existing transport network, identifies whether there is any potential for significant effects to arise (both in isolation and in combination with other developments) and outlines any mitigation measures as required. The assessment will consider the potential effects during the following phases of the Development:

- Construction of the Development
- Operation of the Development
- Decommissioning of the Development

For developments of this nature, the construction phase is the critical impact period with impacts experienced on the surrounding road network. These impacts are both the short-term additional traffic volumes and the geometric requirements of the oversized loads associated with the turbine components. The locations requiring remedial measures to accommodate the turbine delivery will be permanent in nature and are outlined in this Chapter.

There are three separate elements of the works which will have their own separate access routes viz:

- Haul route for delivery of turbine components.
- Haul route for crushed stone, concrete, substation components and other materials for the wind farm site.
- Haul routes for construction of the grid connection.

A Swept Path Analysis has been carried out on the Haul Route for the abnormal loads associated with turbine components. The Swept Path Analysis includes an assessment of blade oversail. A separate haul route is proposed for other construction materials referred to as the Civil Construction Haul Route.

This chapter outlines potential effects of the Development on traffic and transport based on the Swept Path Analysis which has been undertaken for the Haul Route. It also estimates the number of HGV and other traffic movements on the Civil Construction Haul Route used for materials deliveries.

Figures are contained in **Volume III**.

Common acronyms used throughout this EIAR can be found in **Appendix 1.2**. This chapter of the EIAR is supported by Figures provided in Volume III and by the following Appendix documents provided in Volume IV of this EIAR:

- **Appendix 15.1: Collett Route Survey Reports of February 2020, September 2020 and October 2021**
- **Appendix 15.2: Swept Path Analysis Drawings**

### 15.1.2 Statement of Authority

This chapter of the EIAR has been prepared by David Kiely, Director, Jennings O'Donovan & Partners Limited who holds a BE in Civil Engineering from University College Dublin and MSc in Environmental Protection from IT Sligo. He is a Fellow of Engineers Ireland, a Chartered Member of the Institution of Civil Engineers (UK) and has over 39 years' experience. He has extensive experience in the preparation of EIAR and EIS for environmental projects including Wind Farms, Solar Farms, Waste Water Projects and various Commercial Developments. David has also been involved in the construction of over 60 wind farms since 1997.

The Collett Route Survey Reports for wind turbines was prepared by Steven Mangham of Collett & Son, Halifax, West Yorkshire, UK. Collett & Son owns a fleet of over 60 vehicles and 100 trailers and is one of the main transport contractors who deliver wind turbine components to Ireland. They also provide consultancy services in relation to the assessment of turbine haul routes. He also oversaw the preparation of the Swept Path Analysis drawings for the turbine haul route between Ringaskiddy and Cummeenavrck, west of Ballyvourney.

Mr. Mangham has a BTech in Civil Engineering from Leeds College of Building and a BSc in Civil Engineering from Leeds Beckett University. He has been employed by Collett & Son for over 12 years and is their Consultancy Manager. He has been involved in transport assessments for over 250 wind farms in the UK and for over 40 wind farms in Ireland.

The Swept Path Analysis of the turbine component haul route between Cummeenavrck and the wind farm Site as well as drawings showing the extent of widening works on this route was prepared by John Doogan, Senior Designer at Jennings O'Donovan & Partners Limited. John has a National Diploma in Civil Engineering from Bolton Street College of Technology, Dublin and has over 32 years of road design experience. He has worked on over 30 wind farms in Ireland and Sweden.

Topographic surveys of the turbine component haul route were carried out by Mr. Garry Henebry, Managing Director, GHE Surveying, Mitchelstown, Co. Cork. Garry Henebry is the Managing Director of GHE Surveying and has 20 years' experience of surveying. Garry qualified from St. Johns Central College Cork City in 2001 with a Diploma in Architectural Design and since then has established an extensive background in planning, civil engineering and surveying. GHE operates out of Mitchelstown, Co. Cork and are nationwide throughout Ireland with their services. They provide precise and detailed measurement information at all stages of a project and they specialise in the provision of innovative solutions to all aspects of engineering surveying in the civil sector and all aspects of land and measured building surveying. Garry has provided surveying services to contractors engaged in the construction of wind farm and grid connections.

## **15.2 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA**

### **15.2.1 Assessment Methodology**

This assessment has involved the following elements, further details of which are provided in the following sections:

- Policy and guidance review
- Desk study, including review of available maps and published information
- Site visit (driving the route) including review of road network to be used
- Topographical Survey of potential 'constraints'
- Swept Path Analysis of the Haul Route
- Establishment of Baseline Scenario
- Evaluation of potential effects
- Evaluation of the significance of these effects
- Identification of measures to avoid and mitigate potential effects
- Cumulative assessment in association with other potential development such as existing and permitted development as well as proposed development that could become consented before this application is decided upon
- Evaluation of residual effects following implementation of mitigation measures

### **15.2.2 Planning Policy and Guidelines/Guidance**

In addition to the EIAR standards outlined in **Chapter 1: Introduction**, the following guidance, guidelines and standards have been used in the preparation of this chapter:

**Table 15.1: Policy and Guidance**

Policy / Author	Title	Policy
Cork County Council	Cork County Development Plan 2022-2028	<p>The CDP states:</p> <p><i>“Objective TM12-2-2: Promote and facilitate an active travel culture in the County where active travel is a viable choice.</i></p> <p><i>f) Where appropriate, identify alternative routes, signposted for cycling and walking, to improve the experience and uptake of active travel.</i></p> <p><i>h) Seek to improve connectivity within the County and region for walking routes and commuter cycling routes and recreational amenity functions.”</i></p> <p><i>“Objective TM 12.8: Traffic/Mobility Management and Road Safety</i></p> <p><i>a) Where traffic movements associated with a development proposal have the potential to have a material impact on the safety and free flow of traffic on a National, Regional or other Local Routes, the submission of a Traffic and Transport Assessment (TTA) and Road Safety Audit will be required as part of the proposal.</i></p> <p><i>d) Ensure that all new vehicular accesses are designed to appropriate standards of visibility to ensure the safety of other road users.</i></p> <p><i>e) Improve the standards and safety of public roads and to protect the investment of public resources in the provision, improvement and maintenance of the public road network.”</i></p> <p><i>“Objective TM 12.13: National, Regional and Local Road Network</i></p> <p><i>Key Project 2040 projects:</i></p> <ul style="list-style-type: none"> <li><i>• N22 Ballyvourney to Macroom road</i></li> </ul> <p><i>i) Promote the improvement of strategic Regional and Local Roads throughout the County in accordance with the strategies identified for the main settlements in this plan.</i></p> <p><i>j) Restrict individual access onto national roads in order to protect the substantial investment in the national road network, to improve carrying capacity, efficiency and safety and to prevent the premature obsolescence of the network.</i></p> <p><i>k) Limit access to regional roads where appropriate so as to protect the carrying capacity of the network and have regard to safety considerations, particularly where access to a lower category road is available.</i></p> <p><i>l) Ensure that all route upgrades are planned, designed and constructed to be compliant with EU environmental directives and to minimise impacts on biodiversity, built heritage and landscape.</i></p> <p><i>m) Avoid the creation of additional access points from new developments or the generation of increased traffic from existing accesses onto national roads to which speed limits of greater than 50kph apply.</i></p>

Policy / Author	Title	Policy
Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government	The Design Manual for Urban Roads and Streets (DMURS)	This document outlines guidelines on the design of urban roads and streets in terms of street networks, street signage, pedestrians and cyclists, carriageways (widths, surfaces, junctions etc.), policies and plans, design process and audits (safety and quality).
Transport Infrastructure Ireland (TII)	Traffic and Transport Assessment Guidelines (PE-PDV-02045, May 2014)	The guidelines provide guidance for developers, planning authorities and the National Roads Authority (NRA) for: <ul style="list-style-type: none"> <li>• Scoping for traffic and transport assessment for future development and development areas, particularly areas in proximity to national roads,</li> <li>• Defining thresholds where studies are recommended to minimise the impact of future proposals on the national road network,</li> <li>• Contributing to the provision of sustainable forms of development and better-informed planning decisions.</li> </ul>
Transport Infrastructure Ireland (TII)	Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060, June 2017)	Design Standards for Junction Design, excl. major interchanges.
Transport Infrastructure Ireland (TII)	Rural Road Link Design (DN-GEO-03031 June 2017)	This Standard applies to Single and Dual Carriageway roads (including Motorways) in rural areas. It also applies to single carriageway Urban Relief Roads and Urban Dual Carriageways and Motorways. The Standard shall be used to derive the Design Speed, and the appropriate values of geometric parameters for use in the design of the road alignment. It sets out the basic principles to be used in co-ordinating the various elements of the road layout, which together form the three-dimensional design of the road.
Transport Infrastructure Ireland (TII)	Design Phase Procedure for Road Safety Improvement Schemes (DN-GEO-03030, April 2021)	This Standard sets out the procedures to be followed for the technical aspects of the Design Phase of the following scheme types: <ul style="list-style-type: none"> <li>• Road Safety Improvement Schemes</li> <li>• Urban Road Schemes</li> <li>• Road Safety Improvements aspects</li> <li>• Local authority general improvement schemes which have not been identified as Road Safety Improvement Schemes, schemes led, funded or partly funded by other agencies, development led schemes and/or community schemes.</li> </ul>
Transport Infrastructure Ireland (TII)	Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (PE-PAG-02017, May 2019)	This document provides guidance on the development of transport models for use in the appraisal of transport infrastructure. The guidance addresses the scoping and construction of transport models which reflect transport demand and supply in a 'Base Year'. It provides guidance on the preparation of future travel demand projections for use in modelling and appraisal.
Transport Infrastructure Ireland (TII)	Expansion Factor for Short Period Traffic Counts (PE-PAG-02039, October 2016)	This document aims to support the conversion of short period traffic counts to annual average daily traffic (AADT).

Policy / Author	Title	Policy
Transport Infrastructure Ireland (TII)	Road Safety Audit (GE-STY-01024, December 2017)	This Standard outlines the requirements for Road Safety Audits in the management of the national road infrastructure. It sets out the procedures required to implement Road Safety Audits and defines the relevant schemes and stages in the design and construction at which audits shall be undertaken.
Department of the Environment and Local Government and Department of Transport	Traffic Management Guidelines 2012	This document outlines guidelines for traffic management and sustainability, consultation and monitoring, speed management, junctions, vulnerable road users, public transport and parking. The guidelines recommend that consultation is carried out for schemes that involve a long construction period or area. The guidelines outline the relevant legislation governing different types of road works. The guidelines outline safety measures to be taken in the design of roads and junctions. The guidelines outline the arrangements for temporary traffic management where construction and improvement of roads is taking place and who should be consulted in planning for roadworks and the factors to consider.
Department of Transport, Tourism and Sport	Guidelines for Managing Openings in Public Roads (Second Edition, April 2017)	The document prescribes standards in respect of the work of forming openings, backfilling and the reinstatement of road surfaces and the associated materials to be used on all roads other than National Roads. It also prescribes procedures and requirements in relation to the use of MapRoad Roadworks Licensing (MRL) and its use for all road openings in public roads other than those openings carried out by a road authority.

### 15.2.3 Scoping Responses and Consultation

Consultation responses are shown in **Table 15.2**.

**Table 15.2: Consultation Responses**

Consultee	Type & Date	Summary of Response	Response to Consultee
Transport Infrastructure Ireland (TII)	Email dated 7 <sup>th</sup> December 2020	With respect to EIA Scoping issues, the recommendations indicated below provide only general guidance for the preparation of EIA, which may affect the National Roads Network. The developer should have regard, inter alia, to the following: <ul style="list-style-type: none"> <li>• Consultations should be had with the relevant Local Authority/National Roads Design Office, with regard to locations of existing and future national road schemes in the vicinity of the subject development site.</li> <li>• TII would be specifically concerned as to potential significant impacts the development would have on the existing national road network (and junctions with national roads) in the proximity of the proposed development.</li> </ul>	Addressed by this EIA / Chapter.

Consultee	Type & Date	Summary of Response	Response to Consultee
		<ul style="list-style-type: none"> <li>• The developer should assess visual impacts from existing national roads.</li> <li>• The developer should have regard to any Environmental Impact Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the areas concerned. The developer should, in particular, have regard to any potential cumulative impacts.</li> <li>• The developer, in preparing EIAR, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works).</li> <li>• The developer, in preparing EIAR, should have regard to TII's Environmental Assessment and Construction Guidelines, including the 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (National Roads Authority (NRA), 2006).</li> <li>• The EIAR should consider the 'Environmental Noise Regulations 2006' (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' (1st Rev., NRA, 2004)).</li> <li>• It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's 'Traffic and Transport Assessment Guidelines' (2014) should be referred to in relation to proposed development, with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of the TII TTA Guidelines, which addresses requirements for sub-threshold TTA.</li> <li>• The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.</li> <li>• In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network.</li> <li>• In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Separate structure approvals/permits and other licences may be required in connection with the proposed haul route, including where temporary modification to the road network may be required. Consultation with relevant PPP Companies and MMarC Contractors may also be required. All structures on the haul route should</li> </ul>	<p>Addressed in Chapter 12</p> <p>Addressed in this Chapter</p> <p>Addressed in this Chapter</p> <p>Addressed in Chapter 13</p> <p>Addressed in Chapter 11</p> <p>Addressed in Section 15.5.15 of this Chapter</p> <p>Addressed in this Chapter</p> <p>Addressed in this Chapter</p>

Consultee	Type & Date	Summary of Response	Response to Consultee
		<p>be checked by the applicant/developer, to confirm their capacity to accommodate any abnormal load proposed.</p> <ul style="list-style-type: none"> <li>Where the wind farm scheme includes grid connection proposals, the scheme promoter should note locations of existing and future national road schemes and develop proposals, to safeguard proposed road schemes. In the context of existing national roads, alternatives to the provision of cabling along the national road network, such as alternative routing or the laying of cabling in private lands adjoining the national road, should be considered in the interests of safeguarding the investment in and the potential for future upgrade works to the national road network. The cable routing should avoid all impacts to existing TII infrastructure, such as traffic counters, weather stations, etc. and works required to such infrastructure shall only be undertaken in consultation with and subject to the agreement of TII. Any costs attributable shall be borne by the applicant/developer. The developer should also be aware that separate approvals may be required for works traversing the national road network and/or motorway network where applicable.</li> </ul> <p>Notwithstanding, any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.</p>	<p>Addressed in this Chapter. A substantial proportion of the grid connection (some 76%) is to be located outside public roads.</p>
Cork County Council	<p>Email dated 22<sup>nd</sup> January 2021. Report from Exec. Planner dated 11<sup>th</sup> January 2021. Report from Ecology Office Planner dated 3<sup>rd</sup> February 2021. Emails dated 24<sup>th</sup> June and 4<sup>th</sup> July 2022 from James Dwyer. Senior Executive Engineer, Roads and Transportation</p>	<p>No specific comments in relation to traffic and transportation. There is a possibility of some temporary junction at Carrigaphooca - this will enable the opening of the eastern section later this year but I do not have any details of the junction arrangement or how long it will be left in place. Other than that there are no other junctions planned. The safest option might be to work with the junctions at Toonlane and Gurteenroe.</p> <ul style="list-style-type: none"> <li>My previous comment re the junction off the N22.</li> <li>The consents for the re-installation of the temporary bridge could be difficult.</li> <li>Widening and strengthening of the local road network from the main Coolea/Ballyvourney road south will be required.</li> </ul> <p>Regarding the grid connection:</p> <ul style="list-style-type: none"> <li>All bridges will require HDD - no cable is to be attached to any bridge.</li> <li>Any existing culverts exposed along the route must be replaced across the full width of the road with a suitably sized pipe. Also such points must be notified to the local Council office as they are exposed. A location and photographic record of these crossings is to be maintained and handed over to the local Council office once the grid route on the public road is complete.</li> <li>A full width regrading and resurfacing will be required on all sections of public road affected.</li> <li>Specific details required where the proposed grid route crosses the existing grid route serving Grousemount Wind Farm.</li> <li>Joint Bays are to be off the road line.</li> </ul>	<p>No response required in this Chapter. Addressed in this Chapter and is the Construction Methodology - 110kV Underground Cable Connection proposed by TLI Group. Incl. in Appendix 2.4 to EIAR.</p>

Consultee	Type & Date	Summary of Response	Response to Consultee
		<ul style="list-style-type: none"> <li>Any diversion routes are to be suitably prepared to ensure that they are fit for the level of traffic expected. These routes must be maintained (hedgcutting/potholing/etc) for the duration of any diversion.</li> <li>The Contractor will have to maintain the temporary reinstatement in a good condition until a permanent reinstatement is completed.</li> </ul>	
Kerry County Council	Emails and letter from SEO Corporate Affairs 4 <sup>th</sup> August 2022	No specific comments in relation to traffic and transport.  Letter of Consent issued to allow Planning Application to be made in relation to their land at Cummeenavrick.	No response required – consent obtained for use of turning area at Cummeenavrick on Turbine Haul Route.

#### 15.2.4 Study Area

The study area for Traffic and Transport assessment is defined as the wind farm Site, the Haul Route for Turbine Components, the Civil Construction Haul Route for the importation of rock, concrete and other construction materials to the Site primarily from local quarries and the Grid Connection Route. It also includes routes to service the grid connection and road widening to the haul route for turbine components (deliver materials and remove spoil).

The Turbine Components Haul Route is shown on **Figure 15.1** and **Figure 15.2**, the Civil Construction Haul Route is shown on **Figure 15.3**, the Grid Connection Route is shown on **Figure 15.4** and locations for disposal of spoil from construction of the grid connection are shown on **Figure 15.5**.

It is proposed that the turbine and electrical components will be delivered via Ringaskiddy Port, Co. Cork. The following route is proposed and is discussed in further detail in **Appendix 15.1**:

- Exit Ringaskiddy Port onto N28.
- At the roundabout, continue on N28.
- At the roundabout, continue on N28.
- At the roundabout, take the 2nd exit onto N28.
- Continue on N28, then take the slip road onto N40.
- Continue on N40 to N22, use new Macroom By-Pass which ends north-west of Ballyvourney.
- Continue on N22, then turn right at the island junction at Cummeenavrick and complete a 180 degrees turning manoeuvre and continue onto the N22 to Ballyvourney.

- At Ballyvourney, take a right turn onto a temporary access track (to be constructed as part of the Development) as far as the Sullane River, provide a temporary bridge over the Sullane River and continue with the development of a new access track so as to merge onto the L-3400-79 (see Drawings 6225-PL-810 and 6225-PL-811).
- Continue on the L-3400-79 and at the 'Y' junction, turn left onto the L-3405-0 local road.
- Continue on the L-3405-0 and at the 'Y' junction, continue onto the L-7405-0 local road.
- Take a left turn onto the upgraded private road to the Site entrance (see **Figure 15.2**).

While sub-base and base course materials for the Access Track and Turbine Hardstand construction will be sourced on site from borrow pits, crushed stone will be imported for the final running layer. Specific grades of rock fill may be required as fill under Turbine Foundations. The crushed stone as well as rock fill and concrete for Turbine Foundations, concrete blocks for the construction of substation buildings and precast chambers for site cabling will be sourced from one of the local quarries in the area. Concrete, crushed stone and concrete blocks for construction of the Development will come from licenced quarries in the locality such as:

- McGroup Keim Quarry
- Coppeen Concrete, Enniskeane
- Mid-Cork Quarries, Gortnadiha
- McSweeney Bros, Kilmichael
- Keohane Readymix, Ballygurteen
- Murray Bros Tarmacadam Ltd, Ardcahan

These quarries will also be the source of crushed stone and concrete for widening works to the turbine haul route (N22 turnaround location, temporary bridge over Sullane River, L-3405-0 and L-7405-0) and for grid connection works.

The N22 Macroom By-Pass (currently under construction) will be a dual carriageway Type 2 road with four junctions:

- Baile Bhuirne (Ballyvourney) grade-separated junction: the tie in with the existing N22 at the western end of the road development west of Baile Bhuirne.
- Tonn Láin (Toolane) grade-separated junction and off-line roundabout: This will provide access to and from the existing N22, to the east of Baile Mhic Íre.
- Gurteenroe grade-separated junction and off-line roundabout: The location where the proposed route crosses the regional road, R582.

- Coolcour roundabout: This is the tie-in with the existing N22 at the eastern end of the road development in the townland of Coolcour.

Two of these junctions are at each end of the by-pass with only two in between.

The delivery route proposed are such as to maximise use of the new N22 Macroom By-Pass and to avoid centres of population such as Macroom, Ballyvourney and Ballymakeery.

There is no junction with the L-3402 and hence sections of the existing N22 road will need to be used for transporting concrete, crushed stone and other materials to the wind farm Site.

For the quarries to the south, trucks will use the R587, then the R584. As there is no direct access or junction between the new Macroom By-Pass (N22) and the R584, trucks will use the existing N22 south-eastwards to join the new N22 Macroom By-Pass, will follow the new N22 Macroom By-Pass to the Toolane Junction, then exit onto existing N2 and travel eastwards to Lissagressig and then follow the L-3402 to the wind farm Site (see **Figure 15.3**).

From Keim, trucks will follow the R582 in a south-easterly direction and join the New Macroom By-Pass (N22) at Gurteenroe Junction. They will then follow the new N22 By-Pass to Toolane Junction and return along the existing N22 to meet the L-3402 at Lissacressig (see **Figure 15.3**).

Wood from forestry felling required to accommodate part of the Development will be removed from site once the civil works are complete. Possible suitable locations have been identified in Enniskeane and Lissarda. The proposed route for transporting wood is shown on **Figure 15.6**. This route is effectively the reverse of the civil construction haul route and trucks will leave the wind farm site via the L-3402 to Lissacressig, drive westwards on the existing N22 to the Toolane junction of the new N22 Macroom By-Pass; follow the By-Pass to the Coolcour junction with the existing N22 and then proceed either south-eastwards to the L-7489 or north-westwards to the R584.

In the email from Cork County Council dated 24<sup>th</sup> June 2022 (see **Table 15.2**), there is a possibility of a temporary junction at Carrigaphooca to enable the early opening of the eastern end of the new N22 Macroom By-Pass. Such a junction would be advantageous.

However, as the entire By-Pass will be complete well in advance of wind farm construction, this Chapter assumes that the temporary junction will be closed on completion of the by-pass.

The proposed grid route is largely independent of the haul routes (see **Figure 15.4**). Leaving the wind farm site, the grid route will follow private lands in a north-westerly direction to the L-7405 (0.562km), then to the L-7400 westwards and northwards for a distance of 3.53km. There is then a directional drill crossing under the Bardinch River (0.152km) before re-entering the road for 1.089km, then crossing private lands for 0.195km (to avoid a bend) before returning to the L-7400 for 1.632km to the end of that road. From there, it will follow forest tracks as far as the N22 which will be crossed by directional drilling. It will then follow the old route of the N22 for a short distance (c.0.469km) before following forestry tracks to the existing Ballyvouskill Substation. Of the total length of 28.462km, some 6.872km will be within public roads. The majority of the line (21.59km) is within lands under the control of the Developer.

For the grid connection, general material excavated from trenches in public roads will be disposed of to a licenced facility while excavated road surfacing material will be recycled. General soil waste will be transported to one or more of the following licensed facilities (see **Figure 15.5**):

- Tomas Mullins, Scrahanagown, Coolea, Co. Cork
- Richard & Dennis Carroll Plant Ltd., Clonfadda, Macroom, Co. Cork
- Ciaran Ryan Plant Hire Ltd., Ballymacorcoran, Clondrohid, Co. Cork
- Séan Ó Luasa, Na Foithrí (Fuhirees), Cúil Aodha, Maighchromth, Co. Chorcaí

Soil and stone spoil from road widening on the Turbine Haul Route will be disposed of to the same facilities.

Excavated road surfacing materials will be recycled and used for temporary reinstatement of trenches. Bitumen and supplementary road surfacing for trench reinstatement can be sourced from Lehane Tarmacadam, Kilbarry, Macroom, Co. Cork or McSweeney Bros, Kilmichael or Murray Bros Tarmacadam Ltd., Ardcahan.

Grid construction traffic will be serviced via the N22 at Cummeenavrick or will be serviced from the wind farm Site or will be serviced using the L-3400 through Coolea or via the wind farm site. For the section of the grid connection north-east of the N22, access will be gained from the N22 at Cummeenavrick.

For the section of grid connection immediately to the south-west of the N22, access will be gained via an existing forest track at Derryreag Townland. The locations of these access points are shown on **Figure 15.4**. The L-3400 will be used to service the grid connection to be laid within the L-7400, L-7404 and L-3400-32 while the wind farm will be used to service the grid connection within the L-7405.

The wind farm Site is partially owned by Coillte Teo who operate an "Open Forest" policy which allows public access for amenity. The Beara to Breifne Way, used by walkers, goes through the site (see **Figure 15.7**). The southern part of the route through the wind farm Site will be upgraded to form the Site access tracks and the improved quality track will be open to pedestrian use following completion of the upgrade works.

### 15.2.5 Desk Study

Primary Route Assessments for the turbine component haul route were carried by Collett & Sons Ltd., Halifax, U.K. who are specialists in the transportation of wind turbine components. This is included in **Appendix 15.1**.

Desk Studies of the Study Area were largely completed in advance of undertaking the route survey. This involved using Google Maps and Streetview to assess the proposed haul route road network from Ringaskiddy Port and from Foynes Port. The civil construction haul route was assessed in a similar manner as was potential traffic related to the grid route.

Cork County Council were consulted as part of the Scoping process but did not have any specific comments in relation to traffic and transport at that stage. They subsequently corresponded via emails dated 29<sup>th</sup> June 2022 and 4<sup>th</sup> July 2022 (see **Table 15.2**). The response set out that widening and strengthening of the local road network from the main Coolae/Ballyvourney road south will be required. It also prescribed certain requirements for the grid connection.

Traffic count data from TII was used to assess the current Baseline Scenario on the N22 in the area.

For supplementary background information, Planning Documentation (Environmental Impact Statement, August 2013) in relation to Grousemount Wind Farm was reviewed to examine how transportation from the N22 at Ballyvourney was considered as part of that project and if any traffic count data was available so as to give an indication of background flows.

The Grousemount Wind Farm Project (now constructed and operational) also included a temporary crossing of the Sullane River to transition between the N22 and the L-3400-79 for turbine component delivery similar to that under consideration as part of this Development.

### 15.2.6 Field Work

Two possible routes for the turbine component haul route were surveyed by Collett & Sons Ltd. A Preliminary Route Assessment was carried out in February 2020 for the route between Ringaskiddy Port and the Site. This was for a 73.94m blade length and it assessed constraints within Macroom village rather than the N22 By-Pass (currently at an advanced stage of construction). This was revised in October 2021 to include the use of the Macroom By-Pass. The second survey (September 2020) examined the route between Foynes Port and the Site and was based on the use of a 77.5m blade. The Ringaskiddy Port to Site route was resurveyed in October 2021 to reflect the use of a 76m blade component. In each case, the route was assessed by a two-person team and the various junctions and constraints were photographed. A copy of each report is included in **Appendix 15.1**.

For the range of wind turbines under consideration, the rotor diameters will vary from 149m to 155m. For a typical central hub diameter of 3m, the blade lengths will range from 73m to 76m. In terms of turbine transportation, the effects of transporting a 76m blade (maximum blade length under consideration) will be similar to those of 73m. No additional works are required to facilitate their transportation nor any further impacts predicted.

The distance between Ringaskiddy Port and the Site is c. 92.8km while the distance between Foynes Port and the Site is c. 216km. On completion of the Macroom By-Pass, the route will be generally wider than the route from Foynes. Accordingly, due to the much shorter length and better quality road, the route from Ringaskiddy was selected.

A Topographical Survey of areas of potential works between the N22 and the Site on the Haul Route was undertaken during June and July 2021 by GHE Surveying. The points surveyed are as follows:

- Old Road Alignment/Proposed Turning Area on N22 at Cummeenavrick
- Temporary access track and Site of proposed crossing of Sullane River at Ballyvourney
- L-3400-79 between Ballyvourney and junction with L-3405-0
- L-3405-0 to junction with L-7405-0
- Private lands

This fieldwork enabled the various haul route drawings to be prepared by JOD (see Planning Drawings Nos. 6225-PL-250 to 6225-PL-257).

Lidar survey data was procured so as to supplement topographical survey data between the L-7405-0 and the wind farm site.

Traffic counts (see **Section 15.3.5**) were carried out at the L3400/L3405 junction (location shown on **Figure 15.11**) and at the L3402/Forest Access (location shown on **Figure 15.11**) on Thursday, 7<sup>th</sup> October 2021.

### 15.2.7 Evaluation of Potential Effects

The baseline environment is described in **Section 15.3**. The available data will then be utilised to identify and categorise potential effects likely to affect the national and local road network used for the Turbine Component Haul Route, the Civil Construction Haul Route and the Grid Connection as a result of the Development.

The statutory criteria (EPA, 2002; EPA, 2003) for the assessment of effects require that likely effects are described with respect to their extent, magnitude, type (i.e. negative, positive or neutral) probability, duration, frequency, reversibility, and transboundary nature (if applicable). The descriptors used in this Environmental Impact Assessment Report (EIAR) are those set out in EPA (2002) 'Glossary of Impacts'.

Effects may be categorised as follows:

- Direct: where the existing traffic and transport environment in proximity to the Development is altered, in whole or in part.
- Indirect: where the traffic and transport environment beyond the Development is altered by activities related to the construction or operation of the Development.
- No Effect: where the Development has neither negative nor positive effect upon the traffic and transport environment.

### 15.2.8 Sensitivity

The sensitivity of the local transport infrastructure has been identified utilising the criteria outlined within the TII Guidance. These criteria are outlined within **Table 15.3** below.

**Table 15.3: Receptor Sensitivity**

Importance	Description
High	Receptors of greatest sensitivity to changes in traffic flow including: People whose livelihood depends upon unrestricted movement within their environment including commercial drivers and companies who employ them, local residents, schools and colleges.
Medium	Traffic flow sensitive receptors including: People who habitually pass through the area, but whose livelihoods are not dependent on free access. Would also generally include: congested junctions, community services, parks, businesses with roadside frontage and recreation facilities.
Low	Receptors with some sensitivity to changes in traffic flow: People who occasionally use the road network. Would also include: public open spaces, nature conservation areas, listed buildings, tourist attractions, residential roads with adequate footway provision and churches.
Negligible	Receptors with very low sensitivity to traffic flows: People not sensitive to transport effects. Would also refer to receptors that are sufficiently distant from the affected roads and junctions.

**Table 15.4** below provides the general approach to determining the importance and sensitivity of a resource or receptor based on The Institute for Environmental Management and Assessment (IEMA) Guidelines<sup>1</sup>. The assessment of environmental impacts arising from road traffic is not an exact science and a degree of professional judgement is required. The definitions set out in **Table 15.4** below are generally applied. This will partially define the magnitude and significance criteria set out in the sections below, while applying thresholds quoted in the IEMA Guidance. Sensitive receptors are generally areas with key facilities associated with high footfall.

**Table 15.4: Determining the Importance / Sensitivity of Receptor**

Importance/Sensitivity of Receptor	Resource	Receptor
High	Traffic flows on highway network near schools, colleges, hospitals playgrounds, accident blackspots, retirement homes and roads without footways that are used by pedestrians.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers.
Medium	Traffic flows at congested junctions and on highway network near shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers, people visiting shops etc.
Low	Traffic flows adjacent to places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Residents/workers travelling to these places.
Very Low	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	Residents/workers travelling by foot or by vehicle.

<sup>1</sup>The Institute of Environmental Management and Assessment (1993), Guidelines for the Environmental Assessment of Road Traffic

### 15.2.9 Magnitude

The magnitude of potential impacts has been defined in accordance with the criteria provided in the 2002 EPA publication 'Guidelines on the information to be contained in Environmental Impact Statements' as outlined within **Table 15.5**.

The Institute for Environmental Management and Assessment (IEMA) Guidelines contains two broad principles to determine the scale and extent of an assessment, which are:

- Principle 1 – include road links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%).
- Principle 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

If the predicted increase is lower than these thresholds, then the effects can be considered to be low or not significant. If the increases are above the thresholds, then the increase can potentially be significant and assessment is required.

The Traffic and Transport Assessment Guidelines (PE-PDV-02045, TII, May 2014) were developed to assess the potential effects of major developments on the national road network during their operation. These guidelines are applicable to the national roads relevant to the project and have been used to assess the construction, operation and decommissioning phases of the Development of the N22, N28 and N40.

On roads where existing traffic levels are generally low e.g. on local roads such as those on the Haul Route between the N22 and Site or those public roads which are to accommodate the grid connection, increase in traffic flow during construction are likely to be higher than the IEMA Guideline thresholds and in such cases it is necessary to consider the overall increase in traffic flows and the capacity of the road before making a conclusion on effects.

In this case, the N22 and part of the local road L-3400-79 (between the proposed Sullane Bridge crossing and the junction with the L-3405-0) have been used successfully for the construction of Grousemount Windfarm during 2018 and 2019, which had over double the number of turbines (38) as the proposed development.

The IEMA Guidelines acknowledge that there are no commonly agreed thresholds for judging the magnitude of change for the effects assessed, with the exception of severance,

for which IEMA suggests thresholds of 30%, 60% and 90% for slight, moderate and substantial impacts respectively.

For the most robust approach, the built-up area thresholds in line with the IEMA guidance have been used to guide assessments of magnitude of change. However, a level of professional judgement has been applied to arrive at a set of common thresholds for ascertaining the magnitude of impact. In respect of the environmental effects of traffic, magnitude, based on increase in total vehicular traffic and/or HGV traffic has been determined on the following basis:

- High – considerable deterioration / improvement in local circumstances (total traffic flows of +/-90%).
- Medium – readily apparent change in conditions (total traffic flows of +/- 60 – 90%).
- Low – perceptible change in conditions of circumstances (total traffic flows of +/- 30 – 60%).
- Very Low — no discernible change in conditions (total traffic flows of less than +/- 30%).

**Table 15.5: Magnitude of Change**

Magnitude of Effect	Description
Significant	The Development could result in a change of length or duration to the current traffic routes or schedules which could result in hardship.
Moderate	The Development could result in delays or the need to reschedule which may cause inconvenience.
Slight	The Development could occasionally cause minor modifications to routes, or slight delays in current schedules, or on activities in the short-term.
Imperceptible	The Development does not cause an effect on movement of road traffic above normal levels.

#### 15.2.10 Significance of Effects

A combination of the magnitude of the impact under consideration and the sensitivity or value of the receiving environment / receptor, as set out in **Table 15.4** can be used in considering the overall significance of an effect. The general approach adopted for classifying effects is outlined in **Table 15.6**. A Major Moderate effect is seen as '**significant**'. A Minor or Negligible effect is seen as '**not significant**'.

**Table 15.6: Significance of Effects**

Sensitivity/Value of Receptor	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

## 15.3 BASELINE DESCRIPTION

### 15.3.1 Site Location, Context and the Development

Separate haul routes are proposed for turbine components, wind farm civil and electrical works construction and for the various elements of the grid connection. Each are described below.

The proposed Turbine Components Haul Route is shown in **Figures 15.1** and **15.2** and the proposed Civil Construction Haul Route (crushed stone, concrete, concrete blocks and precast units) will come from the quarries as shown on **Figure 15.3**. Incidental building materials will be sourced from either Macroom or Killarney. The grid connection route is shown on **Figure 15.4** as well as traffic access points. Disposal routes for soil and stone excavated for the grid connection are shown in **Figure 15.5**. Disposal routes for forestry logs felled at the wind farm Site are shown on **Figure 15.6**.

It is proposed that the turbine nacelles, tower hubs and rotor blades will be landed at Ringaskiddy Port, County Cork. From there they will be transported to the N22 some 7.7km north-west of Ballyvourney and then turn around towards Ballyvourney along the old (current) N22 and will travel across a new temporary crossing of the Sullane River onto the L-3400-79 and then on to the Development Site using the Local Roads L-3405-0 and L-7405-0 to the new access track on private lands and on to the Site entrance. A temporary crossing of the Sullane River and the L-3400-79 was previously used for transportation of turbine components for the neighbouring Grousemount Wind Farm as the existing three-arch masonry bridge at Ballyvourney on the L-3400-79 Local Road and close to N22/L-3400-79 junction (see **Photo 15.2**) was considered unsuitable for the passage of turbine components of the dimensions proposed. The proposed temporary bridge will be a single span structure which will be delivered to Site in a number of components for pre-assembly before being lifted into position using a crane (see JOD Drawings 6225-PL-810 and 6225-PL-811). The temporary bridge will remain in position until turbine commissioning is complete after which the deck will be removed and the Site reinstated. The bridge support piles will also be removed.

Whilst a final choice of turbine type for the Development has yet to be made, the vehicle used for the Swept Path Analysis is the largest associated with the turbines currently being considered (see **Chapter 2: Project Description, Section 2.5.2** for further details). The Swept Path Analysis has been completed for a turbine with 155m rotor diameter, which has a blade length of 76.0m. This is the longest blade length of all the turbines currently under

consideration<sup>2</sup> and would have the greatest potential impact on road passage requirements. As the shortest blade under consideration would be 73.0m, the swept paths would be only marginally different and the effects will be similar to the 76.0m blade. No additional works are required to facilitate their transportation nor are any further impacts predicted.

While a detailed assessment of the route is presented in this chapter and associated appendices, it should be noted that the N22 from Ringaskiddy to Macroom and Cummeenavrick (on the N22) to the junction of the L-3400-79 with the L-3405-0 of the selected turbine component haul route was used for the transport of turbine components to the 38 turbine Grousemount Windfarm which used vehicles with similar clearance specifications in terms of height and width. So as to confirm the suitability of any changes to the roadway or to street furniture along the route between EIAR and pre-construction, a further survey of the route will be undertaken using a transport vehicle prior to the delivery of turbine components to Site.

For the civils works during construction, crushed stone materials for the running surfaces of the Site Access Tracks and Turbine Hardstands will be sourced from one of the local authorised quarries in the area. Ready-mix concrete for Turbine Foundation construction and substation foundations will also be sourced from one of the local authorised quarries. The local quarries are located either to the north-east at Keim or to the south-east at Kilmichael, Coppeen, Gortnadiya, Ardcahan or Ballygurteen as described in **Section 15.2.4** above. HGV's from any of these quarries will use the same routes between the N22 and the Development Sites. The proposed Civil Construction Haul Route is outlined in **Figure 15.3**. Other material deliveries will use standard HGVs and use the local, national and regional road network.

For the grid connection, traffic for the delivery of crushed stone, ducting, cables and precast components and for the removal of spoil will access the grid route from the N22 eastwards along forest tracks to Ballyvouskill and also southwards along forest tracks and to the L-7401-1 towards the wind farm Site. The L3400-79, L3400-62 and L3400-32 will be used for deliveries to the grid connection to be constructed within the L-3400-32, L-7400 and L-7404. Access to the grid route within the L-7405 and between the L-7405 and the wind farm Site will be via the wind farm Site. **Figure 15.5** shows the grid connection access routes and spoil disposal locations and routes.

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<sup>2</sup> The GE5.3-158 has a larger blade overall but has a two-part construction and so will not be as long for transportation purposes.

Workers employed on the Site will generally use the N22 and the construction traffic routes to reach the Site.

### 15.3.2 Sensitive Receptors

The Site is generally served by the N22 which runs between Cork City and Tralee. The N22 is approximately 6 kilometres (km) to the north of the Site and has a speed limit of 100km / hour (hr). The new alignment of the N22 will be complete prior to construction of the Development and will avoid traffic through Macroom and Ballyvourney.

Receptors considered as having 'high' sensitivity are primarily premises which are directly on the N28, N40, N22, L3400-79 and L-3402 which have significant potential to generate traffic.

Between Ringaskiddy Port and the Wind Farm Site, the sensitive receptors are assessed in **Table 15.7**.

**Table 15.7: Sensitivity of Receptors – Turbine Component Haul Route**

Receptor	Sensitivity	Reasons/Comments
Various Businesses and Factories on N28 including Pfizer Ireland Pharmaceuticals	Very Low	Located north of N28 but with multiple junctions onto N28.
Shanbally Shop & Deli	Medium	Shop has direct access onto Shanbally Roundabout/N28 with pedestrians crossing.
Shanbally National School	High	Located on Maroon Terrace south of roundabout/N28.
Residences at Shanbally	Low	Roadside residences as well as multiple junctions onto N28 giving access to residential developments.
Church of the Immaculate Heart of Mary, Shanbally, Co. Cork	Medium	The church is located along the N28 and fronts onto the Haul Route. Some mass attendees are highly likely to use the N28 to get to the church and increased traffic on the road may affect access and egress from the church car park.
Shamrock GAA Club	Medium	Located to south of N28, junction onto N28.
Various Businesses/ Factories incl. Enva and Zenith	Very Low	Located north of N28 but with multiple junctions onto N28.
Raffeen Bridge, Accommodation, Monkstown, Co. Cork	Very Low	Located to south of N28, access via Raffeen Road onto N28.
Various Private Dwelling in Raffeen area	Very Low	Located to north and south of N28. Access onto N28 via R610, L2470 and Raffeen Road.
Storage Yard, Raffeen	Low / Very Low	Located to south of N28 with direct access.
Various Businesses and Private Residences in Hilltown Area	Very Low	Access to N28 via L6469, L6477 and other Local Roads.
Maxol Service Station	Medium	Adjacent to N28.

Receptor	Sensitivity	Reasons/Comments
Agricultural Landholdings, Farmsteads and Private Dwelling	Low	Occasional direct access onto N28.
Douglas, Rochestown, Deanrock, Bishopstown, Maryborough, Togher, Urban Areas of Cork City – Residences, Businesses	Very Low	Major junctions only onto N28 and N40/South Ring Road. Most Receptors sufficiently distant from affected roads and junctions.
Marymount University Hospital & Hospice	High	The Hospital is located off the Curraheen Road Junction of the N40. Slow movement of traffic components could delay access to the slip road.
Cork City Football Club; Curraheen Park Greyhound Stadium. Cork Show Grounds, Agricultural landholdings, Farmsteads and Private Dwellings.	Medium / Low	Major junctions only onto N40 & N22 from (Curraheen Road) and Maglin Road.
Urban Area of Ballincollig, Coolroe, Classis Lake,	Very Low	Major junctions only onto N22. Most Receptors sufficiently distant from affected roads and junctions.
Roadstone Quarry, Classis, Co. Cork.	Very Low	Major junctions only onto N22 via R608.
The Ovens Bar, Ovens, Co. Cork	High	Roadside Access onto N22.
Agricultural Landholdings, Farmsteads, Businesses and Private Dwellings between Ovens and Farranavarra.	Very Low	Occasional direct access onto N22.
Roadstone Quarry, Garryhesta	Very Low	Not in commercial use. Direct access onto N22.
White Lodge Bed & Breakfast, and Farran House self-catering accommodation, Farranavarra, Co. Cork; Farranavarra Village.	Medium/Low	Some properties and businesses have direct access onto N22.
Agricultural Landholdings, Farmsteads, Businesses and Private Dwellings between Farranavarra and Crookstown, Co. Cork	Medium/Low	Occasional direct access onto N22.
Crookstown Village	Very Low	To the North of N21 and largely contained within two junctions with N22. Properties to south join N22 via Ryecroft Manor Road.
Roadstone Quarry, Castlemore	Medium / Low	Located to south of N22. Access to N22 is via R585.
Agricultural Landholdings, Farmsteads, Businesses, and Private Dwellings between Crookstown and Lissarda, Co. Cork	Medium / Low	Occasional direct access onto N22.
Lissarda Village & Kilmurray Cross incl. O'Leary's Garage, Circle K	High	Direct access onto N22. Route is through centre of village.

Receptor	Sensitivity	Reasons/Comments
Filling Station, Ma Fitz's Bar & Restaurant, Garden Centre, Chinese Restaurant, Other Business Units, Roadside Residences		
Agricultural Landholdings, Farmsteads, Businesses and Private Residences between Kilmurray Cross and Coolcour	Medium / Low	Occasional Direct Access onto N22.
Fountain House Bed & Breakfast, Mashanageass, Co. Cork	Medium	Close to N22.
The Lee Valley Park	Medium	Amenity Area on R584 west of N22.
Urban area of Macroom between Gurteenroe Coolcour Junction and Junction on Re-aligned N22	Very Low	New By-Pass Road with entry/exit from major junctions only.
Rural Area between Gurteenroe Junction and Toolane Junction on re-aligned N22	Very Low	New By-Pass Road with entry/exit from major junctions.
Villages of Ballymakeery and Ballyvourney between Toolane Junction and Bhaile Bhuirne Junction on re-aligned N22	Very Low	N22 is being realigned so as to avoid villages. However, they will have access junctions onto N22.
Hillview House Bed & Breakfast 1, Coolcower Macroom, Co. Cork	Low/Medium	Close to junction of old and new realignment of N22.
Western House Bed & Breakfast, The Mills, Ballyvourney, Co. Cork	Low/Medium	Located at junction of N22 and L-3400-79.
Tír Na Meala B&B Bed & Breakfast, Derreenculling, Coolea, Co. Cork	Low	Not directly on route but L-3400-79 turbine component haul route is along main access to the B&B.
Rural Area between N22 By-Pass (Ballyvourney) junction and Commeenavarick	Very Low	Occasional entry via N22.

For the civil works construction haul route between the N22 and the wind farm Site along the L-3402, the sensitive receptors are assessed in **Table 15.8**.

**Table 15.8: Sensitivity of Receptors – Civil Construction Haul Route**

Receptor	Sensitivity	Reasons/Comments
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on R584, R587, R585, R586 and R599	Medium/Low	Occasional direct access onto Regional Roads.
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on R582	Medium/Low	Occasional direct access onto R582.
N22 Macroom By-Pass between Coolcour Junction and Toolane Junction	Very Low	New By-Pass road with no direct access by sensitive users.
Existing N22 between Toolane Junctional and Lissacresig (junction with L-3402), Agricultural Landholdings, Farmsteads, Business and Private Residents	Medium/Low	Direct access onto N22.
Agricultural Landholdings, Farmsteads, Businesses and Private Dwellings between N22 junction with L-3402 at Lissacresig and Reananerree on L-3402	High	Direct access onto L-3402.
Reananerree Village including School, Derrylineen and Agricultural Landholdings, Farmsteads, Businesses and Private Dwellings on L-3402 to Forest Entrance	High	Direct Access onto L-3402.

For the Grid Connection works and the haul routes to these areas, the sensitive receptors are assessed in **Table 15.9**.

**Table 15.9: Sensitivity of Receptors – Grid Connection and Haul Routes**

Receptor	Sensitivity	Reasons/Comments
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on R584, R587, R585, R586 and R599	Medium/Low	Occasional direct access onto Regional Roads.
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on R582	Medium/Low	Occasional direct access onto R582.
N22 Macroom By-Pass between Coolcour and Ballyvourney Junctions	Very Low	New By-Pass road with no direct access by sensitive users.

Receptor	Sensitivity	Reasons/Comments
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on existing N22 between Ballyvourney Junction and Cummeenavrick	Medium/Low	Direct access onto N22.
Agricultural Landholdings, Farmsteads, Businesses and Private Residences on existing N22 between Ballyvourney Junction and L-3400-79	Medium/Low	Direct access onto N22.
Bun a Bhaile B&B, Coolea, Co. Cork	High	B&B has direct access to the haul route.
Coolea Village, Coolea Church, Swimming Pool, Businesses and Private Dwellings	High	Not directly on grid route but materials haul route (L-3400-79) is through village.
Private Dwellings and Farmsteads on the L-3400-32	High	Direct access onto haul route and grid route.
Private Dwellings and Farmsteads on L-7405, L-7404, L-7400 and L-7401-1	High	Direct access onto grid route.

For works within the wind farm Site, the sensitive receptors are assessed in **Table 15.10**. The key receptors are walkers on the Beara to Breifne Way which passes through the wind farm (see **Figure 15.7**).

**Table 15.10: Sensitivity of Receptors – Wind Farm Site**

Receptor	Sensitivity	Reasons/Comments
Walkers on Beara to Breifne Way Track through Wind Farm Site	High to Low	Southern half of route will be reconstructed as part of wind farm site roads. Northern half of route through the wind farm Site will not be disturbed.

### 15.3.3 Road Access to the Site

#### 15.3.3.1 Turbine Haul Route

For the turbine haul route, much of journey from Ringaskiddy Port to the Site will be on National Primary Roads. These include the N28, N40 and N22. These roads vary in terms of width, number of lanes and types of junctions.

Leaving Ringaskiddy Port, the N28 initially has two lanes westwards from the R613 junction. This narrows to one lane prior to the Pfizer Roundabout and continues towards Shanbally in a similar manner with traffic islands at either side of junctions. The speed limit is 50km/h. Shanbally is the transition from an industrial area to a largely residential area.

After Shanbally, the road has a central reservation (painted) to allow for right turning at junctions while the speed limit is 60km/h.

From Raffeen, the road widens such that there is a hard shoulder in each direction and the speed limit increases to 100km/hr.

A central reservation with splitter islands (splitter islands accommodate street furniture which could potentially need to be relocated temporarily to allow passage of turbine blades) is present at the approach to the R611 Roundabout. It is also present following the roundabout on the N28/R617 junction. Westwards from that junction, there is a climbing lane prior to the road narrowing to two single lanes without hard shoulders for a short distance before widening again with one lane and hard shoulder westwards and two lanes and hard shoulder eastwards. Approaching N40 junction, the N28 widens to three lanes in each direction.

The N40 (South Ring Road) has two lanes and hard shoulder in each direction, it widens further towards the junction with the N27. All junctions are merge type junctions. At Ballincollig, the N40 becomes the N22. The N22 continues generally as one lane plus hard shoulder in each direction to Lissarda where it narrows to one lane in each direction with no hard shoulders for a short distance. It also narrows approaching the first River Lee crossing and continues as a single lane in each direction (no hard shoulder) to Coolcour.

At Coolcour, a new section of the N22 is currently under construction (N22 Baile Bhuirne to Macroom Road Development). This will comprise 22km of dual carriageway. This road is scheduled for completion in mid-2023 which will be well in advance of the proposed Gortyrhilly Wind Farm which is likely to start construction in 2025 (should permission be granted).

Turbine delivery vehicles will re-join the existing N22 at Baile Bhuirne Junction which is c.2km north-west of the village of Ballyvourney. They will then proceed westwards to the proposed turning area at Cummeenavrick near the Kerry county boundary. The turning area is a former alignment of the N22. After turning, vehicles will drive towards Ballyvourney. The section of existing N22 between Cummeenavrick and Ballyvourney varies in width. The majority has a hard shoulder in each direction but the southern shoulder phases out west of Ballyvourney while the northern hard shoulder transitions to a footpath (see **Photo 15.1**) reducing the width of the run surface available to turbine delivery vehicles. At this location, the road width is c.6.5m. Photo locations are shown on **Figure 15.8**.



**Photo 15.1 – N22 Immediately West of Ballyvourney**

The N22/L-3400-79 junction at Ballyvourney (see **Photo 15.2**) has buildings on the south-western corner and there is a bridge over the Sullane River within 50m of the junction on the L-3400-79. This bridge will not be used for the delivery of turbine components due to its shape but will be used for the delivery of crushed stone, concrete for widening turbine haul route and for grid connection works within L7400, L7401-1 and L3400-32.



**Photo 15.2 – Existing Bridge at Ballyvourney on L-3400-79 and Close to N22/L-3400-79 Junction**

Vehicles will then follow the L-3400-79 as far as the junction with the L-3405-0 (see **Photo 15.4**). This section of road is typically 6.5m wide along its length (see **Photo 15.3**) and is 6.2m wide at the junction.



**Photo 15.3 – Local Road L-3400-79 – Exit Point from Sullane River Crossing**

Vehicles will then follow the L-3405-0 as far as the junction with the L-7405-0. This section of L-3405-0 road is typically 2.8m wide although sections can be as narrow as 2.4m. There are verges each side to give an overall width between fences of c.5m – 5.6m. While the running surface is narrow, and is less than the minimum of 4.5m required for turbine delivery vehicles, the road is required to be widened (see **Photos 15.4 and 15.5**). Cross sections of the road showing existing and proposed widths are shown on Drawings 6225-PL-270 to 6225-PL-274.



**Photo 15.4 – Local Road L-3405-0**



**Photo 15.5 – Local Road L-3405-0**



**Photo 15.6 – L3405 - L7405 Junction**

The L-7405-0 is similar in nature to the L-3405-0 (see **Photo 15.7**) and is typically 2.8m wide. The junction onto a private laneway is shown in **Photo 15.8** while the laneway itself is shown in **Photo 15.9**. The final section of the proposed route will be via a new section of track over existing agricultural land (see **Photo 15.10**).



**Photo 15.7 – Local Road L-7405-0**



**Photo 15.8 – Junction to L-7405-0 and Private Laneway**



**Photo 15.9 – Private Laneway**



**Photo 15.10**

### **15.3.3.2 Civil Construction Haul Route**

From Keim, trucks would follow the R582 in a south-easterly direction to the existing N22 and then follow the L-3402 to the Site.

For the quarries to the south, trucks would use the R587, then the R584 to the existing N22 and then follow the L-3402 to the Site.

The L-3402 between the existing N22 and the existing forestry entrance varies in width from c. 4-6m, generally with verges each side (see **Photos 15.11, 15.12 and 15.13**). It is c.5.0m wide at the forestry entrance. It has a general speed limit of 80km/h. The road is relatively straight and the double bend at Gortnaddan/Reananerree (L-3402-82 shown on **Figure 15.3**) have large enough radii so as not to impede traffic flow. It has been used as a haul route for previous wind farms in the locality and traffic levels are low (see **Section 15.3.5.4**).



**Photo 15.11 – School on Local Road L-3402**



**Photo 15.12 – Local Road L-3402**



**Photo 15.13 – Approach to Bridge on L-3402**

### 15.3.3.3 Roads On Grid Connection Route

The grid connection will be laid within sections of the L-7405 (0.562km), then to the L-7400 westwards and northwards for a distance of 3.53km. There is then a directional drill crossing under the Bardinch River (0.152km) before re-entering the road for 1.089km, then crossing private lands for 0.195m (to avoid a bend) before returning to the L-7400 for 1.632km to the end of that road. From there, it will follow forest tracks as far as the N22 which will be crossed by directional drilling. It will then follow the old route of the N22 for a short distance (c.0.469km) before following forestry tracks to the existing Ballyvouskill Substation. Of the total length of 28.462km, some 6.872km will be within public roads. The L-7405 is narrow at c.2 - 3m and has been used historically for the abstraction of wood. There are occasional rock outcrops to the northern side of the road while, to the southern side, sporadic farm buildings come close to the road edge. The L-7400 is also narrow at 2 - 3m wide.

### 15.3.4 Delivery Vehicle Specification

Delivery of wind turbine components will be carried out using oversized vehicles. Two different types of loads will arise viz. very long loads for turbine blades and wide/high loads for tower bottom sections. The longest vehicle used during deliveries will be for the rotor blades and will be approximately 7m long articulated vehicle with a trailer length of 55.5m trailer and a 17m overhang for the blade. An indicative delivery vehicle schematic is shown in **Figure 15.9** below. The Swept Path Analysis (see **Appendix 15.2**) assesses the extent of obstacles to be removed (e.g. tree pruning) or relocated (street furniture or poles) or the extent of any potential oversail into private lands associated with blade transportation. It was based on the use of a 76m blade which is the longest blade for the range of turbines under consideration. The outcome would be similar for a 73m blade which is the shortest blade for the range of turbines under consideration. No additional works are required to facilitate their transportation and no further impacts are predicted.



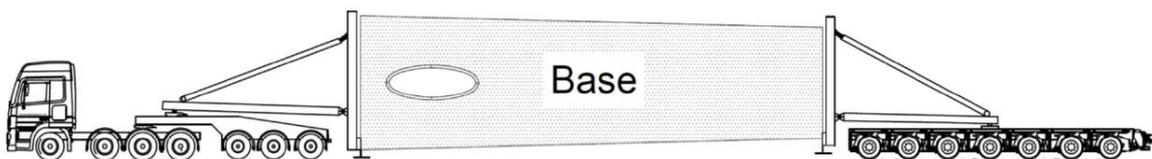
**Figure 15.9: Turbine Delivery Vehicle for Turbine Rotor Blades (SG155)**

The widest and tallest turbine delivery vehicle will be for the tower sections. The bottom tower section will be 4.69m wide which is 0.14m wider than the blade delivery vehicle. These dimensions will be similar for the range of turbines under consideration. They are 4.435m tall which is 1.035m taller than the blade delivery vehicle and 0.335m taller than the hub delivery vehicle. This vehicle is shown in **Figure 15.10**.

For the tower sections associated with the range of turbines under consideration, no additional works are required to facilitate their transportation and no further impacts are predicted.

It is noted that the route has been used for the delivery of turbine components to the Grousemount Windfarm and the specifications in terms of height and width of vehicles is similar.

A survey of the Haul Route has been undertaken by Collett & Sons (see **Appendix 15.1**) to identify the extent of works required.



**Figure 15.10: Turbine Tower Section Delivery Vehicle (SG155)**

Delivery of other materials to Site for the construction of the windfarm will be undertaken using standard HGVs, the largest of which is expected to be a 16.5m standard articulated vehicle.

### 15.3.5 Existing Traffic Volumes

#### 15.3.5.1 TII DATA

TII count traffic continuously<sup>3</sup> on the N22 at Slieveragh Cross, north-west of Ballyvourney (Station Id: TMU N22 060.0E), see **Figure 15.11**. The Average Annual Daily Traffic (AADT)

<sup>3</sup> <https://trafficdata.tii.ie/public/multinodemap.asp>

volume on the road was recorded to be 7,258 vehicles in 2019 (2020 and 2021 values are less due to Covid Restrictions) as outlined in **Table 15.11**. From this figure, the number of HGVs was 385 with light vehicles making up the remaining 6,873 of the total of 7,258. The 2022 figure reflects traffic counted between 1<sup>st</sup> January and 27<sup>th</sup> July 2022 and, when extrapolated forward, is likely to be similar to the 2019 value.

**Table 15.11: TII Traffic Data**

Station Id. TMU N22 060.0E			
Description: N22 Between Killarney and Macroom, Ballyvourney, Co. Cork			
	AADT	% HGV	Coverage
2022*	6,887	5.7%	55.9%
2021	5,784	6.4%	100.0%
2020	4,941	6.9%	99.7%
2019	7,258	5.3%	96.8%
2018	7,159	5.4%	99.7%
2017	6,933	5.1%	99.7%

\*Up to 27<sup>th</sup> July 2022

As would be expected, there is no specific traffic data from TII for the local roads in the vicinity of the Site as TII's counters are located only on National roads.

#### 15.3.5.2 Grousemount Wind Farm Data

Reference to Section 16.1.2 of the Environmental Impact Statement for Grousemount Wind Farm, August 2015 shows that Short-period traffic counts were carried out in June 2015 on the L3400 (see **Figure 15.11**) to ascertain the traffic patterns in the area.

**Table 15.12: Traffic Counts on the L3400 at Derrylahan, Co. Cork**

Period	Volume East	Volume West	Total
12pm-2pm	51	55	106
3pm-5pm	58	49	107

Cars and light vans accounted for virtually all the traffic occurring with only one HGV being recorded in the four hours of measurement.

While the data is not current, and no reliance is placed on this data, the pattern of development has not changed much in the locality during the intervening years and the information provides an indication of baseline traffic conditions.

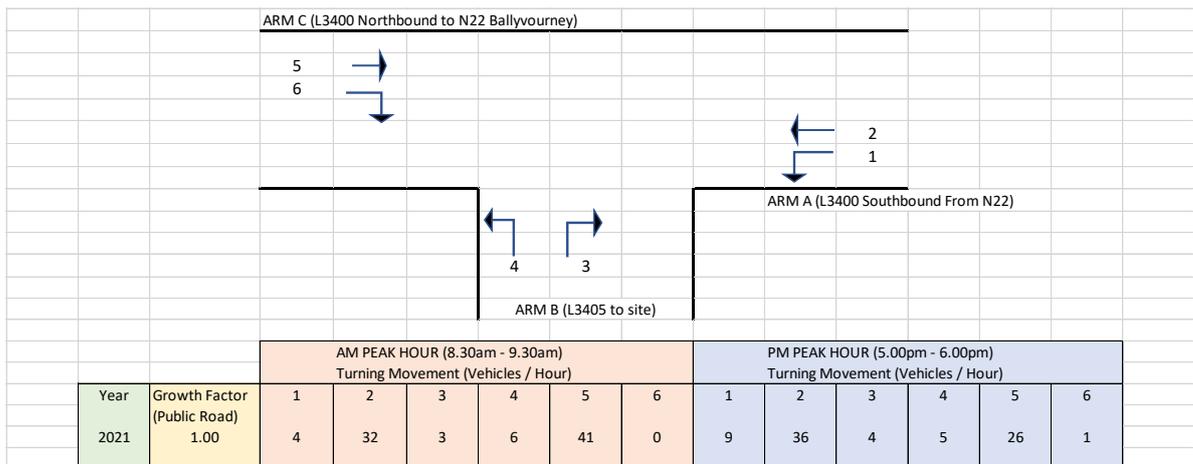
### 15.3.5.3 Traffic Counts at L3400/L3405 Junction

A short period traffic count was carried out at the L3400/L3405 junction on Thursday 07<sup>th</sup> October 2021. The counts were carried out between the hours of 7.30am and 9.30am during the morning period and between the hours of 4.00pm and 6.00pm during the evening period. The location of the traffic count is shown on **Figure 15.11**. The layout of the junction is shown on **Photo 15.14**.



**Photo 15.14 – Junction Layout**

The results of the short period traffic counts show that peak AM and PM traffic periods at this junction occur between 8.30am and 9.30am in the morning and between 5.00pm and 6.00pm in the evening. Turning movements at the junction are shown on **Figure 15.12** during the AM and PM peak periods. The arrows show the direction of travel with each labelled ‘1’ to ‘6’.



**Figure 15.12 – Junction Turning Movements at L3400/L3405**

The Annual Average Daily Traffic (AADT) values for each of the L3400 and the L3405 roads were calculated using TII Publication PE-PAG-02039 “Expansion Factors for Short Period

Traffic Counts". This document provides a mechanism to convert short-term traffic count data to AADT. The study area is located within the South-West (Cork County) region. From Appendix A of PE-PAG-02039, the proportion of the 24-hour traffic occurring during the period 08.30 – 09.30 can be interpolated as 0.077, while for the period 17.00 – 18.00, the proportion is 0.088. Adding the two, gives a value of 0.165.

For the L-3405, the traffic movements correspond to directions 6, 4, 3 and 1 and total 13 for the morning count and 19 (1+5+4+9) for the evening count. The total of the two counts is 32. The 24-hour estimate is therefore 194 (32/0.165) vehicles.

For the L-3400 and the period 08.30 – 09.30, the traffic movements correspond to all directions and total 86 (41+0+4+32+3+6) while for the period 17.00 – 18.00 the total is 81 (26+1+9+36+4+5). The total of the two counts is 167. The 24-hour estimate is therefore 1012 (167/0.165).

The survey was carried out on a Thursday. From Appendix B of PE-PAG-02039 the daily traffic flow is 1.08 times the Weekday Average Day Traffic (WADT) and the factor for conversion is 0.93. Multiplying the 1012 and 194 values derived above by 0.93 gives the weekly average daily traffic values of 941 for the L3400 and 180 for the L3405.

The final calculation is to convert to AADT by factoring for month of year. The traffic count was carried out in October. From Appendix C of PE-PAG-02039, the factor for the South-West (Cork County) region is 1.00. Thus, the AADT for the L3400 is 941 while the AADT for the L3405 is 180.

The short period traffic counts from 7<sup>th</sup> October 2021 (see **Table 15.13**) show that HGV traffic on the L3400 accounts for less than 1% of the total traffic volume using the road. HGV traffic on the L3405 accounts for less than 2% of the total traffic using the road and comprises mostly of school buses.

**Table 15.13: L3400 - L3405 Junction – Existing Traffic Flows – 7<sup>th</sup> October 2021**

Type of Vehicle	Movement No. 1	Movement No. 2	Movement No. 3	Movement No. 4	Movement No. 5	Movement No. 6
<b>07.30 to 08.30</b>						
Cars	2	27	2	5	36	0
Vans & LGV's	1	4	0	0	3	0
Trucks	1	0	1	0	1	0
Articulated Trucks	0	0	0	0	0	0
Buses	0	1	0	1	1	0
Motorbikes	0	0	0	0	0	0

Type of Vehicle	Movement No. 1	Movement No. 2	Movement No. 3	Movement No. 4	Movement No. 5	Movement No. 6
Bicycles	0	0	0	0	0	0
<b>Totals</b>	<b>4</b>	<b>32</b>	<b>3</b>	<b>6</b>	<b>41</b>	<b>0</b>
<b>Veh.s/Minute</b>	<b>0.07</b>	<b>0.53</b>	<b>0.05</b>	<b>0.10</b>	<b>0.68</b>	<b>0.00</b>
<b>% Heavy Veh.s</b>	<b>0.250</b>	<b>0.031</b>	<b>0.333</b>	<b>0.167</b>	<b>0.049</b>	<b>0.000</b>
<b>04.00 to 05.00</b>						
Cars	8	30	2	4	21	1
Vans & LGV's	0	5	1	1	3	0
Trucks	1	0	0	0	0	0
Articulated Trucks	0	1	0	0	1	0
Buses	0	0	1	0	1	0
Motorbikes	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0
<b>Totals</b>	<b>9</b>	<b>36</b>	<b>4</b>	<b>5</b>	<b>26</b>	<b>1</b>
<b>Veh.s/Minute</b>	<b>0.15</b>	<b>0.60</b>	<b>0.07</b>	<b>0.08</b>	<b>0.43</b>	<b>0.02</b>
<b>% Heavy Veh.s</b>	<b>0.111</b>	<b>0.028</b>	<b>0.250</b>	<b>0.000</b>	<b>0.077</b>	<b>0.000</b>

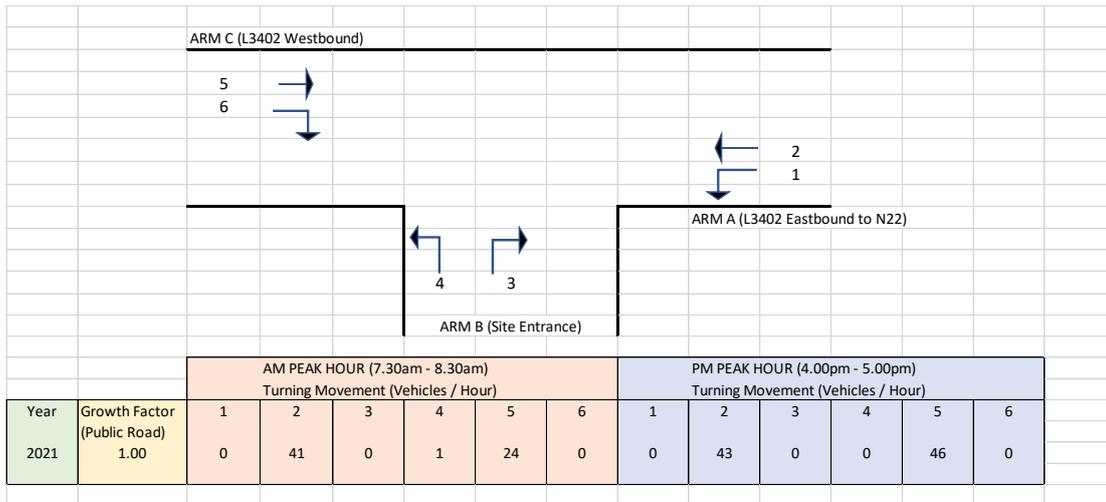
#### 15.3.5.4 Traffic Counts at L3402 / Existing Forest Access Junction (New Wind Farm Construction Site Entrance)

A short period traffic count was carried out on the L3402 at the existing forestry access road junction on Thursday 7<sup>th</sup> October 2021. The junction location will be used during the construction of Gortyrally wind farm. The counts were carried out between the hours of 7.30am and 9.30am during the morning period and between the hours of 4.00pm and 6.00pm during the evening period. The location of the traffic count is shown on **Figure 15.11**. The layout of the junction is shown on **Photo 15.15**.



**Photo 15.15 – Junction Layout**

The results of the classified traffic counts show that peak AM and PM traffic periods at this junction occur between 8.30am and 9.30am in the morning and between 4.00pm and 5.00pm in the evening. Turning movements at the junction are shown on **Figure 15.13** during the AM and PM peak periods. The arrows show the direction of travel with each labelled '1' to '6'.



**Figure 15.13 – Junction Turning Movements at L3402/Forest Access**

The Annual Average Daily Traffic (AADT) was calculated using TII Publication PE-PAG-02039 “Expansion Factors for Short Period Traffic Counts”. Traffic movements along the L3402 at the proposed Site entrance (civil works haul route) were 66 vehicles during the 07.30 – 08.30 peak and 89 vehicles during the 16.00 – 17.00 peak. These total 155. The 24-hour Expansion Factor from Appendix A of PE-PAG-02039 for 07.30 – 08.30 is 0.077 while for 16.00 – 17.00, it is 0.083. These total 0.16. Thus, the estimated 24-hour flow is 969 (155/0.16). Multiplying by 0.93 (as per Appendix B of PE-PAG-02039) gives the weekly average daily flow of 901. Again, the factor in Appendix C of PE-PAG-02039 for month of year is 1.00, such that the AADT for the L3402 is 901.

The classified traffic counts from 7<sup>th</sup> October 2021 (see **Table 15.14**) show that HGV traffic on the L3402 accounts for less than 1% of the total traffic volume using the road.

**Table 15.14: L3402 Construction Site Access Junction – Existing Traffic Flows – 7<sup>th</sup> October 2021**

Type of Vehicle	Movement No. 1	Movement No. 2	Movement No. 3	Movement No. 4	Movement No. 5	Movement No. 6
<b>07.30 to 08.30</b>						
Cars	0	28	0	1	17	0
Vans & LGV's	0	12	0	0	5	0
Trucks	0	0	0	0	2	0
Articulated Trucks	0	1	0	0	0	0
Buses	0	0	0	0	0	0
Motorbikes	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>41</b>	<b>0</b>	<b>1</b>	<b>24</b>	<b>0</b>
<b>Veh.s/Minute</b>	<b>0.00</b>	<b>0.68</b>	<b>0.00</b>	<b>0.02</b>	<b>0.40</b>	<b>0.00</b>
<b>% Heavy Veh.s</b>	<b>0.000</b>	<b>0.024</b>	<b>0.000</b>	<b>0.000</b>	<b>0.083</b>	<b>0.000</b>

Type of Vehicle	Movement No. 1	Movement No. 2	Movement No. 3	Movement No. 4	Movement No. 5	Movement No. 6
<b>04.00 to 05.00</b>						
Cars	25	0	0	36	0	61
Vans & LGV's	15	0	0	9	0	24
Trucks	1	0	0	0	0	1
Articulated Trucks	2	0	0	0	0	2
Buses	0	0	0	1	0	1
Motorbikes	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0
<b>Totals</b>	<b>43</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>0</b>	<b>89</b>
<b>Veh.s/Minute</b>	<b>0.72</b>	<b>0.00</b>	<b>0.00</b>	<b>0.77</b>	<b>0.00</b>	<b>1.48</b>
<b>% Heavy Veh.s</b>	<b>0.070</b>	<b>0.000</b>	<b>0.000</b>	<b>0.022</b>	<b>0.000</b>	<b>0.045</b>

### 15.3.6 Predicted Future Traffic Volumes

TII publication "Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand projections, PE-PAG-02017, May 2019 can be used to predict future growth in traffic volumes across Ireland. Traffic volumes are predicted to increase in the coming years (predictions are for the period 2016 to 2030) when construction of the Development is likely to take place. **Table 15.15** shows the multiplier for County Cork under different growth rate scenarios.

**Table 15.15: Traffic Annual Growth Predictions Formulae (Multipliers) for County Cork 2016 to 2030**

Low Sensitivity Growth Rate		Central Growth Rate		High Sensitivity Growth Rate	
LV	HV	LV	HV	LV	HV
1.0173	1.0361	1.0189	1.0377	1.0223	1.0411

LV = Light Vehicles, HV = Heavy Vehicles

Assuming that construction will take place in 2025, under the high sensitivity scenario, the amount of light vehicles on the N22 will increase to 7,845 in 2025 from the 2019 AADT of 6,873 and heavy vehicles to 490 in 2025 from 385 in 2019.

The estimated capacity of the N22 national primary road in the vicinity of Ballyvourney is based on Table 6.1 of the TII publication DN-GEO-03031 – Rural link design which provides a table of recommended rural road layouts and capacities for each cross section. The N22 at the turnaround location is similar in section to a 7.3m Type 1 single carriageway. A Type 1 carriageway has a guidance capacity of 11,600 AADT for level of service D (approaching unstable flow) while at the turn off to join the L-3400-79, it is similar to a Type 3 single (6.0m) Carriageway which has a guidance capacity of 5,000 AADT for level of service D. The new N22 Macroom By-Pass will be a Type 2 Dual Carriageway. Such a road has a guidance capacity of 20,000 for Level of Service D. The new by-pass will take all through traffic from

the existing N22 so as to leave nominal residual flows. According to Figure 3.1 of the EIAR for the N22 Baile Bhuirne – Macroom By-Pass<sup>4</sup>, under the “Do Something” scenario, the 2027 traffic flows on the existing N22 would be 2,500 trips/day west of Macroom but would be 8,900 – 9,500 AADT around Macroom (was predicted to be 15,500 in 2012).

The recorded traffic figures show that, in 2025, the N22 is predicted to be running at approximately 71.9% capacity at the turnaround location (existing N22 west of the by-pass) and therefore has capacity to accommodate additional traffic in the future. The N22 Macroom By-Pass is predicted to be running at approximately 11,100 to 11,200 AADT in 2027 or at 56% capacity.

### 15.3.7 Accident Statistics

The Road Safety Authority publish tables on “Road Casualties and Collisions in Ireland” each year. The last published table is for 2016.

Statistics are divided into those occurring “Inside Built-up Areas” and those occurring “Outside Built-up Areas”. **Table 15.16** below presents a summary of accidents for the N22 for the years 2013 to 2016.

**Table 15.16: Summary of Accidents for the N22 for the years 2013 to 2016**

Year	Inside Build Up Areas			Total	Outside Built Up Areas			Total	Overall Total	Collision Rate per km
	F	SI	MI		F	SI	MI			
2016	0	4	19	23	2	5	21	28	51	0.44
2015	0	2	23	25	1	7	22	30	55	0.47
2014	0	0	12	12	4	8	21	33	45	0.38
2013	0	1	8	9	4	3	13	20	29	0.25

F = Fatal

SI = Significant Injuries

MI – Minor Injuries

For the N22, historical accidents were more prevalent outside built-up areas than inside them.

<sup>4</sup> N22 Baile Bhuirne – Macroom (Baile Bhuirne to Coolcour) Environmental Impact Statement, Volume 3 – Figures, McCarthy Hyder Consultants, October 2009

## 15.4 PROPOSED WORKS

### 15.4.1 Construction Phase

The construction period of the Development is anticipated to take approximately 21 months. The majority of HGV deliveries to Site will take place during turbine foundation and hardstands and Site access track upgrade works. During this period, there will be trips associated with the arrival and departure of construction staff and with the delivery of crushed rock for Site access tracks as well as, reinforcing steel and ready-mix concrete for turbine foundations. While much of the stone for Site tracks and hardstands will be sourced from on-site borrow pits and from the excavation works, a finishing layer of imported stone will be required prior to turbine delivery.

Staff trips will mainly be made using cars and vans, while deliveries of steel, concrete, and rock and construction materials will be made by HGVs. The majority of deliveries will be during the first half of the construction period. It is important to note that it is anticipated that ready-mix concrete and hardcore materials will be sourced from local quarries in the area either to the north or south of the N22, will use the new N22 Macroom By-Pass to Toolane Junction, then the existing N22 and then the L-3402 to the wind farm Site such that Ballymakeery and Ballyvourney villages will be avoided and the urban area of Macroom will also largely be avoided.

It is expected that construction hours will be between 07:00 and 19:00 Monday to Friday and 07:00 – 13:00 on Saturdays with no working on Sundays or on Bank or Public Holidays unless agreed otherwise with Cork County Council (e.g. for concrete works for foundations which may start before 07:00). Some special deliveries such as turbine components and concrete for Turbine Foundations are likely to be required to be delivered outside of these times in consultation with Cork County Council.

### 15.4.2 Turbine Component Haul Route

For abnormal loads between Ringaskiddy Port and the wind farm Site, works will be required to facilitate the delivery of turbine components. Some of these will be relatively minor in nature for example temporary removal of street furniture and signage. The extent of works has been determined by reference to the Collett Report of October 2021 (see **Appendix 15.1** for Swept Path Analysis Drawings prepared by Collett for that part of the haul route between Ringaskiddy Port and Cummeenavrick) and to the results of a swept path analysis prepared by JOD (see **Appendix 15.2**) of:

- The turning area at Cummeenavrick
- The route between the existing N22 west of Ballyvourney and the Site.

The JOD Swept Path Analysis drawings were created using AutoTrack Software and the results of topographic surveys carried out by GHE Surveying during June and July 2021.

**Table 15.17** presents a summary of the works required on the turbine component haul route. Photographs of each location are included in the Collett Report of October 2021.

**Table 15.17: Works Required on Turbine Component Haul Route**

Reference Point in Collett Report	Potential Constraint	Works Description
1	Exit from Ringaskiddy Port	Flower pots and fencing to be removed. Bollards to be removed. Localised area of road widening required at bollard location. See Collet Drawing 343154-10A1.1.
2	N28 Roundabout at Pfizer	Signage and Street furniture to be temporarily removed for central area of roundabout and from Splitter Island beyond roundabout. Road widening required into roundabout and at Splitter Island. See Collet Drawing 343154-20A1.1.
3	Splitter Island on N28	No works required
4	Splitter Island on N28 at Shanbally	No works required
5	N28 Roundabout at Shanbally	Signage and bollards to be temporarily removed. Road widening required at Splitter Island. See Collet Drawing 343154-30A1.1.
6	Splitter Island on N28	No works required
7	Splitter Island on N28	No works required
8	Splitter Island on N28	No works required
9	Splitter Island on N28	No works required
10	Splitter Island on N28	No works required
11	Splitter Island on N28	No works required
12	Splitter Island on N28	No works required
13	N28 / R611 Roundabout	Signage and Street Furniture to be Temporarily Removed from Entry Splitter Island. Tree to be pruned. See Collet Drawing 343154-10A0.1.
14	Splitter Island on N28	No works required
15	N28 / N40 Junction	No works required
16	Splitter Island on N22	No works required
17	Splitter Island on N22 at Srelane	Flexi Bollards to be Temporarily Flattened
18	Splitter Island on N22 near Ovens	Flexi Bollards to be Temporarily Flattened
19	Splitter Island on N22 at Ovens	No works required
20	Splitter Island on N22 at Ovens	No works required
21	Splitter Island on N22 at Ovens	No works required
22	Splitter Island on N22	No works required

Reference Point in Collett Report	Potential Constraint	Works Description
23	Splitter Island on N22	No works required
24	Splitter Island on N22	No works required
25	Splitter Island on N22	No works required
26	Splitter Island on N22	No works required
27	Splitter Island on N22	No works required
28	Splitter Island on N22	Flexi Bollards to be Temporarily Flattened
29	Splitter Island on N22	No works required
30	Splitter Island on N22	No works required
31	Splitter Island on N22	No works required
32	Splitter Island on N22	No works required
33	Splitter Island on N22	No works required
34	Left Bend on N22	No works required
35	Right Bend on N22	No works required
36	Macroon By-Pass Interchange	Localised triangular area of Road Widening Required on approach to Roundabout. Signage may need to be temporarily removed (not yet constructed). See Collett Drawing 343154-50A1.1.
37	N22 By-Pass Interchange at Ballyvourney	Street Furniture/Signage to be temporarily removed. Road bearing surface to be provided across part of Roundabout. See Collett Drawing 343154-60A1.1.
38	N22 Turning Area at Cummeenavrick	Remove Earth Bunding, Construct new track adjacent to existing track which runs between existing N22 and bond on former N22. See JOD Drawing 6225-PL-256.
39	River Sullane Bridge Crossing	Temporary Bridge to be constructed, Track to be constructed in Third Party Lands each side of Bridge. See JOD Drawings 6225-PL-810, 6225-PL-811, 6225-PL-251.
40	L-3400-79 / L-3405-0 Junction	Road Widening into Third Party Lands, Signage and Street Furniture to be Temporarily Removed, Tree to be Removed and vegetation to be trimmed. See JOD Drawing 6225-PL-252.
41	L-3405-0	Tree Pruning and Road Widening Required. See JOD Drawing 6225-PL-252.
42	L-3405-0	Tree Pruning and Road Widening and Strengthening Required. See JOD Drawing 6225-PL-252.
43	L-3405-0	Tree Removal and Road Widening Required. See JOD Drawing 6225-PL-252.
44	L-3405-0	Tree Pruning and Road Widening Required. See JOD Drawing 6225-PL-252.
45	L-3405-0	Tree Pruning and Road Widening Required, Telecoms Pole to be Removed and Line Ducted Underground within widened road. See JOD Drawing 6225-PL-252.
46	L-3405-0	Tree Pruning and Road Widening Required, Telecoms Pole to be Removed and Line Ducted Underground within widened road. See JOD Drawing 6225-PL-252.

Reference Point in Collett Report	Potential Constraint	Works Description
47	L-3405-0 Right Bend	Road Widening Into Third Party Lands Required, Telecoms Pole to be Removed and Line Ducted Underground within widened road. See JOD Drawing 6225-PL-252.
48	L-3405-0	Road Widening Required. See JOD Drawing 6225-PL-253.
49	L-3405-0 / L-7405-0 Junction	Road Widening Required into Third Party Lands. See JOD Drawing 6225-PL-253.
50	L-7405-0 / Private Lane Junction	Road Widening Required into Third Party Lands. See JOD Drawing 6225-PL-253.
51	Private Lane	Track in Third Party Lands to be Widened and Strengthened. See JOD Drawing 6225-PL-253 to 6225-PL-255.
52	New Access Track	New Track to be Constructed in Third Party Lands. See JOD Drawing 6225-PL-253 to 6225-PL-255..

From **Table 15.17** above, it is evident that very little temporary works are required between Ringaskiddy Port and the turning area at Cummeenavrick. These are shaded in “Orange” in **Table 15.17**. However, works are required between the N22 at Cummeenavrick and the Site – these are shaded in red in **Table 15.17** and shown on Drawings 6225-PL-250 to 6225- PL-257, **Appendix 15.2**.

At the turning area point at Cummeenavrick in Table 15.9, an earth berm is to be removed and a new track constructed adjacent to an existing track (which will be widened and re-profiled vertically). The track will be constructed between the existing N22 and a bend on former part of the N22. The extent of track required is shown on Drawing 6225-PL-256, **Appendix 15.2**.

At the turn off from the N22 to L-3400-79, the access tracks and bridge similar to that previously used for Grousemount Wind Farm will be installed until turbine commissioning is complete. AutoTracking confirms the extent of track required and that the bridge width will be adequate.

Road widening and cleaning of vegetation within Third Party Lands is required on the L-3400-79 at the junction with the L-3405-0 (Chainage 2290 – 2340 on Drawing 6225-PL-252, Revision P01.3 in **Appendix 15.2**).

Road widening is required (both sides of road) along the L-3405-0 (see Drawing 6225-PL-252 in **Appendix 15.2**). Some 1,600m of overhead telecommunication line will need to be undergrounded in new ducts to be placed within the widened road.

At the right hand bend, oversail and widening into Third Party Lands will be required (see Drawing 6225-PL-252 in **Appendix 15.2**).

At the L3405-0/L7405-0 junction, widening is required into Third Party Lands (see Drawing 6225-PL-253). These drawings also show that widening is required along both sides of the L7405-0.

At the junction of the L7405-0 and the private land, widening and oversail into Third Party Lands is required at both sides of the road (see Drawing 6225-PL-253 in **Appendix 15.2**).

Within private lands, the access route will follow an existing track for 250m with widening and strengthening required. A new track will then go in a south-westerly direction over a distance of 100m before crossing the existing track and continuing for c. 400m over agricultural land. It will then cross private access road and turn southwards for c.500m to the proposed substation location within the wind farm Site. See Drawings 6225-PL-253 to 6225-PL-255.

#### **15.4.3 Civil Construction Haul Route**

No upgrade works are necessary to the L-3402 to facilitate the delivery of materials. However, preparatory works such as signage and directions to the wind farm Site will be installed pre-construction (see **Section 15.6 Mitigation Measures**).

A condition survey of the road will be carried out prior to commencement of construction and another post-construction. The Developer will lodge a bond with Cork County Council prior to commencement of construction in the amount to be agreed with the Council for the possible repair/upkeep of the road. During the construction period, the road will be inspected weekly by the Developer's Resident Engineer and the Contractor will be instructed to repair any defects within the following two weeks. At the end of the construction period, any further defects will be remedied to the satisfaction of Cork County Council.

#### **15.4.4 Grid Connection**

No road upgrade works are proposed to the L-3400 facilitate the delivery of materials. A condition survey of the L-3400 and L-3402 roads will be carried out prior to commencement of construction and another post-construction. The Developer will lodge a bond with Cork

County Council prior to commencement of construction in the amount to be agreed with the Council for the possible repair/upkeep of the road. During the construction period, these roads will be inspected weekly by the Developer's resident engineer and the Contractor will be instructed to repair any localised defects within the following four weeks. At the end of the construction period, any further defects will be remedied to the satisfaction of Cork County Council.

Trenches, joint bays and link boxes will be installed in Local Roads L-7405, L7404, L-3400-32, L-7400 and L7401-1. Some 6,060m of trenching, 0.6m wide, will be laid within these roads (c.570m will also be installed within former N22).

Six joint bays and six associated communication chambers/link boxes references JB-28, JB-30, JB-32, JB-33, JB-34 and JB-35 will be laid within these local roads (see TLI Drawings 05836-DR-211, 05836-DR-212, 05836-DR-213 and 05836-DR-214 included in **Volume III**). These local roads will be reinstated (temporary and permanent) in accordance with "Guidelines for Managing Openings in Public Roads", Department of Transport, Tourism and Sport, Second Edition (Rev. 1), April 2017. This will involve full-width resurfacing as part of the permanent reinstatement to be carried out once commissioning of the wind farm substation is complete.

#### **15.4.5 Wind Farm Internal Access Tracks**

Within the wind farm Site, the main spine track is from the Site entrance, westwards to the Site compound, then to Turbine T11, Turbine T6, Turbine T10, Turbine T7 junction, Turbine T8, Turbine T9 to substation and then to turbine component haul route.

East of the spine track, there is a circuit from Turbine T11 to Turbine T14, to Turbine T13, to Turbine T12 to Turbine T10. There is also a link between the Site entrance and T14.

West of the spine track, there is one branch which services Turbine T7, the Met Mast, Turbine T2, Turbine T1, Turbine T3, Turbine T4 and Turbine T5.

One borrow pit (located north of Turbine T3) will service the western branch of the Site while the other borrow pit (located between T6 and T11) will service the eastern part of the Site.

## 15.5 ASSESSMENT OF POTENTIAL EFFECTS

### 15.5.1 HGV Deliveries

The estimated timescale for the completion of the construction phase is 21 months, inclusive of all works to Site Access Tracks, access routes, substation building and erection and commissioning of turbines and grid connection works.

**Tables 15.18 to Table 15.24** present a summary of the estimated deliveries of materials required to construct the wind farm, the turbine component haul route improvement works and the grid connection.

It is estimated that 840m<sup>3</sup> of structural concrete and 60m<sup>3</sup> of blinding concrete will be required for each turbine foundation and that an additional 600m<sup>3</sup> will be required for the substation buildings and plinths, met mast foundation and other miscellaneous works. This gives a total volume of concrete of 13,300m<sup>3</sup>. Based on 6m<sup>3</sup> per concrete truck, some 2,200 loads will be required.

It is estimated that 90t of reinforcing steel will be required for each turbine foundation and that an additional 60t will be required for the substation, met mast foundation and miscellaneous works. These total 1,320t. At 20t/load, some 66 deliveries of reinforcing steel will be required.

For the proposed area of new Site tracks of 50,940m<sup>2</sup> (see **Chapter 2: Project Description**, Section 2.5.5, 11,320m long x 4.5m wide), some 5,094m<sup>3</sup> of imported crushed stone will be required for a 100mm finishing layer.

For the upgrading works to 2,805m of existing track, some 1,263m<sup>3</sup> will be required.

For the total hardstand area of 70,050m<sup>2</sup> (see **Chapter 2: Project Description**, Section 2.5.3), some 7,005m<sup>3</sup> of imported stone will be required for the finishing layer. These total 13,362m<sup>3</sup>. At 12m<sup>3</sup>/load, some 1,114 deliveries will be required.

Depending on the soil/rock profile, imported crushed stone (engineering fill) may be required under turbine foundations as upfill. Allowing 0.3m per foundation, then 2,330m<sup>3</sup> is required. At 12m<sup>3</sup>/load, some 186 loads are required.

For the 110kV on-site substation, it is assumed that rock sourced on Site will meet the specification for the build-up layers and that the top 200mm of crushed stone will be

imported. For the Site area of 10,500m<sup>2</sup> (see **Chapter 2: Project Description**, Section 2.5.8), the volume of imported stone required is 2,100m<sup>3</sup>. At 12m<sup>3</sup>/load, some 175 loads are required.

For the substation, most of the deliveries will be crushed stone, building materials, electrical switchgear and equipment. However, there will be a large transformer (110kV/33kV) which will be an abnormal load but can be accommodated on the Civil Construction Haul Route.

Forest felling will be required in advance of construction works. It is anticipated that brash will be left on site and that logs will be stacked for the duration of the civil construction period. During the delivery period, if turbines are delivered at night, then logs will be removed by day using the Site access tracks.

The total felling area is estimated at 35.42 ha and the total volume of wood is estimated at 12,193m<sup>3</sup>. This is equivalent to 5,481 tonnes. This is equivalent to 274 loads. Allowing for part loads, voids etc., the total allowance is for 300 loads over a 6-week period equivalent to 10 loads per day. Depending on the quality of the logs, they may be used for timber manufacture and transported to:

- Grainger's Sawmills, GP, Enniskeane, Ballymoney, Co. Cork
- Enniskeane Timber Products Ltd., Ballineen, Co. Cork
- GP Wood, Lissarda, Co. Cork

These locations are shown on **Figure 15.6**.

Should the quality be poor, the timber could be transported to either Clonmel or Waterford for sheeting board manufacture.

Very little waste is envisaged from the construction phase and likely to result from offcuts of timber, electrical cables and packaging. These materials will be segregated on site and removed to a licensed recycling facility once a load accumulates. On average, 1 load/month is envisaged.

It is estimated that during civil construction, approximately 4,376 HGV loads will be delivered to the wind farm Site. Much of these deliveries will be over the 11-month period between months 2 to 12 (see **Table 15.25** for Indicative Delivery Programme). This equates to approximately 295 loads per month or an average of 13 to 15 loads per day. The peak number of deliveries per day will occur during the concrete pour for turbine foundation

construction. An estimated 140 concrete deliveries will be required per turbine foundation as the entire concrete pour has to be placed within 8-10 hours. Some other materials will also be delivered on such days, so a realistic estimation of peak deliveries is approximately 150 deliveries per day (for at least 14 separate days in the construction programme when the turbine foundations will be poured). On these concrete pour days, some 14-18 deliveries per hour will be required.

A summary of estimated loads for the Civil/Electrical Construction Works is presented in **Table 15.18**.

**Table 15.18: HGV and Abnormal Load Deliveries – Associated with Civil/Electrical Construction Works**

Materials	Quantity	No. of Deliveries
Site Establishment and Removal	10	10
Concrete	13,200m <sup>3</sup>	2,200
Reinforcing Steel	1,320t	66
Substation Building and electrical equipment	-	30
Other – Geotextile Mats, Tools, Fencing etc.	-	50
Internal Cabling Materials incl. bedding	-	220
Met Mast Materials	-	4
Imported Crushed Stone (engineering fill) as Uphill to Foundations	2,230m <sup>3</sup>	186
Imported Crushed Stone for Substation, 200mm thick	2,100m <sup>3</sup>	175
Imported Crushed Stone for Site Access Track and Turbine Hardstands (assumes 100mm thick wearing course)	13,362m <sup>3</sup>	1,114
Forestry Removal	12,193m <sup>3</sup>	300
Waste – 1 container/month		21
<b>Total</b>		<b>4,376</b>

Turbine components will be delivered to Site over a period of approximately 10 – 12 weeks after civil works are completed. It is estimated that approximately 180 loads of turbine components and crane parts will be delivered during this period. The majority of these loads will be classified as abnormal loads and the relevant approvals and permits will be obtained by the turbine supplier or its appointed haulage contractor before deliveries take place. A further 20 loads (10 delivery and 10 removal) will be associated with the delivery of the temporary bridge components. These will be delivered so as to be complete well in advance of turbine component deliveries and the delivery route for bridge components will be the turbine haul route. Crushed stone (26 loads) and concrete for abutments (20 loads) will be delivered to facilitate erection and supporting the bridge. Similar loads will arise on removal of these items.

The expected number of HGV deliveries for turbine components are based on specifications from the potential turbine manufacturers, on best estimates of trips generated by similar sized windfarms and previous experience in windfarm planning and civil construction. These figures are likely to vary to some degree depending on the individual lengths of tower sections offered by different manufacturers, but not to the extent that impacts are likely to be significantly changed. A summary of the estimated HGV loads to Site associated with wind turbine components is presented in **Table 15.19**.

Following completion of the construction works, it is estimated that approximately 12 loads will be needed to remove all temporary equipment (e.g. cranes) and materials used onsite e.g. temporary compound, fencing, cabins, storage containers, bridge etc.

The total number of loads associated with the turbine component haul route is estimated at 990.

**Table 15.19: HGV and Abnormal Load Deliveries – Associated with Wind Turbine Components using the L-3405 and L-7405**

Materials	Quantity	No. of Deliveries
Site Establishment and Removal	24	24
Temporary Bridge Components	10	10
Delivery and Removal of Crush Stone for Access Tracks each side of Temporary Bridge	312m <sup>3</sup>	52
Concrete for Abutments of Temporary Bridge (incl. Removal)	103m <sup>3</sup>	40
Miscellaneous Deliveries for Temporary Bridge (fencing, silt fencing, siltbusters, drainage, sumps etc.) incl. Removal	30	30
Anchor Cages & Foundation Templates	15	15
Tower Sections	-	56
Nacelles	14	14
Rotor Blades	42	42
Transformers, Panels and Cabling	-	8
Tools etc.	-	1
Crane Deliveries to Site, including ballast, booms, etc. and removal of same	2 Cranes	50
Road Widening on Turbine Haul Route – Soil Disposal	2,200m <sup>3</sup>	184
Crushed Stone for Widening and Strengthening of Turbine Haul Route	4,690m <sup>3</sup>	391
Road Surfacing for Turbine Haul Route	1,420t	71
Ducting and Miscellaneous Deliveries to Turbine Haul Route	3	3
<b>Total</b>		<b>990</b>

For the grid works, it is assumed that  $1.125\text{m}^3$  of concrete blinding is required per joint bay and  $0.16\text{m}^3$  per communication/link chamber. These will require  $46\text{m}^3$  lean mix concrete or 9 loads at  $6\text{m}^3$  per load. The locations of joint bays are shown on TLI Drawing No. 05836-DR-201 to 05836-DR-214 included in **Volume III**.

Some 36 loads of precast components are required for joint bay walls and roof slabs as well as complete communication and link chambers.

For joint bay floor slabs, some  $135\text{m}^3$  concrete is required which is equivalent to 23 loads.

For 110kV cables,  $630\text{mm}^2$  aluminium, the weight per km of cable is 9.886t. For a total length of 85.5km (28.5km x 3 phases), the weight will be 845t and will require 43 loads. Allowing another load for fibre optic cables brings the total to 44 loads.

Some 133km of ducting is required which is typically delivered in 6m lengths, typically 3km per load. Thus, some 44 loads are required.

Excavations in roads for trenches, joint bays, link and communication chambers is estimated to yield  $585\text{m}^3$  of road surfacing which can be recycled, by adding bitumen, and reused for temporary restoration of trenches. However, it is likely that some supplementary quantity of new road surfacing is required for temporary reinstatement – allow 66 loads (for bitumen and supplementary bitumen macadam). For final reinstatement, full width road reinstatement will be required in accordance with the requirements of “Guidelines for Managing Openings in Public Roads” – Second Edition, April 2017, Dept of Transport, Tourism and Sport. Assuming a 3m width, some  $2,070\text{m}^3$  or 173 loads is required. A further 10 loads have been allowed for entrances and regulating the road profile. This will bring the total for road surfacing to some 249 loads.

For trenches in roads, all material excavated for trenches and chambers cannot be reused so as to comply with EirGrid’s Functional Specification and will be disposed of off-site to a licenced facility. Excluding road surfacing, the volume of such material is estimated at  $5,860\text{m}^3$  based on 0.6m wide trench and 1.315m deep. An allowance is also included for chambers. This will generate some 489 loads.

For trenches within private lands, selected excavated material can be used as trench backfill up to c.42% of overall trench volume. For land in control of the applicant, excess material will be re-graded over the track/trench route.

Some 0.390m<sup>3</sup> of lean mix concrete is required per linear metre of trench. This will give a requirement for 11,100m<sup>3</sup> of lean mix concrete which is equivalent to some 1,850 deliveries to Site for the complete grid connection route.

Some 0.345m<sup>3</sup> of crushed stone is required per metre of trench in roads. This will give a requirement for 2,371m<sup>3</sup> or some 198 loads.

**Table 15.20** to **Table 15.23** provide a break down of the deliveries relevant to various sections of the grid connection.

**Table 15.20: N22 to Ballyvouskill**

<b>Length of Grid Connection in Roads</b>	570		
<b>Length of Grid Connection in Tracks, Lands</b>	16,485		
<b>Number of Joint Bays</b>	22		
<b>Materials</b>	<b>Quantity</b>	<b>Unit</b>	<b>No. of Deliveries</b>
Site Establishment and Removal	8	No.	8
Concrete Blinding for Joint Bays, Comms Chambers and Link Boxes	28	m <sup>3</sup>	6
Concrete for Floors of Joint Bays	83	m <sup>3</sup>	14
Pre-Cast Concrete Joint Bays and Communication Chambers	22	No.	22
Other – Steel mesh, Geotextiles, Silt Fencing, Fencing, Danger Tape, etc.	4	No.	4
Grid Connection Cables	506	t	26
Grid Connection Ducting	85,275	m	28
Disposal of Excavated materials from Trenches in Public Roads	450	m <sup>3</sup>	37
Lean Mix Concrete for Trenches	7,396	m <sup>3</sup>	1233
Crushed Stone for Trenches in Public Roads	142	m <sup>3</sup>	12
Road Surfacing	34	m <sup>3</sup>	4
Total No. of Deliveries	-	-	1,394

**Table 15.21: N22 to L7401-1 (including L7401-1)**

<b>Length of Grid Connection in Roads</b>	1,245		
<b>Length of Grid Connection in Tracks, Lands</b>	2,390		
<b>Number of Joint Bays</b>	7		
<b>Materials</b>	<b>Quantity</b>	<b>Unit</b>	<b>No. of Deliveries</b>
Site Establishment and Removal	8	No.	8
Concrete Blinding for Joint Bays, Comms Chambers and Link Boxes	9	m <sup>3</sup>	2
Concrete for Floors of Joint Bays	26	m <sup>3</sup>	4
Pre-Cast Concrete Joint Bays and Communication Chambers	7	No.	7
Other - Steel mesh, Geotextiles, Silt Fencing, Fencing, Danger Tape, etc.	1	No.	1
Grid Connection Cables	143	t	8
Grid Connection Ducting	18,175	m	6

Materials	Quantity	Unit	No. of Deliveries
Disposal of Excavated materials from Trenches in Public Roads	982	m <sup>3</sup>	82
Lean Mix Concrete for Trenches	1,576	m <sup>3</sup>	263
Crushed Stone for Trenches in Public Roads	310	m <sup>3</sup>	26
Road Surfacing	448	m <sup>3</sup>	52
Total No. of Deliveries	-	-	459

**Table 15.22: L7400, L3400-32, L7404**

Length of Grid Connection in Roads	3,125		
Length of Grid Connection in Tracks, Lands	435		
Number of Joint Bays	4		
Materials	Quantity	Unit	No. of Deliveries
Site Establishment and Removal	8	No.	8
Concrete Blinding for Joint Bays, Comms Chambers and Link Boxes	5	m <sup>3</sup>	1
Concrete for Floors of Joint Bays	15	m <sup>3</sup>	3
Pre-Cast Concrete Joint Bays and Communication Chambers	4	No.	4
Other - Steel mesh, Geotextiles, Silt Fencing, Fencing, Danger Tape, etc.	1	No.	1
Grid Connection Cables	126	t	6
Grid Connection Ducting	17,800	m	6
Disposal of Excavated materials from Trenches in Public Roads	2,466	m <sup>3</sup>	205
Lean Mix Concrete for Trenches	1,544	m <sup>3</sup>	257
Crushed Stone for Trenches in Public Roads	778	m <sup>3</sup>	65
Road Surfacing	1,125	m <sup>3</sup>	129
Total No. of Deliveries	-	-	685

**Table 15.23: L7405 and Private Lands to Wind Farm Site**

Length of Grid Connection in Roads	1,550		
Length of Grid Connection in Tracks, Lands	815		
Number of Joint Bays	3		
Materials	Quantity	Unit	No. of Deliveries
Site Establishment and Removal	6	No.	6
Concrete Blinding for Joint Bays, Comms Chambers and Link Boxes	4	m <sup>3</sup>	1
Concrete for Floors of Joint Bays	11	m <sup>3</sup>	2
Pre-Cast Concrete Joint Bays and Communication Chambers	3	No.	3
Other - Steel mesh, Geotextiles, Silt Fencing, Fencing, Danger Tape, etc.	1	No.	1
Grid Connection Cables	70	t	4
Grid Connection Ducting	11,825	m	4
Disposal of Excavated materials from Trenches in Public Roads	1,223	m <sup>3</sup>	102
Lean Mix Concrete for Trenches	1,026	m <sup>3</sup>	171
Crushed Stone for Trenches in Public Roads	386	m <sup>3</sup>	32
Road Surfacing	558	m <sup>3</sup>	64
Total No. of Deliveries	-	-	390

A summary of the total estimated loads associated with the grid connection is presented as **Table 15.24**.

**Table 15.24: HGV Load Deliveries – Associated with Grid Works**

Materials	Quantity	No. of Deliveries
Site Establishment and Removal	30	30
Concrete Blinding for Joint Bays, Comms Chambers and Link Boxes	46m <sup>3</sup>	9
Concrete for Floors of Joint Bays	135m <sup>3</sup>	23
Pre-cast Concrete Joint Bays and Communication Chambers	36	36
Other – Steel mesh, Geotextiles, Silt Fencing, Fencing, Danger Tape, etc.	7	7
Grid Connection Cables	845t	44
Grid Connection Ducting	133,075m	44
Disposal of Excavated Materials from trenches in Public Roads	5,121m <sup>3</sup>	427
Lean Mix Concrete for Trenches	11,542m <sup>3</sup>	1,924
Crushed Stone for Trenches in Public Roads	1,616m <sup>3</sup>	135
Road Surfacing	2,165m <sup>3</sup>	249
<b>Total</b>		<b>2,927</b>

**Table 15.25** shows an indicative potential breakdown of loads delivered to Site over a 21 month period. The total number of loads is estimated at 8,294.

**Table 15.25: Indicative HGV and Abnormal Load Deliveries Over 21 Month Construction Period**

Activity	Month																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Wind Farm Site Establishment/ Fencing of Environmental Areas, Buffer Zones etc.	5	25	25																		5
Internal Access Road Upgrade & Construction									166	167	167									30	
Substation & Compound Construction Civil Works			12	11	11	11	99	93													
Substation Electrical Works									5	5	5	5	5	5							
Substation Commissioning																					
Excavation and Construction of			31	181	344	344	344	344	309	309	150	35									

Activity	Month																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Turbine +Met Mast Foundations																					
Excavation and Construction of Hardstands										195	195	194									
Forestry Removal													100	100	100						
Internal Cabling Installation										40	30	30	30	30	30	30					
Temporary Bridge, Turbine Haul Route					15	26	20	10										10	20	26	15
Road Widening, Turbine Haul Route						162	162	162	163												
Turbine Delivery and Erection			15										60	48	29	18	20				5
Grid Connection						250	250	250	250	250	250	250	250	250	250	250	4				
Grid Connection Final Road Reinstatement																				86	87
Energisation																					
Turbine Commissioning																					
Site Reinstatement and Finishing Works																		4			4
Waste Management	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Totals</b>	6	26	84	193	371	794	876	860	894	967	798	575	434	415	399	301	15	25	27	132	102

Based on the indicative timetable outlined above the peak times for HGV deliveries will be in months 6 to 11 when the turbine foundations will be constructed, hardstands and Site tracks will be finished in imported stone and the grid connection works will be ongoing. This is estimated to result in a maximum of 967 trips each month with an average of 44 HGV trips per day in this period. Peak deliveries are expected to be during the period of concrete pours for turbine foundations when there will be approximately 140 loads per Turbine Foundation. If two foundations are poured per month, then the balance of the loads in the busiest month would be 667 loads or 31 loads per day over the remaining days of the month.

### 15.5.2 Staff/Worker Traffic

For the wind farm construction, a peak workforce of 50 persons are anticipated on the main Site. There will be peaks and troughs in the numbers, with the peak workforce during the general Site works.

In addition to the onsite construction workforce, additional construction staff will be required for the cable laying works and the turbine haul route works. One gang is envisaged for the haul route works while two-three will be required for the grid connection. At each location off Site, a maximum of 10 construction staff are anticipated including traffic management operatives. Thus, up to 90 workers could be employed at peak times.

The 90 workers will generally travel to the Site via light vehicle (LV) (i.e. car or small van) assuming 2 persons per vehicle, or 45 trips to and 45 trips from the site per day. This is made up of:

- 25 trips each way to/from wind farm Site.
- 5 trips each way to/from haul route improvement works.
- 15 trips each way to/from grid construction works.

### 15.5.3 Predicted Additional Traffic on Roads During Construction Phase, Magnitude and Significance of Impacts

Based on the analysis in **Section 15.5.1** above, **Table 15.26** below has been prepared which summarises the peak additional HGV deliveries per road element while **Table 15.27** provides a summary of the peak additional traffic movements. **Figure 15.14** Shows the various road nodes referred to in these tables.

**Table 15.26: Summary of Peak Additional HGV / Abnormal Load Deliveries to Site Per Road Element**

Node	Road	Civil & Electrical	Turbine	Grid	Total
Ringaskiddy to A	Ringaskiddy Port to Coolcour Junction of New N22 Macroom By-Pass	210	203	95	508
B to A	Existing N22 between R584 Junction and Coolcour Junction with New N22 By-Pass	3015	537	1770	5322
Keim to C	Keim etc to Gurteenroe Junction on New N22 By-Pass	1151	200	635	1986
Kerry to M	County Kerry via Existing N22 Cummeenavrack	0	50	0	50

Node	Road	Civil & Electrical	Turbine	Grid	Total
A to C	New N22 By-Pass between Coolcour Junction and Gurteenroe junction	3225	740	1865	5830
C to D	New N22 By-Pass between Gurteenroe Junction and Toolane Junction	4376	940	2500	7816
D to G	New N22 By-Pass between Toolane Junction and Ballyvourney Junction	0	940	2110	3050
D to E	Existing N22 between Toolane Junction and Junction with L3402	4376	0	390	4766
E to F	L3402 Between existing N22 and Wind Farm Site Entrance	4376	0	390	4766
G to H	Existing N22 between Ballyvourney Junction of New N22 By-Pass and L3400-79	0	990	685	1675
H to I	L3400-79 between existing N22 and Junction with L3405	0	856	685	1541
I to L	L3400-79 to Wind Farm Site	0	856	0	856
I to J	L3400-32	0	0	685	685
J to K	L3400-32	0	0	140	140
L to K	L7405	0	0	390	390
J to O	L7400	0	0	545	545
G to N	Existing N22	0	148	1853	2001
N to M	Existing N22	0	148	1394	1542
M to P	Forest Track	0	0	1394	1394

**Table 15.27: Summary of Peak Additional HGV / Abnormal Traffic Movements on Roads**

Node	Road	Total No. Of Deliveries	Peak Deliveries/ Month	Peak Deliveries/ Day	Staff	Peak Traffic Movements/ Day
Ringaskiddy to A	Ringaskiddy Port to Coolcour Junction of New N22 Macroom By-Pass	508	102	7	0	14
B to A	Existing N22 between R584 Junction and Coolcour Junction with New N22 By-Pass	5322	677	150	90	390
Keim to C	Keim etc to Gurteenroe Junction on New N22 By-Pass	1986	290	150	0	300
Kerry to M	County Kerry via Existing N22 Cummeenavrick	50	50	10	10	30

Node	Road	Total No. Of Deliveries	Peak Deliveries/ Month	Peak Deliveries/ Day	Staff	Peak Traffic Movements/ Day
A to C	New N22 By-Pass between Coolcour Junction and Gurteenroe junction	5830	677	150	90	390
C to D	New N22 By-Pass between Gurteenroe Junction and Toolane Junction	7816	967	150	90	390
D to G	New N22 By-Pass between Toolane Junction and Ballyvourney Junction	3050	250	20	10	50
D to E	Existing N22 between Toolane Junction and Junction with L3402	4766	717	150	80	380
E to F	L3402 Between existing N22 and Wind Farm Site Entrance	4766	717	150	80	380
G to H	Existing N22 between Ballyvourney Junction of New N22 By-Pass and L3400-79	1675	300	25	10	60
H to I	L3400-79 between existing N22 and Junction with L3405	1541	250	20	10	50
I to L	L3400-79 to Wind Farm Site	856	250	20	10	50
I to J	L3400-32	685	200	15	10	40
J to K	L3400-32	140	140	15	10	40
L to K	L7405	390	150	15	10	40
J to O	L7400	545	150	15	10	40
G to N	Existing N22	2001	300	25	20	70
N to M	Existing N22	1542	200	25	10	60
M to P	Forest Track	1394	200	25	10	60

The numbers of HGVs generated by the Development (390 movements per day at peak) could be considered as a significant increase on the numbers of HGVs which are predicted to use the existing N22 in 2025 (490). However, the construction stage traffic movements between Ringaskiddy Port and Macroom (N28, N40 and N22 to Macroom) will be low at 14 movements (7 deliveries) per day. Assuming that the majority of the route between Ringaskiddy and Macroom has a capacity of 11,000 AADT, the change would be 0.1%. The magnitude of change is considered as being "Very Low" (see **Section 15.2.9**).

The magnitude of change is summarised within **Table 15.28** below.

For the existing N22 near Macroom between the R584 and the Coolcour Junction of the new N22 Macroom By-Pass (Nodes B to A), an additional 390 traffic movements per day will arise during concreting of turbine foundations. The predicted flows (see **Section 15.3.6**) for the N22 for 2027 would be 8,900 – 9,500 AADT around Macroom. Assuming a guidance capacity of 11,600 AADT, adding a further 390 traffic movements would increase flows to 9,290 – 9,890 which would still be within the guidance capacity of 11,600 AADT. The flows would increase by 4.1% which, in terms of magnitude, are considered as being “Very Low” (see **Section 15.2.9**).

For the new N22 Macroom By-Pass, the peak additional 390 traffic movements per day will arise during concreting of turbine foundations. The predicted flows for the new N22 Macroom By-Pass for 2027 are 11,100 to 11,200 AADT (see **Section 15.3.6**). This is 56% of the guidance capacity of 20,000 AADT. Adding a further 390 movements would increase the 2027 flows to 11,490 to 11,590 which is still well within the guidance capacity of 20,000. The flows would increase by 3.5% which, in terms of magnitude, are considered as being “Very Low” (See **Section 15.2.9**).

For the existing N22 between the new Ballyvourney Junction and the L3400 with the new Macroom By-Pass, an additional 60 traffic movements will arise. As discussed in **Section 15.3.6**, once the Macroom By-Pass is opened, flows on the existing N22 would be 2,500 trips/day west of Macroom. As discussed in **Section 15.3.6**, at the turn off for the L3400-79, the guidance capacity is 5,000 AADT. The predicted additional flows would increase flows by 2.4% to 2,560 which is still well inside the AADT of 5,000. In terms of magnitude, the change is considered as “Very Low” (see **Section 15.2.9**).

For the existing N22 between the new Toolane Junction of the new Macroom By-Pass with the L-3402 an additional 380 traffic movements will arise. As discussed in **Section 15.3.6**, once the Macroom By-Pass is opened, flows on the existing N22 would be 2,500 trips/day west of Macroom. As discussed in **Section 15.3.6**, at the turn off for the L3402, the guidance capacity is 5,000 AADT. The predicted additional flows would increase by 15.2% which is still well inside the AADT of 5,000. In terms of magnitude, the change is considered as “Very Low”.

Similarly, for sections of the existing N22 between Cummeenavrick and the new Macroom By-Pass (Ballyvourney) junction (Nodes M to N and N to G), the magnitude will be “Very Low”.

For the L3402 (Nodes E to F), the predicated traffic movements associated with the construction phase are 380 per day during concrete placing. From **Section 15.3.5.4**, the AADT is estimated at 901. The increase in traffic movements would be 42%. For an increase of  $\pm 30 - 60\%$ , the magnitude of the impact could be termed "Low" (see **Section 15.2.9**).

For the L3400 (Nodes H to I), the predicated traffic movements associated with the construction phase are 50 per day. From **Section 15.3.5.3**, the AADT for the L3400 is 941. The increase in traffic movements would be 5.3% and the magnitude of impact could be termed "Very Low" (see **Section 15.2.9**).

For the L3405, the predicted traffic movements associated with the construction phase are 50 per day. From **Section 15.3.5.3**, the AADT for the L3405 is 180. The increase in traffic movements would be 27% and the magnitude of the impact could be termed "Very Low" (see **Section 15.2.9**). However, as the road is narrow (<3m), there is likely to be a need for a Road Closure. The magnitude is re-assessed, using judgement, as being "High" reflecting considerable deterioration in local circumstances, although of a temporary nature.

For the L7401, L7400, L7404, L7405 and L-3400-32 (between L7404 and L7400) (Nodes J to K, K to L, L to M), while the AADTs are likely to be low (similar to L3405), the increase in traffic movements of 40 per day could be termed as a "Low" impact. However, as these roads are narrow, there are likely to be road closures to all traffic except local traffic. Accordingly, the magnitude is assessed as being "High" reflecting considerable deterioration in local circumstance, although of a temporary nature.

From the analysis above, the significance of the impacts are assessed (with reference to **Table 15.6**) and are presented in **Table 15.28**. The significance of the impacts are "Negligible" to "Minor" on the N22 (existing and new Macroom By-Pass). The L3402 between the N22 and the wind farm site has "Moderate" impact and needs mitigation such as avoidance of deliveries between school drop-off and collection times.

**Table 15.28: Magnitude and Significance of Impacts**

Node	Road	Sensitivity	Magnitude	Significance of Effects	Duration
Ringaskiddy to A	Ringaskiddy Port to Coolcour Junction of New N22 Macroom By-Pass	Very Low to High	Very Low	Negligible to Minor	Short Term
B to A	Existing N22 between R584 Junction and Coolcour Junction with New N22 By-Pass	Medium to Low	Very Low	Negligible	Short Term

Node	Road	Sensitivity	Magnitude	Significance of Effects	Duration
Keim to C	Keim etc to Gurteenroe Junction on New N22 By-Pass	Medium to Low	Low		Short Term
Kerry to M	County Kerry via Existing N22 to Cummeenavrick	Very Low	Very Low	Negligible	Short Term
A to C	New N22 By-Pass between Coolcour Junction and Gurteenroe junction	Very Low	Very Low	Negligible	Short Term
C to D	New N22 By-Pass between Gurteenroe Junction and Toolane Junction	Very Low	Very Low	Negligible	Short Term
D to G	New N22 By-Pass between Toolane Junction and Ballyvourney Junction	Very Low	Very Low	Negligible	Short Term
D to E	Existing N22 between Toolane Junction and Junction with L3402	Medium to Low	Very Low	Negligible	Short Term
E to F	L3402 Between existing N22 and Wind Farm Site Entrance	High	Low	Moderate	Short Term
G to H	Existing N22 between Ballyvourney Junction of New N22 By-Pass and L3400-79	Low	Very Low	Negligible	Short Term
H to I	L3400-79 between existing N22 and Junction with L3405	High	Very Low	Minor	Short Term
I to L	L3400-79 to Wind Farm Site	Low to Medium	High	Moderate to Major	Short Term
I to J	L3400-32	High	Very Low	Minor	Short Term
J to K	L3400-32	High	High	Major	Short Term
L to K	L7405	High	High	Major	Short Term
J to O	L7400	High	High	Major	Short Term
G to N	Existing N22	Very Low	Very Low	Negligible	Short Term
N to M	Existing N22	Very Low	Very Low	Negligible	Short Term
M to P	Forest Track	Low	Medium	Minor	Short Term

The widening works to turbine delivery route L-3405-0 and L-7405, grid connection works in the L-7400, L-7401-1, L-3400-32 and L-7405 will have a 'high' impact and need mitigation including road closures for all except local traffic.

Therefore, the effects on the local road network (including turbine delivery route, civil construction haul route, grid connection route and haul route) can be predicted to be direct,

negative, negligible to high (depending on the section of road as detailed in Section 15.5.3) but short-term in nature.

There is potential for effects on the sensitive receptors along the L-3402 including a national school prior to the implementation of mitigation measures. It is important to note however that there are a number of alternative routes in the area that can be used by road users to access the N22. There is the potential that particular residents may need access/ egress at particular times of the day e.g. school runs.

When the L7401-1 is closed, local access will be provided and no requirement for diversions is envisaged.

For the grid connection works within the L7400, the southern end (between the L3400-32 and the L-74002-0) will initially be constructed. Traffic from residents along the L-74002-0 will be diverted northwards along the L7400 and then south-eastwards along the L7401-0 and L-7401-20 to Coolea.

Only when the southern end of the L7400 has been re-opened to traffic will the northern part be closed.

When the L-7400 is closed, then traffic from residents in the Inchamore area (L-740001-0) can travel to Coolea via the L-7401-0 and L-7401-20.

#### **15.5.4 Works on the Turbine Components Haul Route**

As outlined in **Table 15.17**, works will be required at a number of locations along the Turbine Components Haul Route from Ringaskiddy Port to the Site. These works may cause some short-term disruption to local road users. However, these effects will be confined to a relatively short period during the construction phase, prior to the delivery of turbine components and hence are not predicted to have a significant effect. Street furniture will be adjusted (where necessary) such that it is socketed into the ground. Street furniture will be removed daily in advance of turbine delivery (which will occur at night) and be replaced immediately following the passage of the abnormal vehicles such that daytime traffic can continue as normal. The L-3405-0 and L-7405-0 will be widened and resurfaced with telephone wires laid underground. Once works have been completed, the effect will be positive due to the improvements to parts of the L-3405-0 and L-7405-0 which will be of benefit to local road users with bends/verges having been widened and junctions improved.

### 15.5.5 Works on the Grid Connection

For the grid connection, the works will be constructed within the L-7405 and L-7400 over a total length of c.6.4km. These roads are narrow at less than 3m. Construction of a trench and joint bays will effectively close the road to vehicular traffic. Formal road closures will be required. The effects on local residents and farmers who live close to these local roads can be predicted to be moderate to high but short-term in nature. The reinstated surface (full-width) is likely to provide a degree of improvement. Trenching and ducting would typically be 60-120m per day. Assuming an average rate of 90m/d, 450m/week, the cumulative time periods of road closure would amount to c. 15 weeks.

### 15.5.6 Light Vehicles/Vans and Construction Personnel

The number of staff on the Site will vary according to the phase of works, peaking at up to approximately 50 during turbine foundation construction. It is expected that the majority of workers will arrive onsite in mini-buses and crew vehicles which are used to transport teams of workers from the various contractors. Vehicle sharing will be actively encouraged to reduce vehicular movements.

It is expected that a maximum of 25-30 vehicles will visit the Site on a daily basis during the peak construction period (Turbine Foundation construction). This is estimated to be an increase of 0.8 % on predicted levels for 2025 on the N22 and an increase of 6.5% on the AADT estimate for the L-3402. Parking for staff will be provided at the Temporary Construction Compound. Given the distance between the Site and the public roadway it is unlikely that any parking would be expected on the L-3402. Nevertheless, no parking will be allowed for construction workers on the public road network. A number of additional unscheduled visits may be required throughout the construction period for Site inspections, Site meetings, and unforeseen circumstances. The predicted effect is negligible to low due to the relatively low increase in traffic over the baseline situation.

### 15.5.7 Air Quality

Good local air quality is essential for the health and quality of life of residents along the Haul Route. Transport accounts for a significant proportion of pollutants in the atmosphere namely, CO<sub>2</sub> emissions, nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>). NO<sub>2</sub> emissions can also be harmful to vegetation and ecosystems in the vicinity of the Haul Route. The increase in traffic movements on the local road network of an average of approximately 67 (average 37 HGV's + 30 cars and vans) trips per day over a short-term period and therefore the effect of the Development on air quality will be imperceptible.

### 15.5.8 Noise and Vibration

There is likely to be some noise and vibration from HGV movements along the Haul Route on the local roads, L-3402, L-3400-79, L-3405-0, L-7405-0 and L-7400 which can cause disturbance to residents living along these roads as the roads are generally not busy. The baseline scenario is that the area is relatively quiet with no major sources of noise and vibration. Due to the relatively low number of trips generated per day, the restrictions on working hours and the short-term nature of the construction phase, the effects of noise and vibration are not predicted to be significant. Mitigation measures are discussed in **Section 15.6** and in **Chapter 11: Noise**.

### 15.5.9 Pedestrians and Vulnerable Road Users

Pedestrian amenity and intimidation can occur where there are large changes to traffic flow and composition. The local roads from the N22 do not have pedestrian footpaths as there is no significant pedestrian traffic in the area. However, the Beara to Breiffne Way does attract walkers. The effect on pedestrian safety is therefore considered to be a potentially high impact of short-term duration.

While the route will remain open to walkers during construction, the western part of the route will be upgraded and could, on occasions, have high site traffic volumes. Accordingly, mitigation is required.

A school is located along the L-3402 and fronts onto the Civil Construction Haul Route. Students of this school are likely to use the Haul Route on their journey to the school although given the age of children attending the school and the lack of pedestrian infrastructure on the local road network in the area, they are likely to be accompanied by parents / guardians with the majority likely to be arriving by car. There is potential for significant effects with mitigation measures required to see that potential effects are reduced (see **Section 15.6**).

### 15.5.10 Driver Delay

The N22 is estimated to be at 71.9 % of its capacity in 2025 with HGV and LGV traffic for the Development taking it to 73.4% considering peak movements. From the traffic counts, the Local Roads from the N22 to the Site are operating below their capacity and therefore significant effects in relation to driver delay are not envisaged from the Development. Confidence in this is given by the fact that the route was used for the construction of other windfarms (e.g. Grousemount and Derragh).

There is potential for some driver delay on the turbine component haul route during the construction of road widening works and the delivery of abnormal load components. Abnormal load deliveries will be timed to take place outside of peak times, possibly at night, and therefore the potential effects are not considered to be significant.

There is potential for driver delay on the grid connection route during its construction and during the deliveries of materials/removal of surplus spoil.

All the above have the potential to be moderate/high for local residents but will be short term in nature.

#### 15.5.11 Severance

Severance is caused when a community is perceived to be physically divided by traffic. There is potential for some severance in settlements along the L-3402, namely Reananerree and Derrylineen. However, these villages are already divided by the L-3402 and so potential effects are not predicted to be significant.

Along the other local roads on the turbine component haul route and the grid connection route, there are only isolated houses which could not be considered to be settlements that could be separated by increased traffic levels and therefore the effects cannot be considered to be potentially significant.

Road closures have the potential to cause severance to residents/businesses on the L-7405 and L-7400 during grid connection works. Road closures will be such that residents can access/egress their properties although there may be minor delays. Accordingly, such severance will be minor and of short duration.

#### 15.5.12 Mud and Debris on the Local Road Network

HGVs leaving the Site have the potential to transport mud, stones or other debris from the Site to the local road network on wheels of the vehicles. This could cause nuisance to local road users or damage to vehicles from loose debris. This effect can be predicted to be direct, negative, minor and short-term in nature confined to the initial decommissioning and construction phases only and will be subject to mitigation measures. Mitigation measures are also discussed in **Section 15.6** and in **Chapter 10: Air Quality and Climate**.

### 15.5.13 Effects on Road Network during Construction Phase

Traffic numbers during construction are outlined in **Section 15.5.1**. There were no reports of significant effects in terms of accidents or delays on the road network during the construction of Grousemount and Derragh Windfarms or during the periodic maintenance at the operational Sillertahane Kilgarvan Windfarm. As the roads are estimated to have sufficient spare capacity, the overall potential effect on the local roads is assessed to be a moderate, negative effect of short-term duration and high probability during construction of the Development.

### 15.5.14 Operational Phase – Traffic

During the operational phase of the Development, the windfarm will normally be unmanned. Operational and remote monitoring activities will be carried out on an ongoing basis via telephone and computer links. However, regular visits to the Site will be necessary for maintenance and routine inspections. A car or van will normally be required for these routine inspections. Under normal circumstances the operation of the windfarm would require 1-2 visits to the Site per week by trained personnel and/or accompanied visitors. Parking will be provided outside the electrical compound at the onsite substation. In the case of a major fault e.g. breakdown of a turbine component, larger machinery, including possibly mobile cranes, will require access to the Site. Should a major turbine component need to be replaced e.g. wind turbine blade, then the bridge over the Sullane River (including access tracks to link between N22 and the bridge and the L-3400-79 and the bridge) will need to be re-erected. Typically, once every 5 years, paintwork may need to be touched up on turbines and the blades cleaned. A Mobile Elevating Work Platform (MEWP) will be used for such activities.

The remaining forestry on Site i.e. surrounding the footprint of construction works will not be felled until 2035.

There will be a low volume of traffic generated during the operational phase of the Development. The effect of traffic associated with the operation of the Development on the existing public road network will be imperceptible due to the type of traffic and the low volume of traffic generated during operation. However, there will be slight temporary short-term effects should major turbine components need to be replaced.

The grid connection will, following commissioning, be taken in charge by EirGrid and no regular ongoing maintenance is predicted. Due to the strict requirements of EirGrid's Functional Specification, the level of supervision normally provided by the Developer and

by EirGrid, and the extent of testing prior to commissioning, the probability of the occurrence of faults on 110kV cable connections is very low. However, should a fault occur it would most likely be within a joint bay which could be exposed and the joint repaired over 3-4 days.

#### **15.5.15 Traffic Impact During Decommissioning Phase**

During decommissioning, it is envisaged that the total volume of HGV traffic will be relatively small compared to the construction period on the basis that the Site Access Tracks will remain in place to serve ongoing forestry and agriculture activity and the turbine hardstands will be allowed to revegetate into the surrounding habitat with only the turbines being removed from Site for recycling/reconditioning. This phase could be expected to last approximately 12-24 weeks. With the site access tracks and turbine hardstands are left in place and revegetated, the effect is predicted to be an imperceptible effect on traffic.

#### **15.5.16 Need for a Road Safety Audit**

A Road Safety Audit is required for all National Road Schemes. TII Publication GE-STY-01024, Dec. 2017 sets out two categories of scheme:

- Road Scheme – A scheme which results in new road construction or permanent change to the existing road or roadside layout.
- Development Scheme – A Scheme which results in a change to the road or roadside layout that is indicated and/or executed for commercial or private development.

The Development will use and cross the N22 National Road but does not propose any modifications to the National Road. None of the modifications in Appendix A – Scheme Type and Audit Stage of GE-STY-01024 are proposed. Hence, there is no requirement for a road safety audit in response to TII Publication GE-STY-01024, Dec 2017.

Objective TM 12.8 of the Cork County Development Plan 2022-2028 requires that:

“Where traffic movements associated with a development have the potential to have a material impact on the safety and free flow of traffic on a National, Regional or other Local Routes, the submission of a Traffic and Transport Assessment (TTA) and Road Safety Audit will be required as part of the proposal”.

The impacts identified in this Chapter will be short-term associated with deliveries of materials to site. No new junctions are being provided as part of the development and there will not be any permanent change that will have a material impact on the safety and free flow of traffic. Accordingly, a Road Safety audit is not required.

## 15.6 MITIGATION MEASURES

### 15.6.1 Construction Phase

The potential effects of the construction of Development have been identified as being potentially high but temporary in nature. The following mitigation measures are recommended:

- A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP). Prior to construction and once the Contractor's have confirmed their suppliers, the TMP will be updated in consultation with Cork County Council and An Garda Síochána as necessary. HGV trips will be scheduled to avoid times when drop offs and pick-ups generally take place at schools, particularly at Reananerree on the L-3402. All drivers will be made aware of the location and presence of schools and other sensitive receptors at an induction session prior to construction activities taking place and will be made aware of the speed limits of the various roads on the route which are contained in the TMP. This is to ensure compliance with speed limits, school drop off and pick-up.
- The new N22 Macroom By-Pass will be used to transport turbine components, materials for upgrading the turbine haul route, materials for construction of the civil and electrical works on the wind farm site, as well as materials for the grid connection so as to minimise traffic through built-up areas such as Macroom, Ballymakeery and Ballyvourney.
- All significant traffic likely to be generated by Gortyrähilly Wind Farm will be during the construction of the development and will be temporary in nature. It is envisaged that the construction period for the wind farm will span a 21-month period with the underground cable being installed over a concurrent 12-month period. The construction-phase Traffic Management Plan will mitigate these impacts. A number of mitigation measures are embedded within the design:
  - The design is such as to minimise the extent of the new build requirement by using existing forestry tracks where possible, thereby minimising materials requirements.
  - The design is such as to maximise the use of onsite resources (particularly stone material for track construction) to minimise the requirement for material import. 59,053m<sup>3</sup> of stone is proposed to be won from the borrow pits which equates to a 5,905 HGV trips to the site avoided.
  - Retaining surplus excavated material on the Site so as to reinstate the borrow pits, thereby eliminating traffic associated with the disposal of same. 91,860 m<sup>3</sup> of spoil are proposed to be stored in the on-site borrow pits, resulting in a saving of 9,186 HGV trips off the site.

- Designing the cable for installation in pre-laid ducts, rather than directly installing the cable in the ground. The latter would require the entire trench from joint bay to joint bay to be fully open for cable laying.
- Use special transporter vehicles with rear wheel steering in delivery of wind turbine components to ensure safe transportation and manoeuvrability on the roads. Extendable transporter vehicles will be retracted on return journeys.
- Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Cork and Kerry County Council Roads Departments to discuss the requirement for a Garda escort.
- The Developer will confirm the intended timescale for deliveries and every effort will be made to avoid peak times such as school drop off times, church services, sporting events, peak traffic times where it is considered this may lead to unnecessary disruption.
- Abnormal loads are likely to travel at night and outside the normal construction times as may be required by An Garda Síochána. Due to the relatively modest distance between Ringaskiddy Port and the Site of c.92.8km, the journey is achievable within a 2-3 hour timeframe. Accordingly, locations for resting will not be required. Local residents along the affected route will be notified of the timescale for abnormal load deliveries.
- A condition survey of the L-3400 and L-3402 roads will be carried out prior to commencement of construction and another post-construction. The Developer will lodge a bond with Cork County Council prior to commencement of construction in the amount to be agreed with the Council for the possible repair/upkeep of the roads. During the construction period, these roads will be inspected weekly by the Developer's Resident Engineer and the Contractor will be instructed to repair any defects within the following two weeks. At the end of the construction period, any further defects will be remedied to the satisfaction of Cork County Council.
- Wheel cleaning equipment will be used at the exit to the wind farm Site at each of the two proposed entrances (i.e. the main Site entrance from the L-3402-36 and the temporary entrance for delivery of turbine components from the L-7405) to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the construction Site.
- The Site entry points will also be appropriately signed. Access to the wind farm construction Site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security / Site personnel on entering and exiting the Site. All Site visitors will undergo a Site induction covering Health and Safety issues at the

Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite.

- In addition, any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas will be employed.
- To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the Site.
- A survey of the turbine component haul route will be undertaken prior to commencement to identify if any new overhead lines or broadband lines will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered. Telephone lines on the L-3405-0 will need to be laid underground in advance of turbine deliveries – these can be incorporated into localised road widening works.
- During the construction phase, clear construction warning signs will be placed on the L-3402, the L-3400-79, L-3405-8 and L-7405-0 as necessary, which will advise road users of the presence of a construction Site and of the likelihood of vehicles entering and exiting the Site or road construction areas. This will help improve road safety.
- Works on public roads on the turbine delivery road and grid connection will be strictly in accordance with “Guidance for the Control and Management of Traffic at Road Works – 2<sup>nd</sup> Edition 2010” as well as “Traffic Signs Manual 2010-Chapter 8- Temporary Traffic Measures and Signs at Roadworks”.
- Road Closures will be obtained for grid connection works on narrow public roads i.e. L-7405 and L-7400. On narrower roads (such as the L-7405, L-7404 and L-7401-1 sections of the grid connection as shown on Figure 15.5) a full road closure is proposed. A number of options are available in some areas for diverting traffic that will allow flexibility during construction. When the L7401-1 is closed, local access will be provided and no requirement for diversions is envisaged. For the grid connection works within the L7400, the southern end (between the L3400-32 and the L-74002-0) will initially be constructed. Traffic from residents along the L-74002-0 will be diverted northwards along the L7400 and then south-eastwards along the L7401-0 and L-7401-20 to Coolea. Only when the southern end of the L7400 has been re-opened to traffic will the northern part be closed. When the L-7400 is closed, then traffic from residents in the Inchamore area (L-740001-0) can travel to Coolea via the L-7401-0 and L-7401-20. While traffic diversions are in place, local access will be maintained at all times. All access points (domestic, business, farm) will be considered when finalising the proposed road closures and diversions. Additional measures such as local road

widening, traffic shuttle systems and 'Stop-Go' systems will also be considered subject to agreement with Cork County Council. Road closures will be scheduled in consultation with local residents and the Contractor shall endeavour to avoid times of high agricultural activity e.g. silage cutting.

- The widening/straightening of haul route L-3405-0 and L-7405-0 is proposed to be completed in advance of road closures to the L-7404 the L-7405 or to the L-3400-32.
- The L-3400-32 and the L-7405 shall not be closed at the same time i.e. one should remain open while the other is closed.
- Road Opening Licences will be obtained for the grid connection trench and chambers within public roads as well as for the widening of public roads.
- All vehicles using or while in operation at the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.
- A speed limit of 25km/h shall apply to all vehicles within the wind farm site.
- During times of high construction traffic on the Beara to Breiffne Way, the contractor will transport walkers through the site. Such circumstance will arise during:
  - Construction/Upgrade/Access tracks and construction of hardstands for turbines T3, T1, T2, T4, T5, T7, T8 and T9.
  - Construction of foundations to turbines T3, T1, T2, T4, T5, T7, T8 and T9.
  - Erection of Turbines T3 and T7.

### 15.6.2 Operational Phase

Effects during operation have been assessed as being imperceptible. However, it is still important that any effect is minimised as far as is possible. Therefore, the following measures are recommended:

- All vehicles using the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.
- A speed limit of 25km/h shall apply to all vehicles within the wind farm site.
- Signage shall be maintained throughout the operational period.
- Road surfaces shall be inspected on a quarterly basis within one month of the inspection.
- The Beara to Breiffne Way shall be kept open to walkers during the operational period.

### 15.6.3 Decommissioning Phase

As the turbine blades can be cut into manageable lengths on decommissioning, there is no requirements to re-use the turbine supply haul route for decommissioning. Thus, all decommissioning related traffic will use the L3402.

The wind turbines proposed as part of the proposed Development are expected to have a lifespan of up to 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully, with the exception of the electricity substation.

Upon decommissioning of the proposed wind farm, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated and removed off-site for recycling. Turbine foundations will remain in place underground and will be covered with earth and allowed to revegetate or reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in potentially significant environment nuisances such as noise, dust and/or vibration. The site roadways will be in use for additional purposes to the operation of the wind farm (e.g. for forestry and recreational use) by the time the decommissioning of the project is to be considered, and therefore the site roads will remain in situ for future use. If it were to be confirmed that the roads were not required in the future for any other useful purpose, they could be removed.

The grid connection, when completed, will be handed over to EirGrid as the Transmission System Operator and thus it will not be removed. Therefore, there will be no impact on the local roads during decommissioning.

The traffic management of the decommissioning phase will be advised by the road conditions at the time of decommissioning. It is not possible to predict the changes to the public road infrastructure and policies in the next 30-40 years. It is envisaged that a Traffic Management Plan will be developed for the decommissioning phase.

Nevertheless, the following traffic management measures are likely to be required:

- Signage will be erected at the site entrance and on the L3402 approaching the site.
- Construction traffic associated with decommissioning will be scheduled so as to avoid school drop off and collection times.
- All vehicles using or while in operation at the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.
- A speed limit of 25km/h shall apply to all vehicles within the wind farm site.
- During times of high traffic on the Beara to Breiffne Way, the Contractor will transport walkers through the site.

## 15.7 CUMULATIVE EFFECTS

### 15.7.1 Construction Phase

Table 2.1 of **Chapter 2: Project Description** as well as **Figure 2.2** sets out the existing and proposed wind farms within 20km of the Site.

The Cork County Council Planning portal was accessed to check planning permissions granted within a 20km radius of the wind farm.

Various wind farms have been granted permission and amendments/additions (e.g. Battery Energy Storage) to consented wind farms have also been granted.

Much of the non-wind planning permissions relate to:

- Dwelling houses
- Extensions to dwelling houses
- Agriculture buildings
- Sports/Recreation facilities
- School Extensions

In terms of their scale, it is considered that the construction of the dwelling houses or extensions to dwelling houses or the agricultural buildings or the sports/recreation facilities or the school extensions would only have a negligible to minor localised impact on traffic should their construction be concurrent with the proposed Development.

Proposed/existing wind farms to the north of the N22 will have less effects on traffic in relation to the Gortyrhilly Site which is to the south of the N22. Should any projects to the north of the N22 be developed cumulatively with Gortyrhilly Wind Farm, then the most likely effects will be on the N22 and on the N28/N40/N22 from Ringaskiddy. In such an event, deliveries from the port will be co-ordinated such that there will not be any intensification of deliveries.

The Sites identified as being in environs of the proposed Development which are permitted but not yet constructed or which are proposed and at pre-planning are:

- **Barrboy – Five turbines, 16.09km to south-west**

The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.

- **Coolea – Single turbine, 5.02km to north-west**  
Likely to use L-3400-79 as haul route. Potential for cumulative effects.
- **Coolknoohil Inchee – Two turbines, 4.3km to north-west**  
Likely to use L-3400-79 as haul route. Potential for cumulative effects.
- **Curraglass – Seven turbines 8.62km to south-west**  
The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.
- **Cummeenabuddoge – Seventeen turbines, 8.03km to north-east**  
Likely to use same grid connection route to Ballyvouskill. Potential for cumulative effects.
- **Derreenacrinnig – Seven turbines, 18.51km to south-west**  
The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.
- **Dromleena – Nine turbines, 17.65km to south**  
The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.
- **Gneeves Milstreet – Seven turbines, 11.81km to north-east**  
The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.
- **Gortnakilla – Four turbines, 6.76km to north-west**  
The local roads to be used for Gortyrhilly are remote from this Site and no cumulative impact on roads or traffic is envisaged.
- **Inchamore – Six turbines, 4.7km to north-west**  
Likely to use same grid connection route to Ballyvouskill. Potential for cumulative effects.
- **Knocknamork – Seven turbines 7.28km north-east**  
Likely to use same grid connection route to Ballyvouskill. Potential for cumulative effects.

The proposed Inchamore, Cummeenabuddoge and Knocknamork wind farms are likely to connect to Ballyvouskill substation. The proposed routes are shown in **Figure 15.15**. All three will share the forest track with the Gortyrhilly grid connection.

The proposed Inchamore Wind Farm site is located west of the N22 and will be serviced by a direct access to the existing N22. The grid connection will be laid in the same forest track as for the proposed Development. Thus, while there may be a slight increase in traffic on the N22, none of the local roads proposed to access Gortyrhilly wind farm or its grid connection will be used for Inchamore. Thus, the cumulative impact will be negligible/minor, negative and short term.

The proposed Cummeenabuddoge wind farm site is located east of the N22 and north of the forest track to Ballyvouskill. A separate access will be provided ultimately from the N22. The grid connection will be laid in the same forest track as for the proposed Development. Thus, while there may be a slight increase in traffic on the N22, none of the local roads proposed to access Gortyrhilly wind farm or its grid connection will be used for Inchamore. Thus, the cumulative impact will be negligible/minor, negative and short term.

The proposed Knocknamork wind farm site is located east of the N22 and south of the forest track to Ballyvouskill. A separate access will be provided from the N22. The grid connection will be laid in the same forest track as for the proposed Development. Thus, while there may be a slight increase in traffic on the N22, none of the local roads proposed to access Gortyrhilly wind farm or its grid connection will be used for Knocknamork. Thus, the cumulative impact will be negligible/minor, negative and short term.

The forest track to be used for the four grid connections (Gortyrhilly, Inchamore, Cummeenabuddoge and Knocknamork) is in the control of the Developer. Should the wind farms be constructed in the same timeframe, then construction activities will need to be scheduled such that there is free access for traffic along the forest track and such that no queues will arise on the N22.

Cumulative effects from the Development and other developments in the area can occur during the construction phase. There could also be cumulative effects should blades need to be replaced in an operational wind farm during the construction phase. However, in the unlikely event of such a scenario the replacement blades would have a 3-4 month lead time and deliveries can be co-ordinated. It would not lead to significant effects. Wind farms do not generate a significant amount of traffic during operation as outlined in **Section 15.5.13**.

If the construction phases of the consented but not yet constructed windfarms were to overlap, then there is potential for cumulative effects on the road network from construction traffic and turbine delivery. However, the Coolae and Coolknoohil projects are already consented and so are likely to be constructed prior to the construction of the Development. Should there be overlap, the projects are relatively small with localised works and the effect is predicted to be low/moderate, negative, direct but short-term on the N22 and L-3400-79 with the potential increase in HGV movements. However, while the L3400-79 is the route proposed for the turbine component haul route for Gortyrhilly, other materials will be delivered using the L-3402. Accordingly, any cumulative impact will be limited and is considered as being slight to moderate and of short duration.

It is possible that a blade (or set of blades) could require replacement if damaged for example by lightning on the nearby Grousemount or Derragh Wind Farms. Should this coincide with the construction period for Gortyrhilly, then there is the potential for cumulative transport affects. However, these are considered as being of low probability, slight impact and of short duration.

### 15.7.2 Operational Phase

The level of maintenance traffic is normally 1-2 visits per week per wind farm with 5-6 visits per week for a month per year during servicing.

Traffic during the operation periods of Gortyrhilly Wind Farm as well as neighbouring sites will be low and in the range of 0 – 10 trips per day. The effect is rated as being insignificant.

### 15.7.3 Decommissioning

All of the wind farms have defined operational periods (generally 25-35 years following commissioning) prescribed by their planning permissions. No two wind farms will be connected at the same time by ESB/EirGrid in terms of electrical safety. Therefore, the operational life of the various wind farms will expire on different dates. The decommissioning periods are relatively short (4-6 months). The developer is in control of the potential projects (Inchamore and Cummeenabuddoge) and can schedule traffic activity for different wind farms should any decommissioning activities potentially overlap. Accordingly, only slight impacts over those assessed in **Section 15.5.14** are predicted. It is unlikely that any significant cumulative impacts will arise.

## 15.8 RESIDUAL EFFECTS OF THE DEVELOPMENT

### 15.8.1 HGV Deliveries

On the turbine component haul route, there is likely to be a slight, negative, short-term residual effect on the national road network with an increase in traffic volumes on the roads and works at a number of locations as outlined in **Table 15.17**. During times when specific widening works are being undertaken on local roads the impacts will be high, negative, short-term. However, with the mitigation outlined, these will be minimised and the resurfaced roads will produce a slight positive residual benefit.

In terms of the Civil Construction Haul Route, the Development is likely to have a minor residual effect on the local road network given increased traffic volumes on the road network are unavoidable. However, with the mitigation outlined, these will be minimised and the resurfaced roads will produce a slight positive residual benefit.

In terms of the grid connection, the Development is likely to have a high negative, short-term impact on Local Roads which will accommodate the grid connection. However, with the mitigation measures as outlined, these will be minimised and the resurfaced roads will produce a slight positive residual benefit.

### 15.8.2 Operational Phase Residual Effects

There will be no residual effects during the operational phase as only occasional light vehicles and MEWP's are envisaged to visit the wind farm Site during operation for routine checking and maintenance.

### 15.8.3 Final Decommissioning Phase Residual effects

On the Turbine Component Haul Route, there is likely to be a slight, negative, short-term residual effect on the road network with an increase in traffic volumes on the roads and works at a number of locations as outlined in **Table 15.17** assuming the turbine components are transported back to Ringaskiddy Port. Instances where bends are widened along the route will be a slight positive residual effect of high probability. Local roads will be widened as outlined in **Section 15.4.2**.

Effects during the decommissioning phase have been assessed to be small compared to the construction phase if hardstand areas are left in place and revegetated and potentially turned into wet heath habitat rather than removed from Site. In this case, the effect can be assessed as being imperceptible.

If the hardstanding areas are removed, then effects can be assessed as likely to be similar to those experienced during the construction phase as being a slight negative, direct short-term and high probability effect.

## **15.9 MONITORING**

The local road network near the Site used to transport construction materials will be monitored during construction so that any damage caused by construction traffic associated with the Development can be identified and maintenance works carried out as soon as practicable to avoid issues for other road users and the local population of the area.

Any extensive repairs, such as full road width resurfacing, required to the local road network arising from damage caused by traffic associated with the Development will be carried out once construction activities have ceased onsite. The monitoring will be undertaken by the Owner's Engineer to be appointed by the Developer for the construction stage in conjunction with the Local Authority Roads Area Engineer on the L-3400-79, L-3405-0, L-7405-0, L-3402, L-3405-0 and L-7405-0.

The appointed Contractor will be responsible for seeing that HGV drivers travelling to and from the Site obey the designated speed limits, rules of the road and that they only use the designated civils construction haul route. This will be undertaken through regular tool box talks for drivers during the construction of the Development.

## **15.10 SUMMARY OF SIGNIFICANT EFFECTS**

This Section has assessed the significance of potential effects of the Development on traffic and transport. The construction stage of the Development has generally been assessed as having the potential to result in effects of a negative, high, direct, short-term, high probability effect or lower (depending on the road element) during the construction phase only. After mitigation, the residual effects have been assessed as moderate, negative and short-term in nature or lower (depending on the road element as detailed in Section 15.8). There will be a positive residual effect from local roads and junctions having been widened along the turbine component haul route and from the resurfacing of these local roads which will accommodate the grid connection.

The operational stage impacts are considered as being imperceptible.

The decommissioning stage impacts are considered as being slight, negative, direct, high probability and short-term in nature.

Potential cumulative effects as detailed in **Section 15.7** were assessed as being slight to moderate, negative, short-term and low probability in nature.

Given that only effects of significant effect or greater are considered “significant” in terms of national legislation, the potential effects of the Development on traffic and transport are considered to be **not significant**.

#### **15.11 STATEMENT OF SIGNIFICANCE**

This assessment has identified that the potential effects of the Development on traffic and transport are considered to be **not significant**, given the mitigation measures embedded in the design and proposed for the implementation of the Development.