

14 TRAFFIC AND TRANSPORT

14.1 INTRODUCTION

14.1.1 Background and Objectives

This chapter of the Environmental Impact Assessment Report (EIAR) assesses the potential traffic and transport effects of the proposed Development, describes the existing transport network within the vicinity of the Site, 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. This assessment was undertaken by Jennings O'Donovan & Partners Limited (JOD). 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

This chapter outlines potential effects of traffic associated with the proposed Development on the public road network and associated junctions during the life of the Tullaghmore wind farm. During the construction phase of the Tullaghmore wind farm, traffic will include heavy goods vehicles (HGV's) delivering construction materials to and from site, abnormal load vehicles transporting turbine components from Galway Port to site, HGV's removing excess unsuitable material which cannot be processed and recycled into the works from site, HGV's and plant involved with grid connection works on the public road network, HGV's and plant involved with alterations to existing junctions to facilitate the movement of abnormal load vehicles and construction operatives visiting the site in cars and light goods vehicles. During the operations phase of the Tullaghmore wind farm traffic will include cars and light goods vehicles involved with site maintenance, servicing and repair. Traffic during the decommissioning of the wind farm will be similar to the construction phase and will consist of HGV's and abnormal load vehicles removing turbine components and electrical installations from site and HGV's importing materials for site landscaping.

Common acronyms used throughout this EIAR can be found in **Appendix 1.4**.

14.1.2 Statement of Authority

This chapter of the EIAR (as well as Swept Path analysis used to inform the chapter) has been prepared by Mr. 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.

14.2 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

14.2.1 Assessment Methodology

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

- Legislation and guidance review
- Desk study, including review of available maps and published information
- Swept Path Analysis (SPA) 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
- Evaluation of residual effects following implementation of mitigation measures

14.2.2 Planning Policy and Guidelines / Guidance

This assessment has been prepared and carried out in accordance with guidance contained in the documents shown in **Table 14.1**.

Table 14.1: Policy and Guidance

Policy / Author	Title	Policy
Environmental Protection Agency (May 2002)	Guidelines on the Information to be Contained in Environmental Impact Statements	These are guidelines to be followed in the preparation of EISs covering screening, scoping, consultation, EIS (EIAR) structure and formats, principles and practice of EIA and the preparation of an EIA.
Government of Ireland	The Design Manual for Urban Roads and Streets (DMURS) ¹	This document outlines guidelines on the design of urban roads and streets in terms of signage, pedestrians and cyclists, carriageways (widths, surfaces, junctions etc.), policies and plans, design process and audits (safety and quality).
Transport Infrastructure Ireland (TII)	The Design Manual for Roads and Bridges (DMRB)	The DMRB provides requirements which shall be applied to the appraisal, design, maintenance, operation and disposal of motorway and all-purpose trunk roads. DMRB requirements can be applied to other roads with the approval of the County Council.

¹ <http://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/DevelopmentandHousing/Planning/FileDownload%2C32669%2Cen.pdf>

Policy / Author	Title	Policy
Transport Infrastructure Ireland (TII)	Traffic and Transport Assessment Guidelines ²	<p>The guidelines provide guidance for developers, planning authorities and the National Roads Authority (NRA) for:</p> <ul style="list-style-type: none"> • Scoping for traffic and transport assessment for future development and development areas, particularly areas in proximity to national roads, • Defining thresholds where studies are recommended to minimise the impact of future proposals on the national road network, <p>Contributing to the provision of sustainable forms of development and better-informed planning decisions.</p>
Government of Ireland	Traffic Management Guidelines 2012	<p>This document outlines guidelines for traffic management and sustainability, consultation and monitoring, speed management, junctions, vulnerable road users, public transport and parking.</p> <p>The guidelines recommend that consultation is carried out for schemes that involve a long construction period or area.</p> <p>The guidelines outline the relevant legislation governing different types of road works.</p> <p>The guidelines outline safety measures to be taken in the design of roads and junctions.</p> <p>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.</p>
Galway County Council	Galway County Council Development Plan (CDP) 2022-2028.	<p>The Galway County Development Plan sets out an overall strategy for the proper planning and sustainable development of the functional area of Galway County Council.</p> <p>Chapter 6 Transport and Movement</p>

² <http://www.tii.ie/tii-library/land-use-planning/Transport-Assessment-GuidelinesMay2014.pdf>

14.2.3 Study Area

The study area for this Traffic and Transport assessment is focused on the public road network which will be used for the following construction operations:

- Transportation of building materials and electrical components.
- Transportation of granular materials for wind farm access road and turbine hardstand construction.
- Transportation of concrete and steel reinforcement for the construction of turbine foundations.
- Transportation of turbine components using abnormal load vehicles from Galway Port to site.
- Works on the N59 national secondary road, R336 and R340 regional roads associated with the connection of the wind farm to the national electricity grid, which will be via 38kV underground cable connection approximately 18.65km in length to the existing ESB Screebe 110kV GIS Substation.
- Works at junctions and pinch points between Galway Port and the wind farm site entrance on the turbine delivery route to facilitate abnormal load vehicles delivering turbine components to site.
- Transportation of excess peat material from site excavations to a peat storage and restoration (biodiversity enhancement) area near Maam Cross.

14.2.4 Desk Study

A desk study of the area was completed in advance of undertaking the route survey. This involved using Google Maps and Streetview to assess the road network from Galway Port to the Site for the transportation of turbine components and to review the road network in the vicinity of the site for the Civil Construction Haul Route. Galway County Council were consulted by the Applicant and provided details of the N59 road upgrade works. Traffic count data from the TII traffic counter on the N59 between Maam Cross and the wind farm site entrance was used to assess the capacity of the existing road network.

14.2.5 Field Work

A survey of the turbine delivery routes between Galway Port and the Wind Farm site was undertaken in September 2021 by Pell Frischmann Ltd. The haul route survey outlines works which are required to facilitate the swept path of abnormal load vehicles transporting turbine components to the site. The proposed haul route is shown in **Figure 2.4** in **Volume III**. The Abnormal Indivisible Load Route Review is included in **Appendix 14.1**.

14.2.6 Evaluation of Potential Effects

Following on from the identification of the baseline environment, the available data was utilised to identify and categorise potential effects likely to affect the local road network used for the Haul Route and Civil Construction Haul Route as a result of the Development.

The statutory criteria (EPA, 2022) 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 (2022) '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.

14.2.7 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 14.2** below.

Table 14.2: 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.

14.2.8 Magnitude

The magnitude of potential impacts has been defined in accordance with the criteria provided in the 2022 EPA publication 'Guidelines on the information to be contained in Environmental Impact Statements' as outlined within **Table 14.3**.

The Institute for Environmental Management and Assessment (IEMA) Guidelines³ 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.

These guidelines were developed to assess the potential effects of major developments on the road network during their operation and not for short-term construction or decommissioning. In the absence of guidance, these guidelines have been used to assess the short-term construction and Decommissioning phases of the Development. On roads where existing traffic levels are generally low, any increase would be higher than the Guidelines 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.

Table 14.3: 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.

³ The Institute of Environmental Management and Assessment (1993), Guidelines for the Environmental Assessment of Road Traffic

14.2.9 Significance of Effects

The magnitude of the effect on the road network will determine the significance of any effects associated with the increase. An increase in traffic flows on existing roads with a low level of service which are experiencing capacity issues will result in significant effects on the road network. An assessment has been made of the significance of effects taking into account the sensitivity of the receptor, effect magnitude, duration, and the likelihood of the effect.

14.3 BASELINE DESCRIPTION

14.3.1 Site Location, Context and the Development

The proposed Wind Farm site is located in the townlands of Tullaghmore, Co. Galway. The site access point is located on the N59 National Secondary Road approximately 32km east of Galway and 38km west of Clifden. The Wind Farm will consist of 6 No. wind turbines with a rotor diameter of 162m and a 38kV electrical substation. Each turbine will be erected on an insitu concrete foundation with steel reinforcement and will have a crane hardstand constructed from granular material, the crane hardstand will be used to store turbine components and to support a crane during the erection of the turbine. Each turbine hardstand will be linked to the site entrance on the N59 by a network of access roads constructed from granular materials with associated drainage and fencing. The turbines will be linked to the onsite substation by electrical cabling laid in buried ducts alongside the access road. The substation will be linked to the National grid via a 38kV underground cable connection approximately 18.65km in length to the existing ESB Screebe 110kV GIS Substation. Due to environmental constraints on the wind farm site, unsuitable excavated material such as peat cannot be deposited on site. The unsuitable material will be transported off site to a biodiversity enhancement area near Maam Cross. The location of the wind farm site, N59 site entrance and peat storage and restoration (biodiversity enhancement) area at Maam Cross is shown in **Figure 1.1**.

It is proposed that the turbine components including rotor blades, towers, nacelles, hubs and drivetrains will be landed by ship and stored for transportation at Galway Port. From Galway Port the turbine components will be transported to the Site using the R337, R336 and N59 passing through Spiddal and Maam Cross. Detailed analysis of the proposed turbine haul route options have been carried out by Pell Frischmann Ltd and are included in the Abnormal Indivisible Load Route Review in **Appendix 14.1** The proposed Haul Route for Turbine Components is shown in **Figure 2.4**.

The wind farm substation will be linked to the National grid via a 38kV underground cable connection approximately 18.65km in length to the existing ESB Screebe 110kV GIS substation. The cable will be laid in buried ducts within the N59, R336 and R340 public roads as shown in **Figure 2.10**.

The haul route for wind farm construction traffic will use the national and regional road network to access the site. The use of local roads for construction traffic will be prohibited unless the local road provides access to a quarry or concrete batching plant. It is envisaged that granular materials for Site Access Track and Turbine Hardstand construction will be sourced from excavations within the Site or from local suppliers. It is also envisaged that ready-mix concrete for Turbine Foundation construction and Substation foundations will be sourced from a local authorised quarry located along the N59 national secondary route and the R336 regional road corridors. The location of aggregate and concrete suppliers in the vicinity of the proposed are shown in **Figure 14.1** in **Volume III**.

Construction workers will use the Site entrance on the N59 to access the site but will need to have flexibility in the roads they use to reach the Site.

14.3.2 Sensitive Receptors

The Site is generally served by the N59 national secondary road which runs between Galway and Clifden and the R336 regional road between Galway and Maam Cross passing through Spiddal. The construction of the wind farm will require works to be carried out on the public road network which may impact on sensitive receptors listed in **Table 14.6**. The works on the public road network and their potential impact on sensitive receptors are listed in **Table 14.5**. Mitigation measures to reduce the impact of construction works at isolated locations on the public road network are discussed in detail in **Section 14.6** of this chapter and summarised in **Table 14.4**.

Table 14.4: Works Location and Potential Impact on Sensitive Receptors

Construction Activity	Potential impact on Sensitive Receptors	Impact of works on Sensitive Receptors and Public Road Users
Construction of N59 Site Entrance	Low Impact / Short Term	Increased journey times due to traffic management. Increased Noise and vibration due to construction works
HGV and Abnormal Load Vehicle Deliveries to Site	Low Impact / Medium term	Increased journey times due to slow-moving traffic.

Construction Activity	Potential impact on Sensitive Receptors	Impact of works on Sensitive Receptors and Public Road Users
Removal of Spoil from Site to Peat Storage and Restoration (Biodiversity Enhancement) Area at Maam Cross	Medium Impact / Medium Term	Increased HGV traffic volumes between the N59 wind farm site entrance and the entrance to the biodiversity enhancement area on the N59. Increased journey times due to slow-moving traffic. Additional turning movements and delay at the N59 biodiversity enhancement area Junction in Maam Cross. Additional noise and vibration from earthworks plant and HGV's operating within the biodiversity enhancement area.
Construction of 38kV Grid Connection between Site and Screebe 110kV Substation.	Medium Impact / Medium Term	Increased journey times due to traffic management. Increased Noise and vibration due to construction works involving saw cutting, excavation, trench reinstatement and surfacing.
Haul Route Enabling Works at Exit from Galway Port	Medium Impact / Short Term	Parking Restrictions at Port. Increased noise and vibration from construction activities during surfacing works and removal of fencing / street furniture.
Haul Route Enabling Works at Lough Atalia Rd. / R339 Junction	Low Impact / Short Term	Increased journey times due to traffic management associated with the removal of street furniture and alterations to traffic signals.
Haul Route Enabling Works at R339 / R338 Junction	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at R338 Cemetery Cross Roundabout	Medium Impact / Short Term	Increased journey times due to traffic management. during modifications to traffic lights and street furniture.
Haul Route Enabling Works at R339 / R338 Junction	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at R339 Mervue industrial Estate	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at R336 Mervue industrial Estate	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at R336 / N6 Junction	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at N6 / N84 Roundabout	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.

Construction Activity	Potential impact on Sensitive Receptors	Impact of works on Sensitive Receptors and Public Road Users
Haul Route Enabling Works at R336 / R866 Junction	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works, modifications to street furniture / traffic lights and tree clearance.
Haul Route Enabling Works at N6 Upper Newcastle Road Junction	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at N6 Browne Roundabout	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and traffic lights.
Haul Route Enabling Works at R338 Deane Roundabout.	Low Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during modifications to street furniture and vegetation clearance.
Haul Route Enabling Works at R338 / R337 Junction.	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works, modifications to street furniture / traffic lights and boundary walls.
Haul Route Enabling Works from R338 / R337 Junction to L1200 Junction.	Low Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during clearance of vegetation.
Haul Route Enabling Works from R338 / L1200 Junction.	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and utilities.
Haul Route Enabling Works from R336 / R343 Junction.	Medium Impact / Short Term	Increased journey times due to traffic management. Parking restrictions. Increased noise and vibration due to construction activities during modifications to street furniture, utilities and boundary walls.
Haul Route Enabling Works from R336 / R343 Junction to R336 / R340 junction.	Low Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during clearance of vegetation.
Haul Route Enabling Works R336 / R340 Junction.	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing works and modifications to street furniture and utilities.
Haul Route Enabling Works From R336 / R340 Junction to R336 / N59 Junction.	Low Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during surfacing, modifications to utilities and clearance of vegetation.
Haul Route Enabling Works R336 / N59 Junction.	Medium Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during modifications to street furniture, utilities and boundary walls.

Construction Activity	Potential impact on Sensitive Receptors	Impact of works on Sensitive Receptors and Public Road Users
Haul Route Enabling Works from R336 / N59 Junction to Site Entrance.	Low Impact / Short Term	Increased journey times due to traffic management. Increased noise and vibration due to construction activities during clearance of vegetation.

Table 14.5: Sensitive Receptors

Receptor	Sensitivity	Reason for Inclusion
Hospitals, Medical Centres	High	Medical centres are likely to be highly sensitive to changes in traffic density, noise and vibration from HGVs and construction activities. Access will be required at all times for general and emergency access
Private dwellings located along the haul routes	High	There are numerous residential properties which front directly on to the proposed Haul Route (for Turbine Components) and proposed Civil Construction Haul Route. Residents of these properties are likely to require unrestricted access to the roads in order to access their place of employment and/or local services. These properties are also likely to be highly sensitive to changes in traffic density, noise and vibration from HGVs etc.
Care Homes	High	Care Homes are likely to be highly sensitive to changes in traffic density, noise and vibration from HGVs and construction activities. Access will be required at all times for general and emergency access
Schools	High	Schools are likely to be highly sensitive to changes in traffic density, noise and vibration from HGVs and construction activities during school hours. Access will be required at all times
Churches	Moderate	Churches are likely to be sensitive to noise and vibration from HGVs and construction activities during church services. Access will be required at all times.
Hotels and B&B's	Moderate	Hotels and B&Bs are likely to be sensitive to noise and vibration from HGVs and construction activities. Access will be required at all times.
Businesses and Shops	Moderate	Businesses and Shops are likely to be sensitive to noise and vibration from HGVs and disruption from construction activities during business hours. Access will be required at all times.
Farms	Low	Farm operations may be sensitive to noise and disruption from construction activities
Public Amenities	Low	Entrance to public amenities may be sensitive to disruption from construction activities

Table 14.6: Mitigation Measures for Isolated Works Carried out on the Public Road Network

Item	Mitigation Measure
Public Safety	All works on the public road network shall be carried out under a road opening licence and an approved traffic management plan (to be developed from the TMP in Appendix 14.2). The location of works shall be signposted in accordance with the Traffic Signs Manual. Works shall be carried out within a dedicated work zone and fenced to prevent unauthorised access.
Public and Emergency Access	Access for the public and emergency services shall be provided at all times through the works.
Public liaison	The contractor shall appoint a liaison officer who will inform the public of the location and expected duration of works on the public road network.
Vehicle noise, emissions, and loading	All vehicles used during the construction, operation and decommissioning phases of the wind will be road legal vehicles subject to HCV, LCV and NCT requirements for noise, axle loading and emissions.
Haul routes for construction traffic	Construction vehicles will be prohibited from using the local road network and will use the national and regional road network to access the wind farm site.
Parking for construction Vehicles	Construction vehicles shall be parked in dedicated parking areas within the work zone when working on the public road.
Noise, vibration and dust	Works on the public road will be carried out during normal working hours in order to minimise disruption from noise and vibration. Dust and debris resulting from construction activities shall be controlled by wetting down and street sweeping.
Traffic delay	Turbine deliveries will be carried out during off peak hours at times agreed with An Garda Síochána and Galway County Council to minimise disruption. The movement of abnormal loads to site will be subject to abnormal load permits and vehicles will be escorted by support teams and An Garda Síochána who provide routine and emergency traffic management for the convoy vehicles in sensitive areas

14.3.3 Road Access to the Site

Access to the wind farm site will be from a simple priority T-Junction on the N59. The junction will be located at the site of an existing forestry / farm access which will be upgraded to accommodate the swept path of abnormal load vehicles accessing the site during the delivery of turbine components. The junction will be a stop-controlled junction with priority for N59 traffic. Visibility splays of 215m will be available in both directions from a 3.0m setback in accordance with TII specifications. The location of the junction will be signposted in accordance with Chapter 8 of the Traffic Signs Manual during the construction of the wind farm.

The N59 is a national secondary road which runs between Galway City and Clifden. The N59 has a speed limit of 100km/h in the vicinity of the wind farm site entrance. The carriageway consists of a 6.0m wide two-lane single carriageway with road markings and signage.

14.3.4 Scoping Responses and Consultation

Consultation responses are shown in **Table 14.7**.

Table 14.7: Consultation Responses

Consultee	Type & Date	Summary of Response	Response to Consultee
Transport Infrastructure Ireland (TII)	Email 27/10/21	<p>The developer/scheme promoter should have regard, inter alia, to the following:</p> <ul style="list-style-type: none"> • Consultations should be had with the relevant Local Authority/National Roads Design Office, with regard to the locations of existing and future national road schemes. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) • The developer should assess visual impacts from existing national roads. • The developer should have regard to any EIAR/EIS and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts. • The developer, in preparing EIAR, should have regard to TII Publications. • The developer, in preparing EIAR, should have regard to TII's Environmental Assessment and Construction Guidelines). • The EIAR/EIS should consider the 'Environmental Noise Regulations 2006' (SI 140 of 2006) 	

Consultee	Type & Date	Summary of Response	Response to Consultee
		<ul style="list-style-type: none"> • 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. • The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required. • 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. • TII recommends that the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. • Any damage caused to the pavement on the existing national road, arising from any temporary works due to the turning movement of abnormal 'length' loads (e.g. tearing of the surface course, etc.), shall be rectified in accordance with TII Pavement Standards • Any grid connection and cable routing proposals should be developed to safeguard proposed road schemes, • In the context of the existing national road network, in accordance with the National Planning Framework National Strategic Outcome no. 2 'Enhanced Regional Accessibility', there is a requirement to maintain the strategic capacity and safety of the network. This requirement is further reflected in the National Development Plan, the Draft National Investment Framework for Transport in Ireland and also the existing Statutory Section 28 'Spatial Planning and National Roads Guidelines for Planning Authorities'. • TII, therefore, advises that grid connection cable routing should seek to 	

RECEIVED: 26/01/2023

Consultee	Type & Date	Summary of Response	Response to Consultee
		utilise available alternatives, as opposed to the strategic national road network, contrary to the provisions of official policy. <ul style="list-style-type: none"> • Other consents or licences may be required from the road authority for any trenching or cabling proposals crossing the national road. • 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, 	
Galway County Council Roads Department	Email 29/09/21	Scoping letter circulated to relevant staff in Galway County Council Roads Department	

RECEIVED: 26/01/2023

14.3.5 Delivery Vehicle Specification

Delivery of road construction materials, concrete for turbine foundations, building materials, drainage, ducting and cables will be carried out using standard heavy goods vehicles (HGV). Delivery of turbine components will be carried out using specialist abnormal load vehicles. Turbine blades measuring 79m in length will be delivered on an extendable semi-trailer, one per trailer. Approximately 10.0m of the blade will over- hang the rear of the trailer. Following delivery to the site, the trailer will be retracted for the return trip. An indicative delivery vehicle schematic is shown in **Plate 14.1** below.



Plate 14.1: Indicative Turbine Delivery Vehicle for Turbine Rotor Blades

Wind turbine blades may be delivered to site using a blade lifter vehicle, the use of a blade lifter vehicle will reduce the extent of widening and strengthening works required at junctions and acute bends on the haul route due to its reduced wheelbase and ability to adjust the blade in the vertical plane. Each turbine tower will be delivered to site in three sections on extendable semi-trailers, the tower sections range in length from 30.0m to 23.0m with a maximum width of 4.5m. An Indicative tower transporter vehicle is shown in **Plate 14.2**.

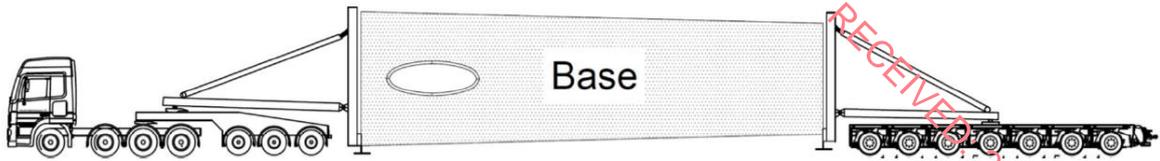


Plate 14.2: Indicative Turbine Tower Section Delivery Vehicle

All material deliveries will have a maximum axle load of up to 12 tonnes per axle, and a maximum total truck weight 65 tonnes approx. The main crane for turbine erection will have a maximum axle loading of 12 tonnes per axle and a maximum total weight of 100 tonnes approx. Vehicles delivering counter-weights for the crane will have a maximum axle loading of up to 12 tonnes per axle.

14.3.6 Existing and Forecast Traffic Volumes

Existing traffic flows on the N59 during an average workday in May 2022 are shown in **Table 14.8**, the N59 traffic flows are taken from the TII traffic counter located to the east of Maam Cross near the wind farm site entrance. The traffic data from the TII website shows that peak traffic occurs at 11.00 in the morning and 17.00 in the evening. HGV traffic accounts for approximately 3.5% of the total traffic volume on the N59 near Maam Cross. Using the methodology from TII publication PE-PAG to calculate annual average daily traffic (AADT) from short period traffic counts, the resulting AADT on the N59 in 2022 would be approximately 3,615 vehicles. The estimated capacity of the N59 national secondary road in the vicinity of wind farm is based on Table 6.1 of TII publication DN-GEO-03031 – Rural link design which provides a table of recommended rural road layouts and capacities for each cross section. The capacity of the N59 which consists of a Type 3, 6.0m wide single carriageway is in the region of 5,000 AADT. The data from the TII traffic counter shows that the N59 is currently running at 73% capacity.

TII publication PE-PAG-20217 forecasts traffic growth for regions in Ireland by applying growth factors to baseline traffic volumes to predict future traffic flows. Forecast traffic growth on the N59 near Maam Cross is shown in **Table 14.9**. Traffic projections on the N59 shows that the N59 will have reserve capacity to cater for projected traffic growth on the public road network and short-term traffic generated by wind farm construction in 2024 / 2025 when construction is likely to commence on site.

Table 14.8: N59 Traffic Volumes 2022

Time	Eastbound	Westbound	Total Traffic	HGV Traffic
07.00 – 08.00	95	60	155	6
08.00 – 09.00	101	96	197	7
09.00 – 10.00	117	98	215	17
10.00 – 11.00	116	128	244	16
11.00 – 12.00	117	132	249	13
12.00 – 13.00	118	118	236	13
13.00 – 14.00	125	111	236	13
14.00 – 15.00	130	123	253	14
15.00 – 16.00	144	137	281	14
16.00 – 17.00	158	140	298	9
17.00 – 18.00	149	151	300	10
18.00 – 19.00	122	129	251	6
19.00 – 20.00	66	96	162	4

Table 14.9: Future Traffic Growth on The N59

Year	Without Development		
	AADT	HGV's Per Hour	%HGV
2022	3,615	10	3.3%
2023	3,705	11	3.4%
2024	3,797	11	3.4%
2025	3,892	12	3.5%

14.4 PROPOSED WORKS

14.4.1 Construction Phase

The construction period of the Development is anticipated to take approximately 10 months, the majority of HGV deliveries to site will take place during the first 7 months of the project and will be associated with the removal of excess peat material resulting from site

excavations, Site Access Track and Turbine Hardstand construction, construction of turbine Foundations, grid connection works and On-site 38kV Substation building.

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 Galway County Council. Some special deliveries such as turbine components and concrete for Turbine Foundations may be required to be delivered outside of these times in consultation with Galway County Council.

14.4.2 Turbine Component Haul Route

For abnormal loads, between Galway Port and the Site, works will be required to facilitate turbine component deliveries. Works will include verge widening / strengthening, alterations to traffic signals and junctions, temporary removal of street furniture and signage. The works are described in detail in the Abnormal Indivisible Load Route Review report prepared by Pell Frischmann included in **Appendix 14.1**.

14.4.3 38kV Grid Connection Works

The construction of the 38kV grid connection will be carried out in the public road network. Grid connection works will be carried out under a number of phased operations which will involve traffic management. The first phase of the works will involve the excavation of a 0.6m wide cable trench, construction of 2m wide x 4m long joint bays, installation of cable ducting, backfilling of trench and temporary reinstatement of road surfacing. The second phase of the works will involve installing the 38kV cable in the ducting. During the cable installation traffic management will be required at the joint bays to allow cable pulling and jointing. The final phase of the works will involve permanent reinstatement of the road surfacing and surface dressing.

14.5 ASSESSMENT OF POTENTIAL EFFECTS

14.5.1 HGV Deliveries

The estimated timescale for the completion of the construction phase is 10 months, inclusive of all works to site access tracks, turbine hardstands, drainage, Substation building, grid connection works and erection and commissioning of turbines. **Table 14.10** contains details of the estimated HGV deliveries to the Site during the construction period. The HGV volumes are based on earthworks calculations and estimations of materials required for wind farm construction.

Table 14.10: HGV and Abnormal Load Deliveries

Materials	Quantity	No. Of Deliveries	Timeframe (Week)	Maximum Loads / Day	Vehicle Type
Mobilise on Site		15	1	5	OGV1
Construction of Site Compound	200m ³	20	1-2	10	OGV2
Site Earthworks (removal of unsuitable material from site)	84,760m ³	7,065	2-28	50	OGV2
Rock for Site Access Tracks and Turbine Hardstands	1,000m ³	100	2-28	5	OGV2
Site Drainage and Fencing		20	2-28	2	OGV2
Ready Mix Concrete for turbine Foundations	3,600m ³	450	6-28	50	OGV2
Steel Reinforcement for Turbine Foundations	300T	16	6-28	3	OGV2
Foundation Bolts	6 Turbines	6	6-28	1	OGV2
Substation Building Materials		15	2-20	1	OGV2
Electrical Switchgear		2	18-28	1	OGV2
Electrical Cables		10	6-28		OGV2
Grid Connection Works	18.6km	1200	10-40	6	OGV2
Wind Turbine Components	6 Turbines	60	28-34	3	OGV2
Crane		10	28	5	OGV2
Reinstatement and Demobilisation		25	38-40	5	OGV2
Total		9,014			

It is estimated that during the wind farm construction, an approximate total of 9,014 loads of material and building supplies will be delivered and removed from the Site. The majority of granular materials for access road and turbine hardstand construction will be sourced from site excavations and processed on site. The majority of HGV movements to and from site will occur during the first seven months of the construction period and will be associated with the removal of unsuitable material arising from site excavations, site road construction and turbine foundation construction.

Table 14.11 shows a schedule of maximum predicted daily traffic movements to site over a 10-month period.

Table 14.11: Schedule of Maximum Predicted Daily Traffic Movements to Site Over 10 Month Construction Period

Activity	Month									
	1	2	3	4	5	6	7	8	9	10
Mobilise on Site	5									
Construction of Site Compound	10									
Site Earthworks (removal of unsuitable material from site)	50	50	50	50	50	50	50			
Rock for Site Access Tracks and Turbine Hardstands	5	5	5	5	5	5	5			
Site Drainage and Fencing	2	2	2	2	2	2	2			
Ready Mix Concrete for turbine Foundations		75	75	75	75	75	75			
Steel Reinforcement for Turbine Foundations		3	3	3	3	3	3			
Foundation Bolts		1	1	1	1	1	1			
Substation Building Materials	1	1	1	1	1					
Electrical Switchgear					1	1	1	1		
Grid Connection		6	6	6	6	6	6	6	6	6
Electrical Cables	1	1	1	1	1	1	1			
Wind Turbine Components							3	3	3	
Crane							5			
Reinstatement and Demobilisation										5
Total	74	144	144	144	145	144	152	10	9	11

Weeks 1 to 4 will involve the excavation of peat and subsoil materials to allow construction and deliveries of materials for site access works, Turbine Hardstand, Site Access Tracks, Temporary Site Compound, site offices, site security, substation building and cable / ducting works and drainage. This period will include deliveries of fencing materials for site boundaries and compounds, temporary fencing to protect trees, hedges and ecological buffer zones where necessary, road construction materials for access tracks, site

entrances, turbine hardstands and delivery of temporary site office units. It is anticipated that a maximum of 74 HGV vehicles (148 HGV movements) will visit the site on a daily basis during the period of weeks 1 to 4.

Weeks 4 to 28 will involve removal of unsuitable earthworks material and deliveries of materials for site access works, turbine hardstand, turbine foundations, site access tracks, turbine delivery substation building, grid connection and cable / ducting works. This period will include deliveries of fencing materials for site boundaries, road construction materials for access tracks, site entrances and turbine hardstands, ready mix concrete and steel reinforcement for turbine foundations. It is anticipated that a maximum of 77 HGV vehicles (154 HGV movements) will visit the site on a daily basis during the period of weeks 4 to 28 with an additional 75 HGV vehicles (100 HGV movements) delivering concrete for turbine foundations on six separate days during the 24 week period between weeks 4 to 28.

Weeks 28 to 40 will involve HGV movements for works associated with turbine delivery, turbine erection, turbine commissioning, electrical works, grid connection works, site landscaping and the removal of temporary works materials such as offices and fencing from site. It is anticipated that a maximum of 11 HGV vehicles (22 HGV movements) will visit the site on a daily basis during the period of weeks 28 to 40.

The expected HGV volumes are based on best estimates of trips generated by similar sized wind farms and will be subject to amendment based on local conditions and contractor working practices.

Based on the indicative timetable outlined above the peak times for HGV deliveries per day will be months 3 to 7 when the unsuitable material will be removed from the site combined with the construction of Site Access Tracks, Turbine Hardstands and Turbine Foundations will be constructed.

Increased volumes of traffic will be generated by the proposed development during the construction period. The Development will generate a maximum of 152 HGV trips (304 HGV movements) and 30 LGV (60 traffic movements) at the N59 site entrance. Peak traffic generated by the development will correspond to the construction of turbine foundations and will occur during six days within the 10 month construction period. Outside these times, construction traffic will typically consist of 77 HGV trips (158 HGV movements) and 30 LGV (60 traffic movements) at the N59 site entrance. Development traffic will be distributed

throughout the day with morning, afternoon and evening peaks. The distribution of daily development traffic is shown in **Table 14.12** during the construction of turbine foundations.

Table 14.12: Development Traffic Profile

Time	Arrivals		Departures	
	HGV	LGV	HGV	LGV
07.00 – 08.00		25		
08.00 – 09.00	20	5	20	2
09.00 – 10.00	17		17	
10.00 – 11.00	17		17	
11.00 – 12.00	17		17	
12.00 – 13.00	10		10	
13.00 – 14.00	5	5	5	5
14.00 – 15.00	20		20	
15.00 – 16.00	17		17	
16.00 – 17.00	17		17	
17.00 – 18.00	12	2	12	5
18.00 – 19.00				25
19.00 – 20.00				

14.5.2 Works on the 38kV Grid Connection

The construction of the 38kV grid connection will be carried out under a number of phased operations which will involve traffic management. The first phase of the works will involve the excavation of a 0.6m wide cable trench, construction of 2m wide x 4m long joint bays, installation of cable ducting, backfilling of trench and temporary reinstatement of road surfacing. The second phase of the works will involve installing the 38kV cable in the ducting. During the cable installation traffic management will be required at the joint bays to allow cable pulling and jointing. The final phase of the works will involve permanent reinstatement of the road surfacing and surface dressing. The phased works will require traffic management to be removed and reinstalled a number of times over the course of the project. The works will be carried out under a road opening licence and traffic management plan (based on the TMP submitted as **Appendix 14.2**) approved by Galway County council. These works may have a slight, negative, temporary effect on residents, businesses and

road users due to increased noise and vibration resulting from construction activities and increased journey times and delays due to temporary traffic management. However, these effects will be confined to a very short period during the construction phase, prior to the delivery of turbine components and hence are not predicted to have a significant effect. Once works have been completed, the works will be reinstated in accordance with the requirements of Galway County Council.

14.5.3 Works on the Turbine Components Haul Route

Works on the turbine supply route are described in detail in the haul route report included in **Appendix 14.1**, works will be required at a number of locations along the Haul Route from Galway Port to the Site. The works will be carried out under a road opening licence and traffic management plan (based on the TMP submitted as **Appendix 14.2**) approved by Galway County council. These works may have a slight, negative, temporary effect on residents, businesses and road users due to increased noise and vibration resulting from construction activities and increased journey times and delays due to temporary traffic management. However, these effects will be confined to a very short period during the construction phase, prior to the delivery of turbine components and hence are not predicted to have a significant effect. Once works have been completed, the works will be reinstated in accordance with the requirements of Galway County Council.

14.5.4 Light Vehicles/Vans and Construction Personnel

The number of staff on the Site will vary according to the phase of the construction works being undertaken on site. Staff numbers on site are expected to reach 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. A number of additional unscheduled visits may be required throughout the construction period for Site inspections, Site meetings, and unforeseen circumstances.

It is expected that a maximum of 25-35 vehicles will visit the Site on a daily basis during the peak construction period (Turbine Foundation construction). Parking for staff will be provided at the Temporary Construction Compound on the wind farm site and at designated locations within the work zone during turbine haul route works on the public road network. No parking will be allowed for construction workers on the public road network in any other circumstance.

14.5.5 Air Quality

Good air quality is essential for the health and quality of life of residents in the vicinity of the wind farm site and along the Haul Route. Transport accounts for a significant proportion of pollutants in the atmosphere namely, CO₂ emissions, nitrogen dioxide (NO₂) and particulate matter (PM₁₀). NO₂ emissions can also be harmful to vegetation and ecosystems in the vicinity of the wind farm site and Haul Route. The increase in traffic movements on the regional and national road network will average approximately 250 (two way) trips per day over a short-term period and therefore the effect of the Development on air quality will be imperceptible. Construction HGV's, LGV's and private vehicles are subject to government HCV, LCV and NCT emissions tests.

14.5.6 Noise and Vibration

There is likely to be some noise and vibration from increased HGV movements along the Haul Route to the wind farm site which may cause disturbance to residents living along this road. Due to the relatively low number of trips generated per day in relation to existing traffic volumes on the national and regional road network, the restrictions on working hours and the short-term nature of the construction phase, the effects are not predicted to be significant. Construction HGV's, LGV's and private vehicles are subject to government HCV, LCV and NCT noise and suspension tests.

14.5.7 Pedestrians and Vulnerable Road Users

Pedestrian and other vulnerable road users may be affected by the works at the wind farm site entrance, haul route modifications and vehicle movements during delivery of turbine components. The construction of the wind farm site entrance and modifications to the public road network at various locations along the turbine haul route will be carried out under a road opening licence and traffic management plan (based on the TMP included in **Appendix 14.2**) which will accommodate pedestrians at the works locations. Pedestrian facilities may be altered for short periods during the transportation of turbine components. During these periods alternative arrangements will be put in place for pedestrians. The effect on pedestrian safety is therefore considered not to be significant and short term.

14.5.8 Driver Delay

The N59 national secondary road is estimated to have a capacity of 5,000 AADT. Projected traffic volumes for future years on the N59 are shown in **Table 14.13** and compared against the impact of peak construction traffic associated with the wind farm development. Levels of construction traffic combined with N59 baseline traffic will not exceed the capacity of the N59 during the construction period. Traffic during the operation of the wind farm will be

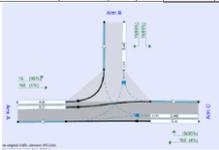
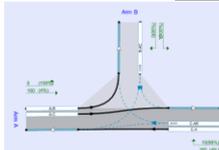
similar to N59 baseline Traffic. The public road network has been used for the construction of wind farms in the area without significant delay or capacity issues.

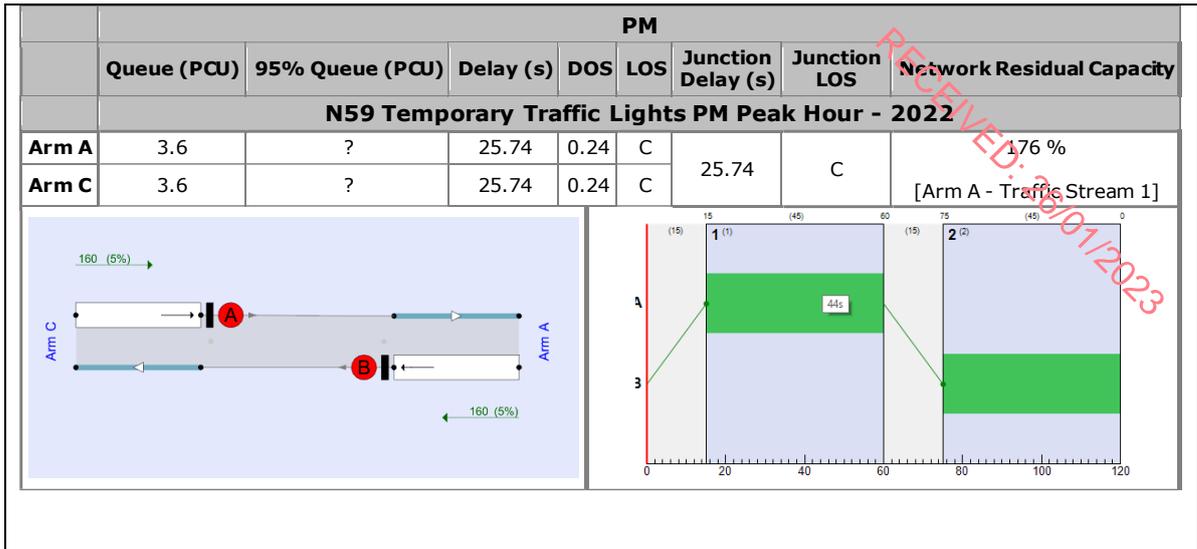
Table 14.12 - N59 Future Traffic Flows – Average Workday May 2022

Year	Without Development			With Development		
	AADT	HGV's Per Hour	%HGV	AADT During Wind Farm Construction	HGV's Per Hour	% HGV During Wind Farm Construction
2022	3,615	10	3.3%	-		-
2023	3,705	11	3.4%	4,277	51	14%
2024	3,797	11	3.4%	4,361	51	14%
2025	3,892	12	3.5%	4,457	52	14%

There is potential for driver delay on the public road network due to HGV turning movements and traffic management associated with site access construction, haul route enabling works and 38kV grid connection. Traffic analysis carried out for the development shows that delays of approximately 25 seconds can be expected at temporary traffic lights on the N59. Traffic analysis for the N59 wind farm site entrance and the N59 peat storage and restoration and enhancement area junction show that the junctions will operate within capacity and will not cause significant delays on the N59. Traffic analysis for the N59 is shown in **Table 14.13**.

Table 14.13: N59 Traffic Analysis

	Queue (PCU)	95% Queue (PCU)	Delay (s)	PM			Junction LOS	Network Residual Capacity
				RFC	LOS	Junction Delay (s)		
N59 Site Entrance PM Peak Hour - 2022								
Stream B-AC	0.1	1.0	15.56	0.07	C	1.65	A	255 %
Stream C-AB	0.1	0.8	8.47	0.03	A			[Stream B-AC]
								
	Queue (PCU)	95% Queue (PCU)	Delay (s)	PM			Junction LOS	Network Residual Capacity
				RFC	LOS	Junction Delay (s)		
N59 Biodiversity Enhancement Area PM Peak Hour - 2022								
Stream B-AC	0.1	1.0	12.95	0.03	B	0.87	A	609 %
Stream C-AB	0.0	0.8	8.39	0.02	A			[Stream B-AC]
								



Delays are expected on the turbine delivery Haul Route during the delivery of turbine components due to the abnormal load vehicles. Abnormal load deliveries will be carried out with an abnormal load permit and timed to take place outside of peak times, possibly at night, and therefore the potential effects are not considered to be significant. The abnormal load convoys will be accompanied by escorts who will provide routine and emergency traffic management in unforeseen circumstances, such as accidents or jack-knifing of vehicles, shifting of loads etc., for abnormal load convoys. In the case of unforeseen circumstances such as accidents, the convoy pilots and drivers may call the emergency services who will respond to the incident. An incident co-ordinator will be mobilised and present at the scene of a serious road related incident to assist and co-ordinate with the emergency and recovery efforts.

14.5.9 Severance

Severance is caused when a community is perceived to be physically divided by traffic. The turbine delivery and construction haul route to the wind farm site will use the existing national and regional road network to access the site, therefore, potential effects are not predicted to be significant.

14.5.10 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 public 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 construction and decommissioning phases only.

14.5.11 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 existing substation and at turbine entrances.

There will be a low volume of traffic generated during the operational phase of the Development. Traffic during operation will be mostly cars and light vehicles associated with routine scheduled and unscheduled maintenance. 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.

Should a turbine require replacement, then the effects can be predicted to be similar to those predicted during the construction phase, although the magnitude is likely to be less as it is unlikely all six turbines will need to be replaced at the same time. 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 and new components such as blades may be required to be delivered to Site in which case the effects will be the same as during construction but with lower vehicle numbers.

14.5.12 Traffic Impact During Wind Farm Decommissioning Phase

During decommissioning, it is envisaged that the total volume of HGV traffic will be relatively small compared to the construction period as it is proposed that Turbine Foundations, Site Access Tracks and Turbine Hardstands will remain in-situ, landscaped and allowed to revegetate with only the turbines, substation building materials and electrical equipment being removed from site for recycling/reconditioning. This phase could be expected to last approximately 16 weeks. If Site Access Tracks and Turbine Hardstands are left in place and revegetated, the effect is predicted to be an imperceptible effect on traffic.

If Site Access Tracks and Turbine Hardstands are to be dug up then the (decommissioning phase could last up to 4 months in this case) material will need to be transported off-site for reuse/recycling elsewhere, in which case HGV numbers could be expected to be similar to those of the construction phase. If Site Access Tracks and Turbine Hardstands are removed

from Site, then the effect can be predicted to be slight and negative of short-term duration and high probability.

The grid connection will remain in place post construction and so there will be no additional traffic effects associated with the decommissioning of the grid connection.

14.6 MITIGATION MEASURES

The potential effects of the Development have been identified as being short-term in nature and associated with the construction and decommissioning stages. Effects during operation have been assessed as being imperceptible and hence mitigation measures are not needed during that phase of the Development unless a replacement turbine component is required, in which case mitigation will be similar to that during construction. However, it is still important that any effect is minimised as far as possible. Therefore, the following mitigation measures are proposed:

- Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Galway County Council to discuss the requirement for a Garda escort. The Applicant will also outline the intended timescale for deliveries and efforts will be made to avoid peak times such as school drop off times, church services, peak traffic times where it is considered this may lead to unnecessary disruption, and abnormal loads may travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents at sensitive locations along the affected route will be notified of the timescale for abnormal load deliveries.
- Wheel cleaning equipment will be used on the Site Access Track near the public road junction 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.
- 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 will be covered during both entrance and egress to the Site where required, for example, during dry conditions.
- Turbine component deliveries will be timed to avoid peak times and in particular, times when pupils will be dropped off and picked up from the various schools on the turbine component Haul Route.

- During the wind farm construction and decommissioning phases, road works signs in accordance with the requirements of Chapter 8 of the traffic Signs Manual will be erected at the wind farm site entrance on the N59 and at all locations on the haul route which are being modified to facilitate turbine delivery.
- Access to the 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.
- During the construction phase, clear construction warning signs will be placed on the N59, advising the general public as to the presence of the construction site. The site entry points will also be appropriately signed. Security gates will be sufficiently set back from the road, so that vehicles entering the site will stop well clear of the public road, thus obviating the queuing of construction traffic on the public road network.
- Grid connection works will proceed at a rate of approximately 100m per work shift, the rate will depend on the ground conditions and the number of existing services encountered in the excavation. The works area will be fully enclosed within the traffic management system. Traffic management using temporary traffic lights shall be kept to the minimum length necessary to accommodate the works being undertaken and to minimise delays to the public.
- Longitudinal trench excavations in the public road shall be straight and parallel to the centre of the road/footway where practicable. Transverse road or footway crossings shall be at right angles to the kerb or property line. Bituminous and concrete road surfaces and footways be cut using a road saw, concrete saw or equivalent mechanical means to the full depth of the bituminous or concrete material prior to any excavation work. The edges of the road shall be trimmed to provide an overlap for permanent road reinstatement in accordance with chapter 7 of the Managing Openings in Public Roads Specification.
- The 38kV cable trench shall be excavated using a rubber tyre excavator on all public roads. The sides of the trench shall be supported to prevent damage to the road. Material arising from trench excavations will be stored at a safe location within the works area and used to backfill trenches, surplus excavated material shall be removed from site and disposed at licenced landfills.
- All excavated trenches in the public road network are to be reinstated at the end of the work shift, A temporary reinstatement shall be carried out in the event that the works are not completed at the end of the work shift.

14.7 CUMULATIVE EFFECTS

Cumulative effects from the Development and other developments in the area will only occur during the construction and decommissioning phase of the wind farm. Windfarms do not generate a significant amount of traffic during operation as outlined in **Section 14.5.11**. There are no other relevant consented developments located within 10km of the Development. Developments more than 10km from the Site are not considered likely to have a significant cumulative impact given distance from the Site.

14.8 RESIDUAL EFFECTS OF THE DEVELOPMENT

14.8.1 Construction Phase Residual Effects

During the construction of the wind farm infrastructure, grid connection works, turbine haul route enabling works and turbine delivery there is likely to be a slight negative short term residual effect for road users on the public road network due to increased volumes of HGV traffic, roadworks and temporary traffic management systems. The works may result in increased journey times for through traffic on the road network and minor delays at junctions and at works locations. However, with the mitigation outlined, these effects will be minimised and will not be significant.

14.8.2 Operational Phase Residual Effects

There will be no residual effects during the operational phase as only occasional light vehicles are envisaged to visit the Site during operation for routine checking and maintenance as outlined in **Section 14.5.11**. In the unlikely event that a turbine needs to be replaced then the effects can be expected to be similar to those predicted during construction.

14.8.3 Decommissioning Phase Residual effects

On the 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 assuming the turbine components are transported back to Galway Port. 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 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 approximately 50% of the excavated rock will likely have to be removed from Site, with the rest being left in-situ and covered in peat for reinstatement. The effects can be classed as being a moderate negative, direct short-term and high probability effect.

The grid connection will remain in place post construction and so there will be no additional effects associated with the decommissioning of the grid connection.

14.9 MONITORING

The public 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.

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 Civil Construction Haul Route. This will be done through regular tool-box talks for drivers.

14.10 SUMMARY OF SIGNIFICANT EFFECTS

This Section has assessed the significance of potential effects of the Development on traffic and transport. The Development has generally been assessed as having the potential to result in effects of a negative, slight/moderate, direct, short-term, high probability effect or lower during the construction and Decommissioning phase only. After mitigation, the residual effects have been assessed as imperceptible/slight, negative and short-term in nature. There will be a slight positive residual effect from road strengthening, widening and surfacing works along the Haul Route if Galway County Council require these improvement works to be left in-situ following construction.

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

14.11 STATEMENT OF SIGNIFICANCE

This assessment has identified no potentially significant effects, given the mitigation measures embedded in the design and recommended for the implementation of the Development.