Planning and Environmental Consultants

Environmental Impact Assessment Report

Killoshulan Wind Farm, Co. Killkenny

Chapter 15 – Material Assets (Including Traffic and Transport, Telecommunications and Aviation and Other Material Assets)



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GLOSSARY OF TERMS

Terms	Definition
Material Assets	*Built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure*
Traffic Volume	Traffic volumes are discussed in terms of vehicles and passenger car units, or PCUs, where each vehicle is expressed in terms of its demand on the network relative to the equivalent number of cars or light goods vehicles
Queue	This is the average queue forecast for each movement and is useful to ensure that queues will not interfere with adjacent junctions.
Degree of Saturation or Ratio of Flow to Capacity	This offers a measure of the amount of available capacity being utilised for each movement. Ideally each movement should operate at a level of no greater than 85% of capacity
Delay	Output in minutes, this gives an indication of the forecast average delay during the time period modelled for each movement.
Electromagnetic Interference	The disruption of an electronic device's operation caused by unwanted electromagnetic radiation or signals from an external source
Clamp and Dolly trailer	Specialized heavy-haul vehicles designed for transporting long wind turbine blades and tower sections
Superwing Carrier	Specialized, extendable trailer designed for transporting extra-long wind turbine rotor blades

GLOSSARY OF ACRONYMS

Acronym	Definition
% Sat	Degree of Saturation
ACP	An Coimisiún Pleanála
ARS	Aviation Review Statement
ATC	Automatic Traffic Count
BESS	Battery Energy Storage System
CEMP	Construction and Environmental Management Plan
ComReg	Commission for Communications Regulation
DoD	Department of Defence
DoT now DoTT&S	Department of Transport

DTT	Digital Terrestrial Television
EMF	Electric and Magnetic Field
ESBN	ESB Networks
HGV	Heavy Goods Vehicle
IAA	Irish Aviation Authority
IAC	Irish Air Corps
GWS	Group Water Scheme
KCC	Kilkenny County Council
LGV	Light Goods Vehicle
MMaRC	Motorway Maintenance and Renewal Contractors
MRF	Materials Recovery Facility
MV/LV	Medium Voltage/Low Voltage
NM	Nautical Mile
OHL	Overhead Lines
PCU	Passenger Car Units
PPP	Public-Private Partnerships
RDO	National Roads Design Office
RFC	Ratio of Flow to Capacity
ROL	Road Opening License
SNH	Scottish Natural Heritage
SoPA	Source Protection Area
TDR	Turbine Delivery Route
TFI	Transport for Ireland
TII	Transport Infrastructure Ireland
TMP	Traffic Management Plan
WMP	Waste Management Plan

15. MATERIAL ASSETS

Material Assets are defined in the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) 'as '*built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure'.* They may be either of human or natural origin. The cultural assets of Archaeology and Cultural Heritage are addressed in Chapter 14 of this Environmental Impact Assessment Report (EIAR). Economic assets of natural heritage include non-renewable resources such as minerals or soils, and renewable resources such as wind and water. These assets are addressed in Chapter 8: Land, Soils and Geology, Chapter 9: Hydrology and Hydrogeology, Chapter 11: Climate. Tourism and amenity resources, which are also considered material assets, are addressed in Chapter 5 on Population and Human Health. The Population and Human Health chapter also addresses existing land-uses (economic assets), including forestry and agriculture.

This chapter of the EIAR addresses the likely significant effects of the Proposed Project on transportation infrastructure (Section 15.1 Traffic and Transport), on Telecommunications and Aviation (Section 15.2) and Other Material Assets (Section 15.3), which are economic assets of human origin. Waste Management is also considered within the EPA 2022 Guidelines as part of Material Assets. EPA Waste Management pertaining to the construction, operation and decommissioning of the Proposed Project is summarised in Section 4.3.4.7 of Chapter 4 of the EIAR. Traffic volumes generated by the removal of waste from the Proposed Project to fully authorised waste facilities, is considered in Section 15.1 below.

This chapter of the EIAR has been prepared in accordance with the requirements of the EIA legislation and guidance outlined in Chapter 1: Introduction.

15.1 Traffic and Transport

15.1.1 Introduction

15.1.1.1 Background and Objectives

The purpose of this section is to assess the effects, on roads, traffic and transport, of the traffic movements that will be generated during the construction, operational and decommissioning phases of the Proposed Project.

A full description of the Proposed Project, including construction phasing details, is provided in Chapter 4 of this EIAR. For developments of this nature, the construction phase is the critical period with respect to the traffic effects experienced on the surrounding road network in terms of the additional traffic volumes that will be generated on the road network, and the geometric requirements of the abnormally sized loads associated with the wind turbine components. The requirements of the additional traffic and abnormal loads generated during the construction stage were assessed for the surrounding public road network that will provide access to the Site. Locations where remedial measures are required to accommodate the abnormal loads are identified.

The magnitude of the increase in traffic volumes experienced on the surrounding public road network is identified during the construction stages of the Proposed Project.

A **Traffic Management Plan (TMP)** has been developed and is included as Appendix 15-2 of this EIAR. The TMP seeks to minimise the traffic impact on the local public road network.

15.1.1.2 Statement of Authority

This section of the EIAR has been prepared by Alan Lipscombe of Alan Lipscombe Traffic and Transport Consultants Ltd. Alan is an expert in traffic and transport assessments. In 2007 Alan set up a traffic and transportation consultancy providing advice for a range of clients in the private and public sectors. Prior to this Alan was a founding member of Colin Buchanan's Galway office having moved there as the senior transportation engineer for the Galway Land Use and Transportation Study. Since the completion of that study in 1999, Alan has worked throughout the West of Ireland on a range of projects including: major development schemes, the Galway City Outer Bypass, Limerick Planning Land-Use and Transportation Study, Limerick Southern Ring Road Phase II, cost benefit analyses (COBA) and various studies for the NUI Galway. Before moving to Galway in 1997, Alan was involved in a wide variety of traffic and transport studies for CBP throughout the UK, Malta and Indonesia. He has particular expertise in the assessment of development related traffic, including many wind farm developments including the following; Borrisbeg, Sheskin South, Kilgarvan, Glenard, Ardderoo, Derryadd, Derrinlough, Knocknamork, Shehy More, Cloncreen, Derrykillew, Coole, Ballyhorgan, Cahermurphy, Lettergull, Barnadivane, Cleanrath and Knockalough.

Alan has a BEng (hons) Degree in Transportation Engineering (Napier University, Edinburgh, 1989), is a member of Engineers Ireland and of the Institute of Highways and Transportation and is a TII accredited Road Safety Audit Team Member.

Traffic counts were undertaken by Traffinomics Ltd, which is an Irish traffic survey company with a comprehensive knowledge of traffic data collection methods. The company, which is 10 years old, is headed by Simon Wheeler, who has been in the traffic survey data collection business for 35 years. Previously Simon worked with Count On Us Ltd, followed by Abacus Transportation Surveys Limited, Ireland's first lens based traffic data collection business. Clients of Traffinomics Ltd. include TII, Local Authorities and many leading retailers.

15.1.1.3 Guidance on Assessment of Effects

This section of the EIAR has been completed in accordance with the EIA guidance set out in Section 1.2 of Chapter 1: Introduction. The assessment uses standard terminology to describe the likely significant effects associated with the Proposed Project. Further information on the classification of effects used in this assessment is presented in Section 1.7.2 of this EIAR. With respect to the assessment of traffic effects the guidance set out in Traffic and Transport Assessment Guidelines, Transport Infrastructure Ireland, May 2014 was adopted.

15.1.1.4 Scoping and Consultation

Transport Infrastructure Ireland

Transport Infrastructure Ireland (TII) responded to Scoping on the 21st of May 2026, in which it provided a list of recommendations to be followed when preparing the EIAR. All relevant TII guidelines and policies have been taken into account in the preparation of this assessment, including the following;

- PE-PDV-02045, Traffic and Transport Assessment Guidelines, Transport Infrastructure Ireland, May 2014
- PE-PAG-02017, Project Appraisal Guidelines, Unit 5.3, Travel Demand Projections, Transport Infrastructure Ireland, October 2021
- DN-GEO-03060, Geometric Design of junctions, Transport Infrastructure Ireland, May 2023.
- GE-STY-01024, Road Safety Audit, Transport Infrastructure Ireland, May 2025.

Specific traffic related issues raised by TII together with Applicant responses are set out in Table 15-1a.

Table 15-1a Issues raised by TII in relation to the Proposed Project and Responses

ID	TII Scoping Response	Response
1	Consultations should be had with relevant Local Authority / National Roads Design Office, with regard to the locations of existing and future national roads schemes in the Area.	It is confirmed that consultation has been undertaken with Kilkenny County Council (KCC), as set out in Chapter 2 of this EIAR, with the main traffic points set out in Section 15.1.1.4 below.
2	TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, including the potential haul route.	The impacts of the Proposed Project on the delivery routes in terms of link flows are set out is Section 15.1.6.1 and 15.1.6.2 of the EIAR. An assessment of the impacts during the construction of the Proposed 110kV Underground Cabling is set out in Section 15.1.7 while a swept path analysis undertaken for the abnormally large loads on the Turbine Delivery Route (TDR) is set out in Section 15.1.9 of the EIAR. The assessment sets out the temporary local measures that will be required on the public road network during the construction of the Proposed Project.
3	The developer should assess visual impacts from existing national roads.	The visual impacts of the Proposed Project are set out in Chapter 13 of this EIAR.
4	The developer should have regard to any EIAR / EIS and all conditions and or modifications imposed by An Bord Pleanála (now An Coimisiún Pleanála) regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.	It is confirmed that all conditions attached to any grant of planning permission for the Proposed Project will be adhered to. The cumulative, traffic related impacts are assessed in Section 15.1.13.7.
5	The developer, in preparing an EIAR, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works).	While there are no junctions or alterations proposed on the National Road network all proposed junctions on the local road network are designed in accordance with TII guidelines.
6	The EIAR should have regard to TII's Environmental Assessment and Construction Guidelines, including the Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March, 2014).	It is confirmed that the potential effects of the Proposed Project with regards Noise is set out in Chapter 12 of this EIAR.
7	The EIAR should consider the "Environmental Noise) Regulations 2018' (SI no 549 of 2018) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider	It is confirmed that the potential effects of the Proposed Project with regards noise are set out in Chapter 12 of this EIAR.

ID	TII Scoping Response	Response
	the incorporation of noise barriers to reduce noise impacts (see "Good Practice for the Treatment of Noise during the Planning of National Road Schemes (NRA, 2014).	
8	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. In relation to 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 TII's TTA Guidelines which addresses requirements for sub-threshold TTA. Any improvements required to facilitate development should be identified. It will be the responsibility of the developer to pay for the costs of any improvements to national roads to facilitate the private development proposed, as TII will not be responsible for such costs.	It is confirmed that the assessment presented in Chapter 15 of the EIAR is undertaken in accordance with Traffic and Transport Assessment Guidelines, TII (2014).
9	The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.	An independent Stage 1 Road Safety Audit in accordance with Road Safety Audit Guidelines GE-STY-01027, TII, May 2025, has been undertaken and is summarised in Section 15.1.11. The Stage 1 Road Safety Audit is included as Appendix 15-4.
10	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.	All construction will be undertaken in accordance with current guidelines including the "*Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "*Guidance for the Control and Management of Traffic at Roadworks*" (DoTT&S).
11	TII recommends that the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Where abnormal 'weight' loads are a feature of the development, e.g., turbine or substation components, separate structure approvals/permits	The proposed haul routes are identified in this Chapter 15 of the EIAR. While it is proposed that the delivery stage of the Proposed Project will involve abnormally large loads, the axle loadings

ID	TII Scoping Response	Response
	and other licences may be required in connection with the proposed haul route. All national road structures on the haul route through all the relevant County Council administrative areas should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal 'weight' load proposed. Any requirements for 'Exceptional Abnormal Loads' should also be addressed in accordance with TII Publications. An abnormal load is defined as anything above 46 tonnes and below 180 tonnes, any load above 180 tonnes, represents an 'Exceptional Abnormal Load' ('EAL'). All structures to be crossed will need a full structural assessment by the developer in accordance with TII Publications 'The Assessment of Road Bridges and Structures' to verify that they can sustain any 'EAL' load safely and without any damage. Reference should be made to Department of Transport Circular RW18 of 2024 ('Exceptional Abnormal Loads') in that regard.	will not exceed accepted limits. A program of pre-delivery condition and structural assessment of the route is however proposed, as set out in the Traffic Management Measures, included set out in Section 15.1.13.5. It is confirmed that the Applicant and the haulage company will engage with TII and the relevant LA's with respect to the RW18 Abnormal Load Management system as required.
12	In addition, the haul route should be assessed to confirm capacity to accommodate abnormal 'length', "width" or height" loads and any temporary works required are identified.	It is confirmed that a geometric assessment was undertaken, as set out in Section 15.1.9 of this EIAR.
13	The national road network is managed by a combination of PPP Concessions, Motorway Maintenance and Renewal Contractors (MMaRC) and local road authorities, in association with TII. The applicant/developer should also consult with all PPP Companies, MMaRC Contractors and road authorities over which the haul route traverses, to ascertain any operational requirements, including delivery timetabling, etc, to ensure that the strategic function of the national road network is safeguarded.	The Applicant agrees with this condition.
14	Where temporary works within any MMaRC Boundary are required to facilitate the transport of turbine components to the Site, the applicant/developer shall contact thirdpartyworks@tii.ie in advance, as a works specific Deed of Indemnity will be needed by TII before the works can take place.	The Applicant agrees with this condition.
15	Additionally, any damage caused to the pavement on the existing national road arising from any temporary works due to the turning movement of abnormal loads (e.g. tearing of the	The Applicant agrees with this condition, as set out in Section 15.1.13.5 of this EIAR.

ID	TII Scoping Response	Response
	surface course, etc.) shall be rectified in accordance with TII Pavement Standards and details in this regard shall be agreed with the road authority prior to the commencement of any development on site.	
16	Any Road Safety Audit requirements should be addressed.	A Stage 1 Road Safety Audit has been undertaken as discussed above.
17	Where grid connection and cable routing form part of any development proposal, proposals should be developed to safeguard proposed road schemes as TII will not be responsible for costs associated with future relocation of cable routing where proposals are catered for in an area of a proposed national road scheme. In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc. Consultation should be undertaken with the Councils relevant Project Teams/National Roads Design Office with regard to locations of existing and future national road schemes in the area, as identified above. Where grid connection proposals impact the existing National Road Network, please note, 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 National Investment Framework for Transport in Ireland and also the existing Statutory Section 28 Spatial Planning and National Roads Guidelines for Planning Authorities. The provision of cabling along the national road network represents a number of significant implications for TII and road authorities in the management and maintenance of the strategic national road network and TII is of the opinion that grid connection cable routing should reflect the foregoing provisions of official policy. Section 12.4.1.1 'Accelerate Renewable Electricity Generation' of the Climate Action Plan 2024 (CAP24) outlines the objective of reaching 80% of electricity demand from renewable sources by 2030 through a range of measures, including; 'All relevant public bodies will carry out their functions in a manner which supports the achievement of the renewable	The Applicant agrees with this condition. Alternative grid connection routes have been considered in Chapter 3, Section 3.2.5.6 of this EIAR.

ID	TII Scoping Response	Response
	electricity targets, including, but not limited to, the use of road and rail infrastructure to provide a route for grid infrastructure where this is the optimal solution'. Consistent with CAP24, for all renewable energy developments requiring grid connection to the national grid, TII recommends that a full assessment of all route alternatives for grid connection takes place, including alternatives to public road, where appropriate. In TII's experience, grid connection accommodated on national roads has the potential, inter alia, to result in technical road safety issues such as differential settlement due to backfilling trenches and can impact on ability and cost of general maintenance, upgrades and safety works to existing national roads. The Scheme promoter should also refer to Department of Transport Circular RW 07 of 2025 and the 'Interim Guidance to Road Authorities (placement of Medium or High Voltage electricity assets)' and the update Circular RW 05 of 2026, both of which can be accessed at the following location. Having regard to the foregoing, in TII's opinion, grid connection routing, where it is proposed to utilise the Road Network must therefore demonstrate that the route proposed represents the 'optimal solution'. In addition, there is a finite road space available to accommodate all utilities in the Road Network and TII notes proposals outlined in the EIAR Scoping document indicating grid connection proposals to the Ballyragget 110kV Substation. TII is aware of a number of other grid connection proposals similarly proposing connection to the Ballyragget 110kV Substation, therefore, it is recommended that a co-ordinated approach to grid connection routing in this area is achieved to avoid risk to the effective delivery of renewable energy projects in the area. Other consents or licences may be required from the road authority for any trenching or cabling proposals crossing the national road. TII requests referral of all proposals agreed and licensed between the road authority and the applicant which affect the national road network.	

ID	TII Scoping Response	Response
	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. All crossings in the vicinity of the national road should be by HDD and avoid all national road structures, including bridges, culverts, etc.	

Department of Transport

A response to scoping was received from The Department of Transport on the 13th June, 2023. The response refers to issues relating to the Proposed 110kV Underground Cabling works within the public road network and are set out together with the Applicant's responses in Table 15-1b.

Table 15-1b Issues raised by DoT in relation to the Proposed Project and Responses

ID	Comment/Recommendation	Response
1	Their presence within the public road could significantly restrict the Road Authority in carrying out its function to construct and maintain the public road and will likely add to the costs of those works.	The Applicant and their Contractor will work with the Road Authority to minimise impacts on construction and maintenance of the road network through the scheduling of construction of sections of the route. This will require a Road Opening Licence which will be applied for in advance.
2	Their installation within the lands associated with the public road may affect the stability of the road. In particular where the road is a "legacy road" (where there is no designed road structure, and the subgrade may be poor or poorly drained) the design needs to take account of all the variable conditions and not be based on a sample of the general conditions.	As set out in Section 15.1.13.5 all road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. All works will be done in accordance with the Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads, DTToS, September 2015.
3	The possible effect on the remaining available road space (noting that there may be need to accommodate other utilities within the road cross-section in the future).	The Proposed 110kV Underground Cabling trench will measure approximately 600mm in width and will be located predominantly in the verge of the road corridor. Therefore, there will be sufficient space for other utilities within the public road corridor.

ID	Comment/Recommendation	Response
4	The necessity to have the power in the cables switched off where the Road Authority considers this necessary in order to carry out its function to construct and maintain the public road.	The Applicant notes that comment.
5	Examination of options other than the routing of cables along the public road.	Refer to Chapter 3: Site Selection and Reasonable Alternatives.
6	Examination of options for connection to the national grid network at a point closer to the wind farm in order to reduce the adverse impact on public roads.	Refer to Chapter 3: Site Selection and Reasonable Alternatives.
7	Details of where within the road cross section cables are to be placed so as to minimise the effect on the Roads Authority in its role of construction and maintenance.	The location of the Proposed 110kV Underground Cabling within the public road corridor is shown on the detailed site layout drawings in Appendix 4-1 of this EIAR.
8	Examination of details of any chambers proposed within the public road cross section so as to minimise the effect on the Roads Authority in its role of construction and maintenance.	The proposed locations of joint bays, communication chambers and earth sheath link chambers are shown in the detailed site layout drawings in Appendix 4-1 of this EIAR.
9	Examine the elimination of joint bays and use of temporary removable jointing bays to protect the integrity of the road structure for the safety of those driving on the public road by eliminating hard spots and also preserve the road width for other utilities.	Joint Bays are subject to standard ESBN specification and cannot be eliminated from the Proposed 110kV Underground Cabling design.
10	Rationalisation of the number of cables involved (including existing electric or possible future cables) and their diversion into one trench, in order to minimise the impacts on the road network and the environment along the road boundary (hedgerows).	Only one cabling trench is proposed as part of the Proposed Project.

It is confirmed that the above points raised by the Department of Transport have been considered in the route selection and design of the Proposed 110kV Underground Cabling as set out in Chapter 3 of this EIAR.

The Department of Transport considers the following should be considered when applying conditions to any approval:

- A condition requiring the specific approval of the local authority to the detail of the final route of cables through the public road space. If during construction there is a need to deviate from the detailed design then the approval of the local authority would again be sought. This would assist in minimising the impact on the public road.
- A condition requiring the developer to comply with all appropriate standards and, inter alia the Guidelines for Managing Openings in Public Roads, 2017 in order to ensure orderly development.

- A condition requiring that the location of the cables would be recorded as exactly as possible (maybe using BIM type technology) so as to facilitate the further use of road space for utilities and the maintenance/construction of the public road by the Roads authority. This record should be lodged with the local authority and with the ESB Networks for retention on their records.
- A condition to require the elimination of jointing bays and the use of temporary removable jointing bays instead, to protect the integrity of the road structure, thereby improving safety for those driving on the public road by eliminating hard spots and preserving the road width for other utilities.
- A condition requiring the developer to route cables away from bridge structures and specifically preventing the developer from attaching cables to road bridges. This would allow for the future maintenance of bridges without interruption of the electricity supply along the cables.
- A condition requiring the developer to notify the Roads Authority of the owner of the cables (Owner) and the controller (Power Controller) of the power transmitted along the cables. In addition, the condition should require Owner and Power Controller to notify the Roads Authority of any change in ownership of the cables or change of Power Controller transmitting power along the cables. In all instances the Owner and Power Controller should be required to maintain an agreed contacts list with the Roads Authority.

Kilkenny County Council

A response to scoping was received from the Planning Department of KCC on the 19th June, 2026. The issues raised in relation to the road network together with the Applicant's responses are set out in Table 15-1d.

Table 15-1d Issues raised by Kilkenny County Council in relation to the Proposed Project and Responses

ID	Comment/Recommendation	Response
1	The EIAR shall include an assessment of the likely effects on transport infrastructure and access in County Laois resulting from the construction, operation and decommissioning of the proposed development.	A detailed assessment of the likely effects of the Proposed Project on the transport infrastructure is presented throughout Chapter 15. It is noted that the network impacted is in County Kilkenny.
2	The applicant shall provide a map showing a detailed proposal of the haulage route for the construction phase i.e. construction of materials, transporting of materials transport of machinery as part of the site preparation works on how they propose to address heavy vehicles meeting on narrow roadways i.e. passing bays etc.	The TDR and the proposed construction routes are shown in Figure 15-1. It is noted that a detailed assessment of the TDR is provided in Section 15.1.9. It is confirmed that all roads that are on the general construction haul routes are suitable for 2-way traffic including for the operation of Heavy Goods Vehicles (HGVs).
3	The applicant shall survey roadways in the vicinity of the site, including all bridges and culverts. This survey shall identify the conditions	As set out in Section 15.1.13.5 a pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to

ID	Comment/Recommendation	Response
	of the public roadway and all structures (bridges, culverts etc).	record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.
4	The applicant shall address and submit details as to how they will maintain the existing road network during the construction phase of the development.	As set out in Section 15.1.13.5 all road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. All works will be done in accordance with the Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads, DTToS, September 2015.
5	The applicant shall provide a construction stage Traffic Management Plan.	Traffic management measure are set out in Section 15.1.13.5 and also in the Traffic Management Plan included as Appendix 15-2.

Department of Defence

A response to scoping was received from The Department of Defence on the 15th June, 2026.

In relation to traffic and transport the response states that the N8 route is identified as an Irish Air Corps (IAC) low level route. The location of structures higher than 45m above ground within 3NM of the route centreline of low-level routes should be considered. An Aviation Review Statement has been included as Appendix 15-6 in the EIAR and aviation is discussed below in Section 15.2.

15.1.1.5 Pre-planning Meetings

Kilkenny County Council

Two on-line pre-planning meetings, as discussed in Section 2.7.3.1 in Chapter 2 of the EIAR, were held with KCC with traffic and transport relate issues raised as follows;

Meeting 7th September 2022 (1st meeting)

- KCC noted works approved by An Coimisiún Pleanála in relation to the N77 National Road and recommended liaising with TII and other project developers in relation to the grid connection over the River Nore.

Meeting 17th June2026 (2nd meeting)

- Concerns were raised by KCC in relation to the impact on the Public Road due to the TDR and Proposed 110kV Underground Cabling. It was confirmed that a significant part of the Proposed 110kV Underground Cabling is along the public road. It is confirmed that all impacts are included in the red line boundary and have been fully assessed.

An Coimisiún Pleanála

Three on-line pre-planning meetings were held with An Coimisiún Pleanála (ACP) with traffic and transport relate issues raised as follows;

Pre-App Meeting 18th October 2022 (1st meeting)

There were no specific traffic or transport related issues raised at this meeting.

Pre-App Meeting 22nd June 2026 (2nd meeting)
The Commission's representatives queried what was raised in consultation with TII with the prospective applicant outlining that the discussion included cumulative impacts along the national road network and local/regional/national roads during construction.

Pre-App Meeting 15th September 2026 (3rd meeting)
There were no traffic or transport related issues raised at this meeting.

15.1.1.6 Methodology and Section Structure

The assessment adopts the guidance set out by Transport Infrastructure Ireland, or TII, in the document number PE-PDV-02045 *'Traffic and Transport Assessment Guidelines, May 2014'*.

The geometric requirements of the transporter vehicles were assessed using AutoCAD and Autotrack.

The Traffic and Transport Section of the EIAR is set out as follows:

- A review of the existing and future transport infrastructure in the vicinity of the Proposed Project, including the proposed haul route, an assessment of base year 2026 traffic flows and traffic forecasts during an adopted construction year of 2032 (Section 15.1.2 Receiving Environment and 15.1.3 – Existing Traffic Volumes),
- A description of the nature of the Proposed Project and the traffic volumes that it will generate during the different construction stages and when it is operational (Section 15.1.4 – Proposed Project Traffic Generation),
- A description of the abnormally sized loads and vehicles that will require access to the site (Section 15.1.5 Construction Traffic Vehicles),
- A review of the effects of Proposed Project generated traffic on links and junctions during construction and when the facility is operational (Section 15.1.6 –Traffic Effects During Construction and Operation),
- A review of the effects of the Proposed Project on the public road network along the underground electrical cabling route (Section 15.1.7 Effect of the Proposed Grid Connection on road network),
- A description of traffic management measures of large deliveries (Section 15.1.8 Traffic Management of Large Deliveries),
- A geometric assessment of the route and its capacity to accommodate the abnormal loads associated with the Proposed Project (Section 15.1.9 – Abnormal Load Route Assessment),
- An assessment of the provision for sustainable modes of travel (in this case primarily with respect to the transport of construction staff) (Section 15.1.12 – Provision for Sustainable Modes of Travel),
- A description of potential significant effects of the Proposed Project on Roads and Traffic (Section 15.1.13 – Likely and Significant Effect and Associated Mitigation Measures).

15.1.2 Receiving Environment

15.1.2.1 Site Location

The Proposed Wind Farm turbines are located approximately 4km west of the village of Freshford and 5.5km east of the village of Urlingford, Co. Kilkenny. During the construction phase, the Proposed Wind Farm site will be accessed via an existing agricultural access point located off the R693 Regionalroad. The R693 runs along the southern boundary of the Proposed Wind Farm site in the townlands of Barna, Co. Kilkenny. This entrance will be upgraded and will be used as the main site entrance for standard HGVs during the construction phase of the Proposed Wind Farm and for the purposes of delivering large turbine components and other abnormal loads to the Proposed Wind Farm site. It is also proposed to access the Proposed on-site 110kV Substation, during both the construction and operational phases of the Proposed Wind Farm, via this entrance. The Proposed Wind Farm is served by a number of existing public, forestry and agricultural roads and tracks. A site location context map and the EIAR Site Boundary is shown as Figure 1-1.

The Proposed 110kV Underground Cabling will originate at the Proposed 110kV Substation, in the townland of Frankford or Ballykieran, Co. Kilkenny, and run north and northeast for 1.4km within farm tracks and agricultural lands, towards the L-1805 local road. The Proposed 110kV Underground Cabling will then continue east along the L-1805 for approximately 440m before following the L-1804 southwest for 240m. The Proposed 110kV Underground Cabling then follows the L-1806 east for 5.5km before turning north and travelling for 500m on the L-1807. The underground cabling route will turn east onto the L-5833 local road for 2.9km. From here it will join the N77 National Road in the townland of Ballyconra and travel south for 770m within the road corridor margins where possible, As part of the design process, every effort has been made to locate the Proposed 110kV Underground Cabling trench off the existing N77 carriageway and within the hard shoulder or soft margin/grass verges, avoiding, insofar as possible, other existing underground services/utilities. As such 730m or 94.8% of the Proposed 110kV Underground Cabling along the N77 is located withing the grass verge either side of the carriageway. The Proposed Project is shown in the context of the national and local highway networks in Figures 15-1 in Appendix 15-3.

15.1.2.2 Proposed Abnormal Load Delivery Route

The Proposed TDR for transporting the abnormally sized loads to the Proposed Wind Farm site is shown in Figure 15-1 in Appendix 15-3.

It is envisaged that large wind turbine components will be delivered to the Proposed Wind Farm site, from the Port of Cork (Ringaskiddy) (other ports such as Galway Port, Shannon Foynes or Dublin Port could also be used), via the N28 and N40 national primary road, the M8 Motorway, R639 regional road followed by the L1857 local road and the R693 from which the abnormally sized loads will access the Proposed Wind Farm site via the site access junction.

From the Port of Cork (Ringaskiddy), the turbine component delivery vehicles will travel north via the N28 and N40 National Primary Roads before merging onto the M8 Motorway. The TDR travels north on the M8 before exiting onto the R639 at M8 Junction 7 located north east of the Town of Cashel.

From this point the TDR is as follows:

- The route travels northeast on the R639 for approximately 28.7km travelling through the village of Urlingford, before turning right onto the L1857 and travelling east for a further 0.7km.
- The route then joins the R693 traveling east through a series of bends for approximately 8.4kms.
- The abnormally sized loads gain access to the Proposed Wind Farm site via the site access junction located off the northern side of the R693.

From the exit off the M8 at Junction 7 to the site access junction on the R693 the section of the TDR on the regional and local road network is approximately 37.8 km.

A detailed swept path analysis was undertaken for all potential pinch points on the TDR from the turnoff from the M8 at Junction 7 to the proposed access junction off the R693. The locations included are shows in Figure 15-2 in Appendix 15-3 of the EIAR, with the assessment discussed in Section 15.1.9.

15.1.2.3 Proposed Construction Traffic Haul Route

It is noted that the majority of the stone required during the construction of the Proposed Project will be won from an onsite borrow pit, as detailed in Chapter 4, Section 4.4.2, of the EIAR.

All concrete required for each turbine foundation will be delivered to the site in one day per foundation, for a total of 10 days. The concrete and crushed stone required for the turbine foundations and general construction will be sourced from local, appropriately authorised quarries. The most likely quarries for the supply of concrete and stone are located within a 20km radius of the site at the locations shown in Figure 4-30, with the delivery routes shown in Figure 15-1 in Appendix 15-3.

15.1.2.4 Proposed Wind Farm Site Access Junctions

It is proposed to carry out temporary widening works at an existing access junction located in the townland of Barna, Co. Kilkenny in order to provide access to the site during both the construction and operational phases of the Proposed Project. The location of the junction of the northern side of the R693 is shown as Location 4 in Figure 15-2 in Appendix 15-3 of the EIAR.

It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic, including staff car trips, during the construction phase, and for maintenance trips once the Proposed Project is operational. The design of the junction is discussed in Section 15.1.10.

15.1.3 Existing Traffic Volumes

Traffic volumes are discussed in terms of either vehicle numbers, or passenger car equivalent units (PCUs), where each vehicle is expressed in terms of its demand on the network relative to the equivalent number of cars. For example, an articulated HGV was given an average factor of 2.4 passenger car units (as per TII Project Appraisal Guidelines for National Roads Unit 5.2), while one of the extended HGVs transporting the large turbine components was assigned a value of 10.

15.1.3.1 Background Traffic Flows

The 6 no. locations included in the link flow assessment and for which base year 2026 traffic count data was collated are shown in Figure 15-3 in Appendix 15-3 of the EIAR and listed in Table 15-2.

All day traffic flows for the links included in the assessment, as set out in Table 15-3, were obtained from all-day traffic counts undertaken at the 3 junctions also shown in Figure 15-3 in Appendix 15-3. These traffic counts were undertaken by Traffinomics Ltd on Tuesday 7th July, 2026. All base year Traffic count data is included as Appendix 15-1 of the EIAR.

An assessment of the seasonal variation of traffic volumes in the proximity of the Proposed Project site was undertaken based on the Automatic Traffic Count (ATC) site maintained by TII on the M8 between Junctions 3 and 4, located between Rathdowney and Urlingford. The data indicates that traffic volumes are highest during the survey month of July, with no seasonal adjustment of the traffic count data required. This data is also included in Appendix 15-1 of EIAR.

The all-day traffic flows observed for the base year 2026 are shown in terms of vehicle numbers in Table 15-3. It is noted that Links 1 to 3 are on the TDR, while Links 4 to 6 are on alternative routes that may be used for general construction traffic.

The existing traffic volumes on the proposed TDR range from 3,309 vehicles per day observed on the R639 (Link 1), to 3,701 vehicles on the R693 just east of Urlingford (Link 2), increasing to 5,274 vehicles on the same road just to the west of the proposed site access junction (Link 3).

On the additional links that may be used by general construction traffic, daily traffic flows range from 1,084 vehicles on the L4115 Longfordpass North Road (Link 4) for construction vehicles approaching the Proposed Wind Farm site from the west to 907 vehicles and 6,567 vehicles on the L1818 (Link 5) and R693 (Link 6) respectively, for construction traffic approaching from the east.

Table 15-2 Count locations and data source

Link	Data source	Year
1 – R639 – South of L4115 Longfordpass North	Classified turning count - Traffinomics	2026
2 – R693 – East of Urlingford	Classified turning count - Traffinomics	2026
3 – R693 – West of site access	Classified turning count - Traffinomics	2026
4 - L4115 Longfordpass North	Classified turning count - Traffinomics	2026
5 – L1818	Classified turning count - Traffinomics	2026
6 – R693 – East of site access	Classified turning count - Traffinomics	2026

Table 15-3 All day traffic flows by location, years 2026 (2-way vehicles)

Link	2026
1 – R639 – South of L4115 Longfordpass North	3,309
2 – R693 – East of Urlingford	3,701
3 – R693 – West of site access	5,274
4 - L4115 Longfordpass North	1,084
5 – L1818	907
6 – R693 – East of site access	6,567

15.1.3.2 Background Traffic Volumes for the Assumed Construction Year 2032

This section describes the process adopted to produce background traffic forecasts for an assumed latest construction year of 2032.

Guidelines for forecasting annual growth in traffic volumes were produced by TII in October 2021, as set out by county in the Project Appraisal Guidelines (Unit 5.3 – Travel Demand Projections). The annual growth rates for light vehicles for County Kilkenny and factors for the years relevant to this study are shown in Tables 15-4 and 15-5. Based on TII growth rates it is estimated that traffic volumes will increase by 5.8% (shown as 1.058 in Table 15-5) during the period from 2026 to 2032, that is between the year when the base traffic data was collected, and the year 2032, the latest year when the construction of the Proposed Project is forecast to take place. Observed year 2026 and forecast 2032 all day traffic flows on the study area network are compared in Table 15-6.

It should be noted that while the latest assumed construction year of 2032 may vary slightly, this will not alter the forecast outcomes and effects presented in this section of the EIAR. This is due to the annual growth rate for background traffic being just 0.37% (as shown in Table 15-4 as 1.0037) and the traffic volumes generated by the Proposed Project will remain unchanged regardless of construction year, as presented subsequently in Section 15.1.4.

TII traffic count data recorded at the TII ATC sites, together with the classified traffic counts undertaken for the purpose of this assessment, were also used to determine the existing percentage of HGVs on the proposed delivery routes. The observed percentage of HGVs are shown in Table 15-7 and range from 14.9% observed on the L4115 Longfordpass North Road (Link 4) down to 6.0% on the R693 (Link 6) to the east of the site access junction.

Table 15-4 TII traffic growth forecasts, growth per annum and cumulative, County Kilkenny

Year	Lights – Annual Factor			Lights – Cumulative Factor		
	Low	Medium	High	Low	Medium	High
2026	1.0108	1.0124	1.0157	1.000	1.000	1.000
2027	1.0108	1.0124	1.0157	1.011	1.012	1.016
2028	1.0108	1.0124	1.0157	1.022	1.025	1.032
2029	1.0108	1.0124	1.0157	1.033	1.038	1.048
2030	1.0108	1.0124	1.0157	1.044	1.051	1.064
2031	1.0016	1.0037	1.0075	1.046	1.054	1.072
2032	1.0016	1.0037	1.0075	1.047	1.058	1.080
2033	1.0016	1.0037	1.0075	1.049	1.062	1.088
2034	1.0016	1.0037	1.0075	1.051	1.066	1.097

Table 15-5 TII traffic growth rates by growth scenario

Period	New Factors		
	Low	Medium	High
2026 – 2032	1.047	1.058	1.080

Table 15-6 All day traffic flows by location and year (2-way vehicles)

Link	Observed 2026	Forecast 2032
1 – R639 – South of L4115 Longfordpass North	3,309	3,501
2 – R693 – East of Urlingford	3,701	3,916
3 – R693 – West of site access	5,274	5,580
4 - L4115 Longfordpass North	1,084	1,147
5 – L1818	907	960
6 – R693 – East of site access	6,567	6,948

Table 15-7 All day flows, percentage HGVs and flows by vehicle type, year 2032

Link	All day flow (vehs)	% HGV's	Vehicles		PCUs		
			HGVs	Cars / LGVs	HGVs	Cars / LGVs	Total
1 – R639 – South of L4115 Longfordpass North	3,501	11.2%	392	3,109	941	3,109	4,050
2 – R693 – East of Urlingford	3,916	7.6%	298	3,618	714	3,618	4,332
3 – R693 – West of site access	5,580	7.7%	430	5,150	1,031	5,150	6,181
4 - L4115 Longfordpass North	1,147	14.9%	171	976	410	976	1,386
5 – L1818	960	10.5%	101	859	242	859	1,101
6 – R693 – East of site access	6,948	6.0%	417	6,531	1,000	6,531	7,532

15.1.4 Proposed Project Traffic Generation

15.1.4.1 Development Trip Generation – During Construction

For the purpose of assessing the effects of traffic generated during the construction of the Proposed Project, the construction phase is considered in two stages.

- Stage 1 – Proposed Project site preparation, groundworks, tree felling, construction of temporary construction compounds, turbine foundations, met mast foundation, Proposed 110kV Substation, Proposed Battery Energy Storage System (BESS), internal electrical cabling, and Proposed 110kV Underground Cabling laying,
- Stage 2 – Wind turbine component delivery and construction.

For the purpose of the traffic impact assessment, projections based on trip generation data collected from other wind farm construction projects regarding the numbers of trips per quantum of material, the number of turbine component parts based on 10 no. turbines, the length of the construction phase and work periods etc. were made to inform the assessment. These projections allow for assessment using the precautionary principle but should not be inferred as prescriptive limitations to the construction phase.

The construction phase of the Proposed Project is expected to last approximately 18-24 months. The shortest potential construction phase duration of 18 months was adopted for the purpose of this assessment in order to test a precautionary scenario. The shortest construction period will give rise to higher volumes of construction traffic using the public road network at any one time. For assessment purposes a standard 255 working days per was adopted, with a total of 383 working days for the 18-month construction period.

15.1.4.1.1 *Stage 1 – Site Preparation and Groundworks including Cable Laying*

For assessment purposes, this stage of the Proposed Project construction, which includes the Site preparation and ground works, turbine foundation construction, Proposed 110kV Substation construction, BESS construction, internal cable laying elements and the Proposed 110kV Underground Cabling, is assumed to last 16 months (346 days). The total numbers of deliveries made to the Site during that period are shown in Table 15-8. It is estimated that a total of 9,275 deliveries by truck, cement mixer or standard articulated HGVs will be made to the Site during this period.

During this construction phase there will be two distinct types of days with respect to trip generation. A total of 10 days will be used to pour the 10 concrete wind turbine foundations. Foundations will likely be poured one per day, with circa 107 concrete loads required for each turbine delivered to the Proposed Project site over a 10-hour period, resulting in 11 HGV trips to and from the Proposed Project site per hour.

On the remaining 336 working days for this stage other general materials will be delivered to the Proposed Project site.

The estimated additional daily traffic generated on the road network during these days are shown in Tables 15-9 and 15-10.

The figures show that on the 10 days that concrete will be delivered to the Site, an additional 514 two-way PCUs will be added to the network (comprising 107 two-way HGV trips with 2.4 PCUs per movement), as shown in Table 15-9. Similarly, on the 336 days when other materials will be delivered to the Proposed Project site, traffic volumes on the local network will increase by an average of 117 PCUs, as set out in Table 15-10.

Table 15-8 Trip generation - Stage 1 - Site preparation and groundworks – total loads

Material	Total no. Truck Loads	Truck type
Concrete	1,070	Concrete mixers
Delivery of plant	42	Large artic
Fencing & gates	4	Large artic
Compound setup	44	Large artic
Steel	27	Large artic
Rock and stone (Proposed Wind Farm & Proposed 110kV Underground Cabling)	4,589	Truck
Ducting and cabling (internal)	293	Large artic
Proposed 110kV Underground Cabling laying	1,824	Large artic
Tree felling	260	Large artic
Crane to lift steel	2	Large artic
Proposed 110kV Substation	114	Large artic
Proposed BESS	500	Large artic
Cranes for turbines	24	Large artic
Refuelling for plant	207	Large artic
Site maintenance	165	Large artic
Miscellaneous	110	Large artic
Total	9,275	

Table 15-9 Trip generation - Stage 1 – Concrete foundation pouring – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Concrete	1,070	Trucks	2.4	2,568	256.8	513.6
* Estimation based on 10 concrete pouring days						

Table 15-10 Trip generation - Stage 1 – Site preparation and groundworks – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Delivery of plant	42	Large artic	2.4	100.8	0.30	0.60
Fencing & gates	4	Large artic	2.4	9.6	0.03	0.06
Compound setup	44	Large artic	2.4	105.6	0.31	0.63
Steel	27	Large artic	2.4	64.8	0.19	0.39
Rock and stone (Proposed Wind Farm and Proposed 110kV Underground Cabling)	4,589	Truck	2.4	11,013.6	32.78	65.56
Ducting and cabling (internal)	293	Large artic	2.4	703.2	2.09	4.19
Proposed 110kV Underground Cabling laying	1,824	Large artic	2.4	4,377.6	13.03	26.06
Tree felling	260	Truck	2.4	624.0	1.86	3.71
Crane to lift steel	2	Large artic	2.4	4.8	0.01	0.03
Proposed 110kV Substation	114	Large artic	2.4	273.6	0.81	1.63
Proposed BESS	500	Large artic	2.4	1,200.0	3.57	7.14
Cranes for turbines	24	Large artic	2.4	57.6	0.17	0.34
Refuelling for plant	207	Large artic	2.4	496.8	1.48	2.96
Site maintenance	165	Large artic	2.4	396.0	1.18	2.36

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Miscellaneous	110	Large artic	2.4	264.0	0.79	1.57
Total	8,205			19,692.0	58.6	117.2
* Estimation based on groundwork period of 336 working days						

15.1.4.1.2 *Stage 2 – Turbine Construction*

During the turbine construction stage, including delivery and assembly, there will be deliveries to the Proposed Project site made by abnormally sized vehicles, referred to in this section as *extended artics*, transporting the component parts of the turbines (nacelles, blades and towers). There will also be deliveries made by standard large HGVs, transporting cables, tools and smaller component parts. The types of load and associated numbers of trips made to the Site during the turbine construction period are shown in Table 15-11, which summarises that a total of 80 trips will be made to and from the Site by extended artics, with a further 40 trips made by standard large articulated HGVs.

Table 15-11 Trip generation - Stage 2 – Wind turbine plant – total loads

Material	Units	Quantity per Unit	Total Quantity	Quantity per Truck	Total Truck Loads	Truck type
Nacelle	10	1	10	1	10	Extended Artic
Blades	10	3	30	1	30	Extended Artic
Towers	10	4	40	1	40	Extended Artic
Sub total					**80**	
Transformer	10	1	10	1	10	Large Artic
Drive train and blade hub	10	1	10	1	10	Large Artic
Base and other deliveries	10	2	20	1	20	Large Artic
Sub total					***40***	
Total					**120**	

For the purposes of this assessment, it is assumed that the turbine delivery element will progress at the rate of 3 extended artic trips made by convoy to the Proposed Wind Farm site on 5 days per week, which is a common delivery frequency for large turbine components from the port of entry to the Proposed Wind Farm site. This will result in this stage taking 27 days spread over a 6-week period with all deliveries made during the night.

On a further two days per week, lasting for 5 weeks, the remaining equipment required during this phase will be delivered to the Proposed Wind Farm site.

The additional traffic movements for these two types of days are summarised in Tables 15-12 and 15-13. In Table 15-12 a PCU equivalent value of 10 was allocated to each extended artic movement, resulting in an additional 60 PCUs on the study network on these 27 days, while an additional 19.2 PCUs are forecast to be on the network on 10 days, as shown in Table 15-13, during the turbine construction phase.

Table 15-12 Trip generation - Stage 2 – Wind turbine plant, extended artics – total movements and volumes per delivery day

Material	Units	Truck Type	PCU Value	Total PCUs	2-way PCUs/ day
Nacelle	1	Extended Artic	10	10.0	20.0
Blades	3	Extended Artic	10	30.0	60.0
Towers	4	Extended Artic	10	40.0	80.0
Total per turbine	8			80.0	160.0
Total per delivery day	3			30.0	60.0
*Estimation based on 3 abnormal sized loads being delivered per day on 5 days per week (total 80 loads will take 27 nights spread over 6 weeks)					

Table 15-13 Trip generation - Stage 2 - Wind turbine plant, standard artic HGVs - total movements and volumes per delivery day

Material	Quantity per Unit	PCU Value	2-way PCUs / day
Transformer	1	2.4	4.8
Drive train and blade hub	1	2.4	4.8
Base & other deliveries	2	2.4	9.6
Total	4		19.2
*Estimation based on equipment for 2 turbines being moved per week spread over 5 weeks			

Construction Employee Traffic

It is estimated that up to 100-120 staff members will be employed on the Proposed Wind Farm during the site preparation and groundworks stage of construction, with a maximum of 70 staff being on the Site at any one time. Construction employee traffic for the Proposed 110kV Underground Cabling is dealt with in Section 15.1.7 below. If a precautionary scenario is assumed that all staff will travel to / from the site by car, at an average of 2 persons per car, then a total of 70 PCU movements (each trip is

two way) will be added to the network during the groundworks stage (Stage 1) of the Proposed Wind Farm, reducing to 45 PCU trips during the turbine construction stage (Stage 2).

Development Trip Generation – During Operation

The Proposed Wind Farm will be unmanned once operational and will be remotely monitored. The only traffic associated with the operational phase of the Proposed Project will be from maintenance personnel.

It is estimated that the traffic volumes that will be generated by the Wind Farm once it is operational will be minimal, with an estimated 3 staff employed on the Proposed Wind Farm site. The impact on the network of these trips during the operational stage is discussed in Section 15.1.6.

Development Trip Generation – During Decommissioning

Traffic generation during decommissioning will be similar but significantly less than the trip generation estimates presented for the construction phase presented above. This is because much of the materials brought into Site during construction will be left in-situ during the decommissioning stage. A Decommissioning Plan is included as Appendix 4-6 of this EIAR.

15.1.5 Construction Traffic Vehicles

The delivery of turbine components including blades, tower sections and nacelles is a specialist operation owing to the oversized loads involved. The proposed turbine dimensions are detailed in Section 4.3.1 in Chapter 4 of this EIAR. With respect to the geometric requirements of the road network the traffic assessment is concerned with the longest blade being proposed, which is 81.5m.

The turbine blades are the longest turbine component and a blade length of up to 81.5 metres has therefore been assessed for the turbine delivery assessment for the Proposed Project.

The critical vehicles in terms of size and turning geometry requirements and used in the detailed route assessment discussed in Section 15.1.9, is the blade transporter vehicle, with the geometry of the vehicle shown in Figure 15-4 in Appendix 15-3.

The key dimensions for the blade delivery vehicle are as follows:

- Total length: 87.5 m
- Length of blade: 81.5m
- Inner radius: 28.0 m

The vehicles used to transport the tower sections and the nacelles will be significantly shorter in length.

All other vehicles requiring access to the site will be standard HGVs, trucks, cement mixers or Light Goods Vehicles (LGVs) and will be significantly smaller than the design test vehicles. Standard HGVs and LGVs will navigate the National and Regional Road networks and access the site via the Proposed Access Junction off the R693.

15.1.6 Traffic Effects During Construction, Operation and Decommissioning

As detailed below in Section 15.1.8, transportation of large turbine components will be carried out at night when traffic is at its lightest and in consultation with the relevant Roads Authorities and An Garda Síochána with deliveries accompanied by Garda escort.

It should be noted that for the purpose of the assessment all vehicles travelling to and from the Proposed Wind Farm site have been assumed to do so from the same direction. The assessment is therefore based on a precautionary scenario, where all traffic generated by the Proposed Project travels to/from the Site via the same route, with the maximum increase in traffic volumes assessed on each link shown in Figure 15-3 in Appendix 15-3.

The potential effects of the Proposed 110kV Underground Cabling will have on the public road network is considered in Section 15.1.7.

15.1.6.1 Effect on Link Flows – During Construction

Background traffic volumes and Proposed Project generated traffic volumes are shown for the typical construction stage scenarios discussed in Section 15.1.4 in Tables 15-14 to 15-17, with the forecast effects, in terms of the percentage increase in traffic flows in PCUs and the number of days affected, set out in Tables 15-18 to 15-21. As stated previously in this section the actual figures presented in the tables will be subject to change, however, they are considered a robust estimation of likely traffic volumes and effects.

In terms of daily traffic flows the potential effects may be summarised as follows:

During Stage 1 – Wind Turbine Foundation Concrete Pouring

For 10 days when the concrete foundations are poured, an additional 584 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +14.4% on the R639 (Link 1), to a range of +13.5% to +9.4% on the R693 (Links 2 and 3) as the route travels east towards the site access junction.

For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +42.1%.

For trips approaching the site from the east it is forecast that traffic volumes will increase by +7.8% when travelling on the R693 (Link 6), or +53.1% when travelling on the L1818 (Link 5).

During Stage 1 – Site Preparation and Groundworks

On the remaining 336 days when the Proposed Wind Farm site preparation and groundworks and construction of the Proposed 110kV Underground Cabling continues, an additional 191 PCUS will travel to and from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +4.6% on the R639 (Link 1), to a range of +4.3% to +3.0% on the R693 (Links 2 and 3) as the route travels east towards the site access junction.

For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +13.5%.

For trips approaching the Proposed Wind Farm site from the east it is forecast that traffic volumes will increase by +2.5% when travelling on the R693 (Link 6), or +17.0% when travelling on the L1818 (Link 5).

During Stage 2 – Wind Turbine Construction Stage – Delivery of large equipment using extended articulated vehicles

On the 27 days / nights that the abnormal loads carrying the large turbine components travel to the Proposed Wind Farm site, an additional 105 PCUs will travel to/from the Proposed Wind Farm site on the TDR. On these days it is forecast that the increase in traffic volumes on these days will range from

between +2.6% on the R639 (Link 1), to a range of +2.4% to +1.7% on the R693 (Links 2 and 3) as the route travels east towards the site access junction.

During Stage 2 – Wind Turbine Construction Stage – Other deliveries using conventional articulated HGVs

For 10 days an additional 64 PCUs will travel to/from the Proposed Wind Farm on the TDR. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.6% on the R639 (Link 1), to a range of +1.5% to +1.0% on the R693 (Links 2 and 3) as the route travels east towards the site access junction.

For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +4.6%.

For trips approaching the site from the east it is forecast that traffic volumes will increase by +0.8% when travelling on the R693 (Link 6), or +5.8% when travelling on the L1818 (Link 5).

Table 15-14 Daily traffic volumes on during concrete pouring - background, Proposed Project generated and total (PCUs), year 2032

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – R639 – South of L4115 Longfordpass North	3,109	941	4,050	70	514	584	3,179	1,455	4,634
2 – R693 – East of Urlingford	3,618	714	4,332	70	514	584	3,688	1,228	4,916
3 – R693 – West of site access	5,150	1,031	6,181	70	514	584	5,220	1,545	6,765
4 - L4115 Longfordpass North	976	410	1,386	70	514	584	1,046	924	1,970
5 – L1818	859	242	1,101	70	514	584	929	756	1,685
6 – R693 – East of site access	6,531	1,000	7,532	70	514	584	6,601	1,514	8,116

Table 15-15 Daily Traffic volumes during site preparation and groundworks – background, Proposed Project generated and total (PCUs), year 2032

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – R639 – South of L4115	3,109	941	4,050	70	117	187	3,179	1,058	4,237

Longfordpass North									
2 – R693 – East of Urlingford	3,618	714	4,332	70	117	187	3,688	831	4,519
3 – R693 – West of site access	5,150	1,031	6,181	70	117	187	5,220	1,148	6,368
4 - L4115 Longfordpass North	976	410	1,386	70	117	187	1,046	527	1,573
5 – L1818	859	242	1,101	70	117	187	929	359	1,288
6 – R693 – East of site access	6,531	1,000	7,532	70	117	187	6,601	1,117	7,719

Table 15-16 Daily traffic volumes during turbine construction, extended artics – background, Proposed Project generated and total (PCUs), year 2032

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – R639 – South of L4115 Longfordpass North	3,109	941	4,050	45	60	105	3,154	1,001	4,155
2 – R693 – East of Urlingford	3,618	714	4,332	45	60	105	3,663	774	4,437
3 – R693 – West of site access	5,150	1,031	6,181	45	60	105	5,195	1,091	6,286
4 - L4115 Longfordpass North	976	410	1,386	45	60	105	1,021	470	1,491
5 – L1818	859	242	1,101	45	60	105	904	302	1,206
6 – R693 – East of site access	6,531	1,000	7,532	45	60	105	6,576	1,060	7,637

Table 15-17 Daily traffic volumes during turbine construction – standard artic HGVs, background, Proposed Project generated and total (PCUs), year 2032

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
1 – R639 – South of L4115 Longfordpass North	3,109	941	4,050	45	19	64	3,154	960	4,114
2 – R693 – East of Urlingford	3,618	714	4,332	45	19	64	3,663	733	4,396
3 – R693 – West of site access	5,150	1,031	6,181	45	19	64	5,195	1,050	6,245
4 - L4115 Longfordpass North	976	410	1,386	45	19	64	1,021	429	1,450
5 – L1818	859	242	1,101	45	19	64	904	261	1,165
6 – R693 – East of site access	6,531	1,000	7,532	45	19	64	6,576	1,019	7,596

Table 15-18 Summary daily effects of Proposed Project traffic - concrete pouring - % increase and number of days, year 2032

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – R639 – South of L4115 Longfordpass North	4,050	584	4,634	14.4%	10
2 – R693 – East of Urlingford	4,332	584	4,916	13.5%	10
3 – R693 – West of site access	6,181	584	6,765	9.4%	10
4 - L4115 Longfordpass North	1,386	584	1,970	42.1%	10
5 – L1818	1,101	584	1,685	53.1%	10
6 – R693 – East of site access	7,532	584	8,116	7.8%	10

Table 15-19 Summary daily effect of Proposed Project traffic - site preparation and ground works - % increase and number of days, year 2032

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – R639 – South of L4115 Longfordpass North	4,050	187	4,237	4.6%	336
2 – R693 – East of Urlingford	4,332	187	4,519	4.3%	336
3 – R693 – West of site access	6,181	187	6,368	3.0%	336
4 - L4115 Longfordpass North	1,386	187	1,573	13.5%	336
5 – L1818	1,101	187	1,288	17.0%	336
6 – R693 – East of site access	7,532	187	7,719	2.5%	336

Table 15-20 Summary daily effect of Proposed Project traffic - turbine construction, extended artics - % increase and number of days, year 2032

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – R639 – South of L4115 Longfordpass North	4,050	105	4,155	2.6%	27
2 – R693 – East of Urlingford	4,332	105	4,437	2.4%	27
3 – R693 – West of site access	6,181	105	6,286	1.7%	27
4 - L4115 Longfordpass North	1,386	105	1,491	7.6%	27
5 – L1818	1,101	105	1,206	9.5%	27
6 – R693 – East of site access	7,532	105	7,637	1.4%	27

Table 15-21 Summary daily effects of Proposed Project traffic- turbine construction, standard artic HGVs – % increase and number of days, year 2032

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – R639 – South of L4115 Longfordpass North	4,050	64	4,114	1.6%	10
2 – R693 – East of Urlingford	4,332	64	4,396	1.5%	10
3 – R693 – West of site access	6,181	64	6,245	1.0%	10
4 - L4115 Longfordpass North	1,386	64	1,450	4.6%	10
5 – L1818	1,101	64	1,165	5.8%	10
6 – R693 – East of site access	7,532	64	7,596	0.8%	10

15.1.6.2 Link Capacity Assessment

An assessment of the impact on link capacity on the TDR was undertaken for the various construction stages as set out in Tables 15-22 to 15-24 with the capacity of the links on the route options, as shown in Table 15-22, varying from 8,600 vehicles per day on the R639 down to 5,000 vehicles per day for the R693, L4115, and L1818.

Capacities are based on road types and widths as set out in the TII Standards document DN-GEO-03031 Road Link Design, Table 6/1. It is noted that the link capacities adopted from the TII guidelines correspond to a Level of Service D, which the guidelines describe as being the level where;

"Speeds begin to decline slightly with a slight increase of flows and density begins to increase somewhat more quickly. Freedom to manoeuvre within the traffic streams is more noticeably limited, and the driver experiences reduced comfort levels".

Background traffic flows are compared to flows forecast for the various construction delivery stages in the construction year of 2032 in Table 15-23, with the percentage capacity reached for each stage shown in Table 15-24.

For the link included on the traffic assess TDR, the assessment shows the following;

- The R639 (Link 1), the R693 east of Urlingford (Link 2), the L4115 (Link 4) approaching the site from the west, and the L1818 (Link 5) approaching the site from the east, are all forecast to operate within link capacity for the background traffic scenario and all construction day scenarios.
- For the R693 west of the proposed site access junction (Link 3 - 124%) and the R693 to the east of the proposed access (Link 6 – 151%), both links are forecast to operate over link capacity Service Level D by the year 2032 with background traffic only, with each forecast to increase by a maximum of +11% points during the 10 days that

the concrete foundations will be poured, reducing to +3% points for the with general construction traffic scenario.

While it is considered that the magnitude of these forecast temporary increases in traffic flows will result in traffic impacts of slight in terms of severity, the following junctions on the TDR and general construction traffic route are included in the detailed junction capacity tests included in Section 15.1.6.3:

- Site access junction on the R693,
- R639 / L4115 junction southwest of Urlingford.

Table 15-22 Delivery route link type and link capacity (at Level of Service D)

Link	Link type	Link capacity (Level of Service D)
1 – R639 – South of L4115 Longfordpass North	Type 2 Single	8,600
2 – R693 – East of Urlingford	Type 3 Single	5,000
3 – R693 – West of site access	Type 3 Single	5,000
4 - L4115 Longfordpass North	Type 3 Single	5,000
5 – L1818	Type 3 Single	5,000
6 – R693 – East of site access	Type 3 Single	5,000

Table 15-23 Delivery route link capacity and summary of link flows by construction delivery stage, year 2032

Link	Link capacity (Level of Service D)	Construction delivery stage				
		Background traffic	Concrete pour	Other site works	Turbine plant	Turbine equipment
1 – R639 – South of L4115 Longfordpass North	8,600	4,050	4,634	4,237	4,155	4,114
2 – R693 – East of Urlingford	5,000	4,332	4,916	4,519	4,437	4,396

Link	Link capacity (Level of Service D)	Construction delivery stage				
3 – R693 – West of site access	5,000	6,181	6,765	6,368	6,286	6,245
4 - L4115 Longfordpass North	5,000	1,386	1,970	1,573	1,491	1,450
5 – L1818	5,000	1,101	1,685	1,288	1,206	1,165
6 – R693 – East of site access	5,000	7,532	8,116	7,719	7,637	7,596

Table 15-24 Delivery route link capacity and % of link capacity by construction delivery stage, year 2032

Link	Link capacity (Level of Service D)	Construction delivery stage				
		Background traffic	Concrete pour	Other site works	Turbine plant	Turbine equipment
1 – R639 – South of L4115 Longfordpass North	8,600	47%	54%	49%	48%	48%
2 – R693 – East of Urlingford	5,000	87%	98%	90%	89%	88%
3 – R693 – West of site access	5,000	124%	135%	127%	126%	125%
4 - L4115 Longfordpass North	5,000	28%	39%	31%	30%	29%
5 – L1818	5,000	22%	34%	26%	24%	23%
6 – R693 – East of site access	5,000	151%	162%	154%	153%	152%

15.1.6.3 Effect on Junctions – During Construction

As identified in the previous Section 15.1.6.2, the capacity of the junctions most affected on the delivery route are;

- Site access junction on the R693,
- R639 / L4115 junction southwest of Urlingford, and

In accordance with TII Guidelines the threshold for requiring a junction to be included in the detailed junction capacity tests are when traffic flows are forecast to increase by 10% or above with the introduction of development generated traffic.

The junctions were assessed using the industry standard junction simulation software PICADY11 of JUNCTION11 (Transport Research Laboratory), which permits the capacity of any priority junction to be assessed with respect to existing or forecast traffic movements and volumes for a given time period. The capacity for each movement at the junction being assessed is determined from geometric data input into the program with the output used in the assessment as follows:

- Queue – This is the average queue in PCUs forecast for each movement and is useful to ensure that queues will not interfere with adjacent junctions.
- Degree of Saturation or Ratio of Flow to Capacity (% Sat or RFC) – As suggested, this offers a measure of the amount of available capacity being utilised for each movement. Ideally each movement should operate at a level of no greater than 85% of capacity.
- Delay – Output in seconds, this gives an indication of the forecast average delay during the time period modelled for each movement.

Scenarios Modelled

The scenarios tested are as follows;

- Construction year 2032,
- AM and PM peak hours,
- Base traffic (do nothing) traffic flows and With Development Construction traffic flows.

The greatest effect in terms of traffic will be experienced during peak hours when, during peak construction periods, approximately 70 workers (35 cars) will pass through it. It is assumed that deliveries of materials to the Site will take place during the day after the workers have arrived, and before they leave at the end of the day and will therefore not occur at the same time. A precautionary scenario was, however, tested based on the maximum number of HGVs that will access and exit the site during any one hour, which will be 11 HGVs in and out, also travelling through the junctions during the AM and PM peak hours.

R693 / Site access junction Capacity Test Results

As there are very limited numbers of trip generated by the existing premises accessed by this junction, junction capacity tests are undertaken for the with construction traffic scenario only.

The AM and PM peak hour traffic flows for the base year 2026 and the proposed construction year of 2032 are shown in Figures 15-5a and 15-5b in Appendix 15-3 of the EIAR respectively. The additional traffic movements that are forecast to be generated by construction workers are shown in Figure 15-5c Appendix 15-3 of the EIAR, while the maximum HGV movements and PCUs that may be generated in

one hour are shown in Figures 15-5d and 15-5e in Appendix 15-3 of the EIAR respectively. The resulting peak hour traffic movements for the with construction scenario in 2032 are shown in Figure 15-5f in Appendix 15-3 of the EIAR.

The results of the capacity test for the proposed site access junction are set out in Table 15-25. It is forecasted that with the development generated traffic traveling through the junction, a maximum ratio of flow to capacity (RFC) of 4.6% is forecast for the AM peak hour and 9.6% for the PM peak hour. The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% in accordance with TII guidelines.

Table 15-25 Junction capacity test results, R693 / Site access junction, AM and PM peak hours, with construction traffic, by time period, year 2032

Period	Location	Without construction traffic		
AM		RFC	Queue (pcus)	Delay (seconds)
	From site	2.3%	0.0	6.9
	Right turn from R693 into site	4.6%	0.1	5.6
PM		RFC	Queue (vehicles)	Delay (minutes)
	From site	9.6%	0.1	7.5
	Right turn from R693 into site	1.1%	0.0	5.3

R639 / L4115 junction Capacity Test Results

The AM and PM peak hour traffic flows for the base year 2026 and the proposed construction year of 2032 are shown in Figures 15-6a and 15-6b in Appendix 15-3 of the EIAR respectively. The additional traffic movements that are forecast to be generated by construction workers are shown in Figure 15-6c Appendix 15-3, while the maximum HGV movements and PCUs that may be generated in one hour are shown in Figures 15-6d and 15-6e in Appendix 15-3 of the EIAR respectively. The resulting peak hour traffic movements for the with construction scenario in 2032 are shown in Figure 15-6f in Appendix 15-3 of the EIAR.

The results of the capacity test for this junction are set out in Table 15-26 and forecast that the development generated traffic will result in an increase to the maximum ratio of flow to capacity (RFC) from 10.4% to 21.1% during the AM peak hour, which will apply to traffic from the L4115 accessing the R639, and from 6.9% to 17.8% during the PM peak hour, which will apply to the right turn from the R639 into the L4115. The results of the junction capacity tests show that the additional traffic movements passing through the junction will be accommodated and have a minor effect on the operation of the junction. The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% in accordance with TII guidelines.

Table 15-26 Junction capacity test results, R639/L4115 junction, AM and PM peak hours, without and with construction traffic, by time period, year 2032

Period	Location	Without construction traffic			With construction traffic		
AM		RFC	Queue (pcus)	Delay (seconds)	RFC	Queue (pcus)	Delay (seconds)
	From L4115	10.4%	0.1	6.9	21.1%	0.3	7.5
	Right turn from R639 to L4115	6.6%	0.1	6.1	11.1%	0.1	6.3
PM		RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
	From L4115	10.6%	0.1	7.4	15.4%	0.2	7.6
	Right turn from R639 to L4115	6.9%	0.1	6.2	17.8%	0.2	7.0

15.1.6.4 Effect on Link Flows – During Operation

Once the Proposed Project is operational it is estimated that there will be 3 staff members employed on site with a similar number of vehicle trips, that is 3 car/LGV trips to and from the site per day. As stated previously it is likely that the Proposed Project will attract some recreational trips, although it is expected that visitor numbers will be low. It is considered that the traffic impact during this phase will be negligible.

15.1.6.5 Effect on Junctions – During Operation

As discussed in Section 15.1.6 it is forecast that once operational, the Proposed Project is expected to generate a maximum of 3 car/LGV trips to and from the site per day for maintenance purposes. It is also likely that small numbers of amenity traffic will be attracted to the Site. It is therefore concluded that the Proposed Project will have a negligible effect on the local network once constructed.

15.1.7 Proposed Grid Connection Construction on Road Network

A detailed description of the Proposed Grid Connection is provided in Section 4.3.2 of Chapter 4 of this EIAR. The Proposed 110kV Substation will be connected via the Proposed 110kV Underground Cabling to the existing 110kV Ballyragget substation, in the townland of Moatpark.

The Proposed 110kV Underground Cabling measures approximately 12.6km of which approximately 10.4km is located within the public road corridor with the remaining 2.2km located in private lands within the Proposed Wind Farm site (1.4km) or within agricultural lands either side of the River Nore (0.6km), with a short section located within the site of the Ballyragget Substation (0.1km).

The extent of the Proposed 110kV Underground Cabling that will impact on the public road network is considered in the 7 sections, as shown in Figure 15-7a in Appendix 15-3 of the EIAR, with 5 sections

located on the public road network and 2 section off road, one in the Proposed Wind Farm site and the other in lands approaching and within the 110 kV Ballyragget substation. The roads comprising each section of the route, together with the traffic management measures required during construction, the length and the estimated number of days required for construction, are set out in Table 15-27. Based on a construction rate of 100m per day, it is estimated that the Proposed 110kV Underground Cabling will take approximately 126 working days to complete based on one construction crew operating at one location. In practice the construction duration may be significantly reduced using two construction crews operating at different locations on the route.

The on-road sections of the Proposed 110kV Underground Cabling travels along approx. 0.8km of the National Road Network (N77), with the remaining 9.6km of the on–road route sections travelling along the local road network. An inspection of the route indicates that the majority of the Proposed 110kV Underground Cabling will require a road closure at the point of construction on any given day during the construction phase. The exception to this is the short 0.8km section of the N77 where it is proposed that a Stop & Go traffic management system will be implemented in order to maintain 2-way traffic flow.

The potential diversion routes that may be used during the construction of the various sections of the Proposed 110kV Underground Cabling are set out in Table 15-28 and shown in Figure 15-7b in Appendix 15-3 of the EIAR. For sections 1, 2, 3 and 4, which comprises 9.6km of the total route, the diversions will result in existing traffic from local roads being diverted onto other local and reginal roads of a similar or higher standard of road.

For the diversion routes shown in Figure 15-7b in Appendix 15-3 of the EIAR, the temporary additional trip length incurred by drivers during the construction of the Proposed 110kV Underground Cabling will range from a minimum of 0.7km to a maximum of 24.8km, as shown in Table 15-28. The distances provided are an absolute maximum diversion that may be incurred for the various sections of the Proposed 110kV Underground Cabling and are measured from either end of the section of the Proposed 110kV Underground Cabling being constructed. In practice the number of trips that incur the full diversion will be very few. It should be noted that the construction of the section that would result in the longest detour of 24.8km, Section 2 on the L1804, would impact on low number of trips daily and would be in place for a maximum of 3 days. It is also noted that many drivers undertaking longer trips will divert onto other parallel routes further afield in order to avoid the closure, again, incurring significantly shorter actual diversions.

With respect to the traffic volumes that will be generated during the construction of the underground electrical cabling route, it is estimated that there will be approximately 14 daily return trips made by a truck transporting materials, and 4 made by a car to transport 10 construction staff to and from the Site. The impact of the additional traffic that will be generated on the network during the construction of the Proposed 110kV Underground Cabling is presented in Section 15.1.13.2.

It is proposed that construction staff will travel to and from the point of construction along the Proposed 110kV Underground Cabling by minibus, or alternatively, staff will travel to the site by carpooling encouraged as part of a staff travel plan. By its nature the impacts of these additional trips on the network will be transient and will therefore be temporary and slight.

The construction methodology of providing a grid connection under and along local road networks is well established and accepted nationwide. There are in excess of 300 wind farms currently operational in Ireland and the majority of these are connected to the national grid via underground cable connections predominantly along the public road networks.

A TMP, incorporating all the mitigation measures is included as Appendix 15-2 of this EIAR, and will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing on site.

Table 15-27 Proposed 110kV Underground Cabling link, traffic management measure, link length (km), construction duration (days)

Grid section	Proposed Grid Connection Section	Traffic management	Length (kms)	Construction duration (days)
Off road	Off road at site	NA	1.4	14
Section 1	L1805	Closure	0.5	5
Section 2	L1804	Closure	0.24	3
Section 3	L1806	Closure	5.5	55
Section 4	L1807 / L5833	Closure	3.4	34
Section 5	N77	Stop & Go	0.83	8
Off road	Off road at Ballyragget Substation	NA	0.7	7
Total			12.57	126

Table 15-28 Proposed 110kV Underground Cabling link, link length (km), potential diversion route, length of diversion route (km), additional trip length (km)

Grid section	Proposed Grid Connection Section	Length (kms)	Potential diversion route	Maximum length of diversion route (kms)	Maximum additional trip length (kms)
Off road	Off road at site	1.4	NA	NA	NA
Section 1	L1805	0.5	L1805, L1804	2.2	1.7
Section 2	L1804	0.24	L1804, R693, R435, L1804	25.0	24.8
Section 3	L1806	5.5	L1804, R693, L1811	12.0	6.5
Section 4	L1807 / L5833	3.4	L1806, N77	4.1	0.7
Section 5	N77	0.83	NA	NA	NA
Off road	Off road at Ballyragget Substation	0.7	NA	NA	NA
Total		12.57			

15.1.8 Traffic Management of Large Deliveries

Traffic management measures are set out in Section 15.1.13.5 and includes the following:

- Identification of a delivery schedule,
- Details of the alterations required to the infrastructure identified in this report and any other minor alteration identified (hedgerows etc),
- A dry run of the route using vehicles with similar dimensions.

The transport of large components is challenging and can only be done following extensive route selection, route proofing and consultation with An Garda Síochána, the local authority and its road section and roads authorities. Turbine components are usually transported at night when traffic is lightest and this is done in consultation with the road's authorities, An Garda Síochána Traffic Corp and special permits are generally required.

In some cases, minor accommodation works are required along the turbine delivery route such as hedge or tree cutting, temporary relocation of powerlines/poles, lampposts, signage and local road widening. Any works on the public road network will be carried out in advance of turbine deliveries and following consultation and agreement with the relevant authorities, if required. It is not anticipated that any sections of the local road network will be closed.

Refer also to the TMP, included as Appendix 15-2 of this EIAR.

15.1.9 Abnormal Load Route Assessment

While the potential turbine delivery route from the port of entry is discussed in Section 15.1.2.2 the route assessment discussed in this section includes all locations on the proposed turbine delivery route from the R639 at Urlingford to the site access junction off the R693, as shown in Figure 15-2 in Appendix 15-3 of the EIAR.

A swept path analysis was undertaken at all locations using Autotrack in order to establish the locations where the wind turbine transporter vehicles will be accommodated, and the locations where some form of remedial measure may be required.

It is noted that a dry run involving a vehicle adapted to replicate the geometry of the extended transport vehicles will be undertaken over the entire turbine delivery route prior to the construction stage of the Proposed Project.

Location 1 – R639 – Mountfinn Drive, Urlingford, Co. Kilkenny

Figure 15-8 Appendix 15-3

It is proposed to carry out temporary accommodation works within the public green space in Urlingford, Co. Kilkenny – north of Mount Finn Drive.

The existing street furniture, trees, within the public green space will be temporarily removed for the duration of the turbine component delivery phase. The temporary removal of electricity/ telecommunication pole and temporary realignment of electricity/telecommunication cabling will be required.

Upon completion of the turbine component delivery phase, the street furniture and electricity/telecommunication pole will be reinstated, and trees and green space will be replanted.

Location 2 – L1857-R693 Junction, Mountfinn, Co. Kilkenny

Figure 15-9 Appendix 15-3

It is proposed to carry out temporary accommodation works within the public road corridor of a located at the southern side of the L1857 Local Road – R693 Regional Road junction, in the townland of Mountfinn, Co. Kilkenny.

The existing road signage within the public road corridor green space will be temporarily removed for the duration of the turbine component delivery phase. The trees and hedgerow within and around the hard shoulder of the junction corridor will be removed for the duration of the turbine component delivery phase.

Trees and hedgerow that were removed during the turbine component delivery phase will be replanted. The signage, and electricity/telecommunication pole will be reinstated.

Location 3 – R693 – R435 Junction, Balief Lower and Balief Upper, Co. Kilkenny

Figure 15-10 Appendix 15-3

It is proposed to carry out temporary accommodation works at the junction of R693-R435 Regional Roads in the townlands of Balief Lower and Balief Upper, Co. Kilkenny.

In the townland of Balief Lower, as the delivery vehicle approaches the regional road junction, the vehicle will enter lands to the west of the R693-R435 Junction in order to transition through the southern turning mechanism. This turning mechanism will involve the removal of field boundaries, hedgerows and street furniture. As the vehicle exits the agricultural land, the vehicle will cross the R693 and travel over the grassy verge that exists on the northern side of the junction. The existing electricity/ telecommunication poles and street furniture within and around this area will be removed for the duration of the turbine component delivery phase. There will be a requirement for some tree felling at this location.

Upon the completion of the turbine component delivery phase, the accommodation area will be covered with a layer of topsoil and reseeded. The electricity/telecommunication pole, field boundaries will be reinstated. The trees that were removed during the construction phase will be replanted.

15.1.10 Proposed Wind Farm Site Access junction

Location 4 - Access Junction on R693 – TDR, general construction and maintenance – All turbines

Figures 15-11 to 15-14 Appendix 15-3

It is proposed to carry out temporary widening works at the proposed site entrance in the townland of Barna, Co. Kilkenny.

This improved layout for an existing access junction located on the R693 will provide for all traffic generated during the construction and maintenance of all turbines. It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic, including staff car trips, during the construction phase, and for maintenance trips once the Proposed Project is operational.

The proposed junction layout is shown in Figure 15-11 in Appendix 15-3 of the EIAR. Junction radii of 13m with 1:10 tapers are proposed for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are proposed as per Figure 7.35 of the Traffic Signs Manual.

The proposed junction includes a run-over area at the northeast corner of the junction to facilitate the delivery of the abnormally sized turbine loads. This area will require to be surfaced to accommodate the wheels of the abnormally sized loads. A short section of runover area is also proposed on the eastern side of the access adjacent to the junction. An additional area is identified to be cleared to facilitate overhang of the turbine blade transport vehicles. On completion of the delivery of the abnormally sized loads the temporary run-over areas will be closed off to traffic with the junction layout reduced in size to the standard junction layout described above.

With a speed limit of 80 km/h the required visibility splays in accordance with the TII Guidelines (Geometric Design of Junctions, DN-GEO-03060, TII, May 2023) are 160m taken from a setback of 3.0m. These splays are shown to be available in both directions as illustrated in Figure 15-12 in Appendix 15-3 of the EIAR.

The autotrack assessment shown in Figure 15-13 in Appendix 15-3 of the EIAR demonstrates that the proposed access junction off the R693 will accommodate the turning requirements of the blade transport vehicle. Similarly, the autotrack assessment set out in Figure 15-14 in Appendix 15-3 of the EIAR demonstrates that the reduced junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Upon the completion of the turbine component delivery phase, the accommodation area will be covered with a layer of topsoil and reseeded. The trees and hedgerow that was removed during the turbine component delivery phase will be replanted.

15.1.11 Road Safety Audit

Traffico Road Safety Engineering Consultants Ltd were commissioned to undertake a Stage 1 Road Safety Audit for the access arrangements, as outlined in Section 15.1.10 above, for the Project Wind Farm site, in accordance with GE-STY-01024 Road Safety Audit Guidelines, TII, December 2017[1]. The Stage 1 Road Safety Audit Report (hereafter the Audit Report) is attached as Appendix 15-4 of this EIAR.

As documented in the Audit Report, the Audit Team identified 2 no. potential Problems. The 2 no. potential Problems identified (shown in Appendix 15-4), together with the Design Teams response and whether the response was accepted by the Audit Team, are set out below.

Problem 2.1

Visibility Splays Partially Obscured, Location: Existing field boundary either side of proposed access off the R693

The Audit Teams notes that drivers attempting to leave the access are likely to have their line of sight to oncoming traffic partially obscured by foliage in the existing field boundaries. This could increase the risk of side-impact type collisions at the Proposed Wind Farm site access.

The Audit Team recommends that access sight lines should be checked, with the existing field boundaries cut back if deemed necessary, to ensure that an appropriate level of visibility can be provided for drivers exiting the Proposed Wind Farm site access.

The Design Team Response is as follows – It is confirmed that the required visibility splays, as shown in Figure 15-12 of Appendix 15-3 of the EIAR, will be kept clear of all obstruction during the construction and operational phases of the Proposed Project.

[1] https://www.tiipublications.ie/document/?id=2943

The Design Team response was accepted in the Road Safety Audit Feedback Form included as Appendix A of the Audit Report.

Problem 2.2

Granular Material Deposited on Regional Road, Location: Windfarm access to R693 Regional Road

The Audit Teams notes that the wheel action of construction and service vehicles may track granular material from the unbound site access road onto the regional road, resulting in a slippery surface and an increased risk of loss-of-control collisions during braking.

The Audit Team recommends that a suitable bound pavement should be installed at the site access where it connects with the regional road.

The Design Team Response is as follows – It is confirmed that there will be a section of the proposed improved site access from the carriageway edge of the R693 that will have a tarred surface. It is also noted that wheel cleaning and road cleaning facilities will be in place during the construction of the Proposed Project.

The Design Team response was accepted in the Road Safety Audit Feedback Form included as Appendix A of the Audit Report.

15.1.12 Provision for Sustainable Modes of Travel

15.1.12.1 Walking and Cycling

The provision for these modes is not relevant during the construction stage of the Proposed Project and travel distances will likely exclude any employees walking or cycling to work.

15.1.12.2 Public Transport

Local TFI bus Service 871 (Urlingford / Johnstown / Freshford / Kilkenny) travels on the R693 past the proposed site access junction twice per day. While this service passes the site the low service frequency would suggest that this bus route is not a viable option for construction staff to travel to the site.

The provision of minibuses will be considered for transporting staff to and from the site in order to minimise traffic generation and parking demand on the site, although for the purpose of this assessment trip generation estimates are based on construction staff travelling by private car.

There are 2 local TFI bus services that travel on part of the Proposed 110kV Underground Cabling, Local Bus Service 838 Portlaoise / Ballyragget / Kilkenny (2 services per day) and the Local Bus Service 897 Athy / Ballyragget / Kilkenny (4 services per day). However, due to the transient nature of construction works along the Proposed 110kV Underground Cabling, use of these public transport services would be limited.

15.1.13 Likely and Significant Effects and Associated Mitigation Measures

15.1.13.1 'Do-Nothing' Scenario

If the Proposed Project does not proceed there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.

15.1.13.2 Construction Phase

For 10 days when the concrete foundations are poured, an additional 584 PCUs will travel to/from the Proposed Project site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +14.4% on the R639 (Link 1), to a range of +13.5% to +9.4% on the R693 (Links 2 and 3) as the route travels east towards the site access junction. For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +42.1%. For trips approaching the site from the east it is forecast that traffic volumes will increase by +7.8% when travelling on the R693 (Link 6), or +53.1% when travelling on the L1818 (Link 5). On these busiest 10 days it is estimated that this will have a temporary, negative and slight effect on the roads on the delivery routes travelling towards the Site. ***No significant effects are forecast.***

On the remaining 336 days when the Proposed Project site preparation and groundworks and construction of the grid connection continues, an additional 187 PCUS will travel to and from the Proposed Project site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +4.6% on the R639 (Link 1), to a range of +4.3% to +3.0% on the R693 (Links 2 and 3) as the route travels east towards the site access junction. For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +13.5%. For trips approaching the site from the east it is forecast that traffic volumes will increase by +2.5% when travelling on the R693 (Link 6), or +17.0% when travelling on the L1818 (Link 5). It is estimated that this will have a temporary, negative and slight effect on the delivery routes to the Site. ***No Significant effects are forecast.***

With respect to the traffic volumes that will be generated during the construction of the underground electrical cabling route, it is estimated that there will be approximately 30 daily return trips made by trucks removing spoil and transporting materials to the site, and 4 return trips made by a car to transport construction staff, to and from the Site. By its nature the effect impacts of these additional trips on the network will be transient and will therefore be temporary and slight. ***No Significant effects are forecast.***

On the 27 days / nights that the abnormal loads carrying the large turbine components travel to the Proposed Project site, an additional 105 PCUs will travel to/from the Proposed Project site on the TDR. On these days it is forecast that the increase in traffic volumes on these days will range from between +2.6% on the R639 (Link 1), to a range of +2.4% to +1.7% on the R693 (Links 2 and 3) as the route travels east towards the site access junction. It is forecast that there will be a temporary, slight negative effect on traffic flows as the delivery of the abnormally sized loads is undertaken at night. ***No Significant effects are forecast.***

For 10 days an additional 64 PCUs will travel to/from the Site on the TDR. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.6% on the R639 (Link 1), to a range of +1.5% to +1.0% on the R693 (Links 2 and 3) as the route travels east towards the site access junction. For trips approaching from the west on the L4115 Longfordpass North Road (Link 4) it is forecast that traffic volumes will increase by +4.6%. For trips approaching the site from the east it is forecast that traffic volumes will increase by +0.8% when travelling on the R693 (Link 6), or +5.8% when travelling on the L1818 (Link 5). On these days it is considered that the additional traffic will have a temporary slight negative effect on the delivery route. ***No Significant effects are forecast.***

15.1.13.3 Operational Phase

The impacts on the surrounding local highway network will be negligible given that there will only be an average of 3 trips made to and from the Proposed Wind Farm site by car or light goods vehicle per day, with none required for the Proposed 110kV Underground Cabling. The effects of the maintenance traffic on the surrounding highway network will therefore be long-term, negative imperceptible. ***No Significant effects are forecast.***

15.1.13.4 Decommissioning Phase

The Proposed Turbines are expected to have a lifespan of approximately 35 years. Following the end of their operational life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Site may be decommissioned fully.

Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during part of the construction phase when turbines were being erected. The impacts and associated effects will be materially less than during the construction phase as significant ground works are not required to decommission a wind farm.

Following decommissioning of the Proposed Wind Farm, turbine foundations, hardstanding areas and site tracks will be rehabilitated, i.e. left in place, covered over with local soil/subsoil and allowed to re-vegetate naturally, if required. The internal site access tracks may be left in place, as they may serve as useful access to the agricultural and forestry land. It is considered that leaving these areas in-situ will cause less environmental damage than removing and recycling them.

While the actual number of loads that will require to be removed from the site in the event that the Proposed Wind Farm is decommissioned has not been determined at this stage, the impact in terms of traffic volumes will be significantly less than during the construction stage.

The Proposed Grid Connection will remain in place as it will remain under the management and operation of ESBN/EirGrid. There are no impacts associated with this.

The works required during the decommissioning phase are described in Chapter 4: Description of the Proposed Project and the accompanying Decommissioning Plan included as Appendix 4-6 of this EIAR.

15.1.13.5 Mitigation Measures

This section summarises the mitigation measures to minimise the effects of the Proposed Project during both the construction and operational stages (decommissioning will be same as construction where required).

Mitigation by Design

Mitigation by design measures include the following:

- Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles as set out in Section 15.1.9.
- Selection of the shortest underground grid connection route, minimising the impacts on the existing road network and traffic.

Mitigation Measures During the Construction Stage

The successful completion of the Proposed Project will require significant coordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the Proposed Project in order minimize the effects of the additional traffic generated. A detailed TMP incorporating all the mitigation measures included as Appendix 15-2 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. In addition, the

traffic management measures proposed for the following construction traffic scenarios are set out for the Proposed 110kV Underground Cabling in Appendix 15-2:

Traffic Management Plan for Killoshulan Wind Farm;

- Delivery of Abnormally sized loads,
- Traffic management measures during construction of the Proposed 110kV Underground Cabling.

The detailed TMP will include the following:

Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Project, and this person will be the main point of contact for all matters relating to traffic management.

Delivery Programme – a programme of deliveries will be submitted KCC and other relevant authorities in advance of deliveries of turbine components to the Site. Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.

Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.

Implementation of temporary alterations to road network at critical junctions – At locations where required highlighted in Section 15.1.9.

Identification of delivery routes – These routes will be agreed and adhered to by all contractors.

Travel plan for construction workers to Proposed Project site– While the assessment above has assumed the worst case that construction workers will drive to the Proposed Project site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of a routes to / from the site and identification of an area for parking.

Travel plan for construction workers to underground electric cabling route – Due to the transient nature of the proposed underground grid connection construction site which will generally be on a section of the public road, construction workers will be transported to and from the site by the construction company at the beginning and end of each shift.

Drivers conduct – All drivers will follow normal rules of the road and will receive toolbox talk regarding the delivery route and planned holding points prior to any deliveries.

Standard permitted axial loads – This will ill not be exceeded.

Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the access junction on the R693 during the 18 month construction period. All measures will be in accordance with the *"Traffic Signs Manual, Section 8* –

Temporary Traffic Measures and Signs for Road Works" (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S).

Delivery times of large turbine components - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.

Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. All works will be done in accordance with the Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads, DTToS, September 2015.

Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on Site and sweeping / cleaning of local roads as required.

It is confirmed that details for the TMP for the Proposed Project will be agreed with TII and the Road Section of KCC prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.

Mitigation Measures During Operational Stage

Due to the very low volumes of traffic forecast to be generated during this stage no mitigation measures are required.

Mitigation Measures During Decommissioning Stage

In the event that the Proposed Project is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-6 Decommissioning Plan. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning, in accordance with Scottish Natural Heritage (SNH) report *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013).

15.1.13.6 Residual Effects

Construction Stage

During the 18-month construction stage of the Proposed Project, it is forecast that the additional traffic that will appear on the public road network serving the Site will have a short-term slight negative effect on residents and existing road users on the delivery route. While the severity of the traffic effects relates to the additional volumes of traffic movements generated during the construction of the Proposed Project, the implementation of the mitigation measures included in the proposed traffic management plan will ensure a controlled and efficient operation during this stage and minimise the impacts on local road users.

Operational Stage

As the traffic impact of the Proposed Project will be imperceptible during the operational stage, there will be no residual effects during this stage.

Decommissioning Stage

As stated above, in the event that the Proposed Project is decommissioned a decommissioning plan will be prepared and implemented in order to minimise the residual effects during this stage. The residual effect will be less than for the construction stage as set out above and will be slight to imperceptible.

15.1.13.7 Cumulative Effects

The extent of the study area to be included in the traffic related cumulative impact assessment was based on the guidance set out in the Traffic and Transport Assessment Guidelines, PE-PDV-02045, May 2014, TII, which states that the assessment should include "*developments granted planning permission, but which are yet to become operational as well as any planning applications that have been submitted but have yet to be determined".*

The same guidelines are referenced to determine which of the developments that fit the above criteria will have a cumulative impact with the Proposed Project, which is a function of the level of increase on traffic volumes that may be experienced on a common road network.

An assessment of all developments at varying stages in the planning process (from proposed to operational), were assessed for the potential for cumulative traffic effects with the Proposed Project based on the following criteria;

- Project status (proposed to operational)
- Degree of overlap on the highway network (low to high)
- Traffic volumes (low to high).

The developments included in the cumulative impact assessment are considered under the following groups;

- Other wind farms,
- Other large scale development applications in the planning process with Kilkenny County Council and Laois County Council,
- Strategic Infrastructure Development (SID) applications made to An Coimisiún Pleanála.

Other wind farms

The other permitted and proposed wind farm developments within a 25 km buffer zone around the Proposed Project that were considered to have potential traffic related cumulative impacts are set out below in Table 15-29. Of the 12 wind farm developments listed, based on the criteria set out above (project status, overlap of delivery routes and traffic volumes) it is estimated that there are 2 for which there is a high potential for cumulative impacts with the Proposed Project. These are the Gathabawn Wind Farm located just to the north, and Littleton Wind Farm located to the south. Both of these wind farms will generate construction traffic on the R639, which is on the delivery route for the Proposed Project.

It is therefore proposed that the construction phase of the Proposed Project will be scheduled, where possible, to avoid the construction phases of these 2 no. Wind Farms. This will ensure that the potential for cumulative effects is minimised. In the event that the construction phase of the Proposed Project overlaps with either of these developments it is estimated that the cumulative impacts will be negative, short term and will be slight. There will be no significant impacts.

Table 15-29 Summary of other wind farms considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 – Foyle Wind Farm Extension (3 turbines)	Permitted	Medium	Low	Medium
2 -Ballynalacken Wind Farm (12 turbines)	Permitted	Medium	Medium	Medium
3 – Borrisbeg Wind Farm (9 turbines)	Permitted	Low	Medium	Medium
4 – Briskalagh Wind Farm (7 turbines)	Permitted	Medium	Medium	Medium
5 – Brittas Wind Farm (10 turbines)	Permitted	Medium	Medium	Medium
6 – Farranrory Wind Farm (9 turbines)	Permitted	Medium	Medium	Medium
7 – Pinewoods Wind Farm (11 turbines)	Permitted	Medium	Medium	Medium
8 – White Hill Wind Farm (7 turbines)	Permitted	Low	Medium	Medium
9 – Coolglass Wind Farm (13 turbines)	In Planning	Medium	Medium	Medium
10 – Gathabawn Wind Farm (12 turbines)	In Planning	High	Medium	High
11 – Littleton Wind Farm (11 turbines)	In Planning	High	Medium	High
12 – Seskin Renewables Wind Farm (8 turbines)	In Planning	Low	Medium	Medium

Other development applications in the Planning Process

There are a total of 35 other developments currently within the 10 km buffer zone progressing through the planning process, 26 with Kilkenny and Laois County Councils and 9 as appeals with An Coimisiún Pleanála, with the potential for cumulative impacts with the Proposed Project, as set out in Tables 15-29 and 15-30 respectively.

Of these 35 developments there are 3 developments (all residential, one in Urlingford (23 dwellings), one in Johnstown (21 dwellings) and one in Freshford 43 dwellings) where it is considered that the potential for cumulative impacts is high. In the event that either of these developments is constructed at the same time as the Proposed Project it is forecast that the cumulative impacts will be negative, short term and slight in terms of severity. There will be no significant impacts.

Table 15-30 Summary of other developments with Kilkenny and Laois County Councils considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Application	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1- Proposed solar farm 1 no. onsite 38 KV substation, Ballyconra, Ballyragget. Kilkenny County Council, Planning Reference 17/669	Medium	Low	Medium
2 - Mixed-use development consisting of 23 new houses, the extension to Urlingford Business Park. Main Street Togher Road, Togher Way, Urlingford. Kilkenny County Council, Planning Reference 20/685	High	Medium	High
3 - Completion of an existing residential development consisting of the provision of 14 new semi-detached dwellings. Togher Crescent, Urlingford, Co Kilkenny. Kilkenny County Council, Planning Reference 21/417	High	Low	Medium
4 - The installation of 31.49km of a 38kV underground electrical cabling in the townlands of Killeen, Rathmacan, Gortnagap, Kyleballyoughter, Courtstown, Raheen, Lates, Curraghscarteen, Canvarstown, Trenchardstown, Lisnalea, Hillend, Coldharbour, Killahy, Greenhill, Lughinny, Craddockstown, Tubbrid Lower, Clomantagh Lower, Barna, Newtown, Kilrush, Belville, Lodge, Garranamanagh, Balleen Lower, Lodge, Tifeaghna (Browne), Lodge Demesne West, Lodge Demesne East, Clontubbrid, Clone, Acragar, Skinstown, Lisdowney, Seskin South, Parksgrove Ballyragget & Moatpark, Co. Kilkenny. Killeen , Co. Kilkenny. Kilkenny County Council, Planning Reference 21/627	Medium	Low	Medium
5 - Recommencement of underground mining at the former Galmoy Zinc and Lead Mine. Garrylaun Castletown Rathreagh, Rathpatrick Whiteswall	Medium	Low	Medium

Moneynamuck, (Stopford) Rathbane and Waterland. Kilkenny County Council Planning Reference 21/599			
6 - The installation of 2 new cooling tower units and associated concrete bases at the existing Waste Water Treatment Plant and associated ancillary site works. Upgrade works to the existing watermain consisting of the installation of a new watermain connecting existing water reservoir tank in the Glanbia Milk Processing Facility to the existing pump house including the crossing of the N77 public road and all ancillary site works. Ballyconra , Ballyragget , Co. Kilkenny. Kilkenny County Council Planning Reference 21/882.	Medium	Low	Medium
7 - Solar Farm within the curtilage of Ballyconra House. Parksgrove and Ballyconra, Ballyragget, Co. Kilkenny. Kilkenny County Council Planning Reference 22/126.	Medium	Low	Medium
8 - The proposed replacement of an existing Heater Battery through the installation of a new unit complete with supporting platform. Ballyconra , Ballyragget , Co. Kilkenny. Kilkenny County Council Planning Reference 22/386.	Medium	Low	Medium
9 - The proposed development will consist of: Construction of two anaerobic digesters, one equalization tank to include concrete base. Ballyconra , Ballyragget , Co Kilkenny. Kilkenny County Council Planning Reference 22/687.	Medium	Low	Medium
10 - For change of design of 12 No. Dwellings as previously granted permission under Planning File 21/417. Togher Crescent , Urlingford, Co. Kilkenny. Kilkenny County Council Planning Reference 22/741.	High	Low	Medium
11 - Construction of 4 No. two-storey terraced buildings comprising of 14 No. three bed houses and 05 No. two bed houses. Lumper Lane and New Road , Urlingford , Kilkenny.	High	Low	Medium

Kilkenny County Council Planning Reference 23/60132.			
12 - A 10 year planning permission for a solar PV development on a ca. 13Ha Site. Tirlan , Ballyconra Ballyragget, Kilkenny. Kilkenny County Council Planning Reference 23/60201.	Medium	Low	Medium
13 - For an amendment to planning application previously granted under reference PL/21/627. The previously consented planning application comprised the installation of 31.4 km of a 38kV underground grid connection comprising cable ducting and associated electrical cabling and all other ancillary works including joint bays, culverts, maker posts and all associated development. The proposed amendments to the previously consented grid connection comprise: • Increase in number of joint bays along the extent of the grid connection from a total of 35 to 45 joint bays • Grid connection to be operated at 38kV but installed to a 110kV underground cable design standards/infrastructure • Minor Adjustments to the route and red line boundary. Various Townlands in Kilkenny :Killeen Rathmacan Gortnagap Kyleballyoughter Courtstown Raheen Lates Curraghscarteen Canvarstown Trenchardstown Lisnalea Hillend Coldharbour Killahy Greenhill Lughinny Craddockstown Tubbrid Lower Cloman. Kilkenny County Council Planning Reference 23/60248.	Medium	Low	Medium
14 - Extension of the operational lifespan of a solar farm permitted by Kilkenny County Council under Planning Ref. 17/669 from 25 years as permitted (by reason of Condition No. 4 of permission Ref.17/669) to 40 No. years. Ballyconra , Ballyragget , Co Kilkenny. Kilkenny County	Medium	Low	Medium

Council Planning Reference 23/60318.			
15 - Proposed installation of a network connection and grid connection, and minor amendments to solar farms previously approved under planning application references 17/669 and 22/126. Ballyconra Parksgrove and Moatpark , Ballyragget , Co. Kilkenny. Kilkenny County Council Planning Reference 23/60330.	Medium	Low	Medium
16 - Extension to existing nursing home, to include 25 no. additional bedrooms at Crosspatrick, Co. Kilkenny, Sacred Heart Nursing Home , Crosspatrick , Co. Kilkenny. Kilkenny County Council Planning Reference 23/60384.	Medium	Low	Medium
17 - The development will consist of 21 no. houses with a total car parking for 45 no. spaces. Dublin Road , Johnstown , County Kilkenny. Kilkenny County Council Planning Reference 23/216.	High	Medium	High
18 - A new residential housing development of 43 dwellings. Bohercrussia Street (L5000) , Tobernapeastia , Freshford Co Kilkenny. Kilkenny County Council Planning Reference 24/60183.	High	Medium	High
19 - The planning application will consist of an amendment to the previously approved development under Planning Reference 23/60248. The amendment planning application will seek to vary the wording of Condition No 2 of planning permission 23/60248 in relation to bridge crossing methodology at; Bridge No. 4 in the townland of Graigueswood Bridge No. 6 in the townlands of Garranamanagh and Kilrush and Bridge No. 10 in the townland of Courtstown. Graigueswood Garranamanagh Kilrush and Courtstown , Co Kilkenny, Co Kilkenny. Kilkenny County Council Planning Reference 24/60396.	Medium	Low	Medium

20 - For an upgrade to the existing Togher Crescent Wastewater Pumping Station. Togher Crescent Wastewater Pumping Station , in the Townland of Urlingford , County Kilkenny. Kilkenny County Council Planning Reference 24/60666.	High	Low	Medium
21 - For the construction of a new standalone 3,879.1 sq.m extension and associated works. Colaiste Mhuire Urlingford Road , Warrenstown Johnstown , Co. Kilkenny. Kilkenny County Council Planning Reference 25/60287.	High	Low	Medium
22 - For construction of a 2173m2 building to include a workshop and ancillary offices. Threecastles , County Kilkenny. Kilkenny County Council Planning Reference 25/60313.	Medium	Low	Medium
23 - For the construction of a truck servicing and maintenance workshop building. Mill Street , Freshford , Co Kilkenny. Kilkenny County Council Planning Reference 25/80.	High	Low	Medium
24 - Refurbish existing 43 no. electricity transmission towers along a c. 7.3 km section (length) of the Coolnabacky – Portlaoise 110 kV overhead line (OHL). The total area to which the application relates is c.37 hectares. Meelick Money Upper Rathleague Hophall Ballymooney Money Lower Dysart Lamberton Demesne Derry Clonminam Powelstown Kylekiproe and Cappoley and Esker, Co. Laois. Laois County Council Planning Reference 24/60593.	Medium	Low	Medium
25 - The construction of 6 no. wind turbines and associated development. Permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark. Situated in the townlands of Ballynaslee , Seskin Ballyconra , Moatpark Co. Kilkenny. Kilkenny County Council Planning Reference 25/60456.	Medium	Medium	Medium

26 - Construction of 2 no. wind turbines with an overall turbine tip height of 175 metres; a rotor blade diameter of 150 metres; and hub height of 100 metres, and associated foundations and hard standing areas. Tinwear Archerstown and Durrow , Co. Laois Laois County Council Planning Reference 25/60414.	Medium	Low	Medium

Table 15-30 Summary of other developments with An Coimisiún Pleanála considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Application	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 - Two wind turbines with ancillary and associated development works. Tinwear Archerstown and Durrow, Co. Laois. APC Reference Number 323775	Medium	Low	Medium
2 - Two anaerobic digesters with storage dome with associated and ancillary site development works. Ballyconra , Ballyragget , Co Kilkenny. APC Reference Number 316132.	Medium	Low	Medium
3 - The demolition of existing outbuildings, construction of 14 no. dwellings. Kilkenny Street, Freshford, Co. Kilkenny. APC Reference Number 300085	High	Low	Medium
4 - Refurbish derelict building to provide community hub centre. Cullahill, Co. Laois. APC Reference Number 314949.	Low	Low	Low
5 - N77 Ballyragget Village to Ballynaslee. North of Ballyragget Village, in the townlands of Ballyconra and Ballynaslee, County Kilkenny. APC Reference Number 308824.	Medium	Low	Medium
6 - The development will consist of the provision of 7 no. wind turbines , and all ancillary works and apparatus. Townlands of Acragar, Ballyconra, Ballycuddihy, Ballyroe,	Medium	Medium	Medium

Ballyroe (Grace), Ballyroe (Maher), Baunaniska, Boherkyle, Briskalagh, Brittas, Clone, Coolnapisha, Curraghduff,, Freshford, Freshford Lots, Graigueswood, Grange, Huntstown, Kilmanagh, Knockeenglass, Knockown, Moatpark, Monabrika, Monavadaroe, Moneenaun, Oldtown,, Oldtownhill, Parksgrove. APC Reference Number 322154.			
7 - Development of a recreational and amenity park comprising of a nature trail, an adventure trail, a coffee dock and all associated works. The former Johnstown Quarry, Ballycuddihy, Johnstown, Co. Kilkenny. APC Reference Number 322050.	High	Low	Medium
8 - Construction of 14 terraced houses. Lumper Lane and New Line, Urlingford, Co. Kilkenny. Reference Number 302845.	High	Low	Medium
9 - Change of design to previously granted permission of 12 houses. Togher Crescent, Urlingford, Co. Kilkenny Reference Number 315747.	High	Low	Medium

15.2 Telecommunications and Aviation

15.2.1 Introduction

This section of the EIAR assesses the likely significant effects of the Proposed Project on telecommunications and aviation assets.

The full description of the Proposed Project, including proposed turbine locations and elevations, is provided in Chapter 4 of this EIAR. As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Project', 'Site', 'Proposed Wind Farm' and 'Proposed Grid Connection'.

Section 15.2.7 describes the way in which wind turbines can potentially interfere with telecommunications signals or aviation activities, presents details on how such effects will be avoided, with the likely significant effects assessed (and mitigation measures proposed).

15.2.2 Statement of Authority

This section of the EIAR has been prepared by Edward Ryan and reviewed by Jonny Fearon and Eoin McCarthy, all of MKO.

Edward Ryan is an Environmental Practitioner with MKO with over 4 years of experience in the private sector. Edward holds a B.Sc. (Hons) in Environmental Science from the University of Limerick and a M.Sc. (hons) in Environmental Systems from Atlantic Technological University: ATU (formally

GMIT). Edward's key strengths and areas of expertise are in project management, GIS, data analysis, fieldwork and report writing. Since joining MKO, Edward has been involved in a range of wind farm projects and residential and commercial development projects. In his role as an Environmental Scientist, Edward works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs.

Jonny Fearon is a Project Environmental Scientist with MKO having joined the company in March 2022. Jonny holds a BSc (Hons) Environmental Science, a MSc (Hons) in Environmental Leadership and a Specialist Diploma in Corporate Environmental Planning. Jonny's key strengths are GIS, data analysis, fieldwork and report writing. Since joining MKO, Jonny has been involved in a range of wind farm projects. In his role as a Project Environmental Scientist, Jonny works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs.

Eoin McCarthy holds a BSc. (Env.) in Environmental Science and is a Project Director with 14 years' experience in the consultancy sector. His project experience includes a significant range of energy infrastructure, tourism, waste permit, flood relief scheme and quarrying projects in addition he has been involved in the project management of the production of EIARs for almost 1GW worth of wind energy projects. Eoin has completed Material Assets (Other Material Assets) section for numerous EIARs for wind energy projects.

15.2.3 Methodology and Guidance

This section of the assessment focuses particularly on the scoping and consultation exercise conducted with telecommunications operators and aviation authorities. Scoping was carried out in line with the EPA guidelines, and the '*Best Practice Guidelines for the Irish Wind Energy Industry*' (Irish Wind Energy Association, 2012), which provides a recommended list of telecommunications operators for consultation.

A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 of this EIAR. Consultation with the telecommunications operators and aviation bodies informed the constraints mapping process, which in turn informed the layout of the Proposed Project, as described in Chapter 3, Section 3.2.5.2 of the EIAR.

The assessment of likely significant effects on material assets uses the standard methodology and classification of impacts as presented in Section 1.7.2 of Chapter 1 of this EIAR.

15.2.4 Background

15.2.4.1 Broadcast Communications

Wind turbines, like all large structures, have the potential to interfere with broadcast signals, by acting as a physical barrier or causing a degree of scattering to microwave links. The most significant effect at a domestic level relates to a possible flicker effect caused by the moving rotor, affecting, for example, radio signals. The most significant potential effect occurs where the renewable energy development is directly in line with the transmitter radio path.

15.2.4.2 Domestic Receivers

Depending on local topography, a domestic receiver may receive broadcast signals from more than one location. The strength of the signals varies with distance from the transmitter, and the receiver's antenna is generally always directed towards the most local, and usually strongest, broadcasting station.

There are two types of potential electromagnetic interference to domestic receivers depending on the location of the receiver in relation to a wind farm. 'Shadowed' houses are located directly behind a wind farm, relative to the location from where the signal is being received. In this case, the main signal passes through the wind farm and the rotating blades can create a degree of signal scattering. In the case of viewers located beside the wind farm (relative to the broadcast signal direction), the effects are likely to be due to periodic reflections from the blade, giving rise to a delayed signal.

In both cases, i.e., shadowed houses located behind the wind farm and those located to the side of it, the effects of electromagnetic interference may depend to some degree on the wind direction, since the plane of rotation of the rotor will affect both the line-of-sight blockage to viewers located behind the wind farm and the degree of reflection to receivers located to the side.

15.2.4.3 Other Signal Types

Wind turbines have the potential to affect other signal types used for communication and navigational systems, for example tower-to-tower microwave communication links, and airborne and ground radar systems. Interference with radar systems occurs when wind turbines are located close to an airport or directly in line with the instrument landing approach. The nearest licensed aerodrome to the Proposed Wind Farm site is Kilkenny Airport which is located approximately 14km to the southeast of the Proposed Wind Farm site. The closest operational airport to the Proposed Wind Farm site is Waterford Airport which is located approximately 65km to the south of the Proposed Wind Farm site.

The airports listed above are outside the range at which such issues would be expected, and as detailed in Table 15-30 below, the Irish Aviation Authority (IAA) noted no issues with the Proposed Project however they issued observations as discussed in Section 15.2.5.2.3.

15.2.5 Preventing Electromagnetic Interference

15.2.5.1 National Guidelines

Both the adopted '*Wind Energy Development Guidelines for Planning Authorities'* produced by the Department of the Environment, Heritage and Local Government (DoEHLG, 2006) (referred to as the Guidelines) and the Draft Wind Energy Development Guidelines for Planning Authorities (DoEHLG, 2019) (referred to as the draft Guidelines) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required.

Developers are advised to contact individual local and national broadcasters and mobile phone operators to inform them of proposals to develop wind farms. This consultation has been carried out by MKO as part of the assessment of the Proposed Project as summarised below in Table 15-30; full details are provided in Section 2.7 in Chapter 2 of this EIAR.

15.2.5.2 Scoping and Consultation

As part of the EIAR scoping and consultation exercise, MKO contacted the relevant national and regional broadcasters, fixed and mobile telephone operators, aviation authorities and other relevant consultees. Consultation was also carried out with ComReg in order to identify any other additional licensed operators in the vicinity of the Proposed Wind Farm site to be contacted, who may not have been on the list of main operators.

The responses received from the telecommunications and aviation consultees are summarised below in Table 15-30 and relevant copies of scoping responses are provided in Appendix 2-1.

Table 15-30 Telecommunications and Aviation Scoping Responses

Consultee	Response	Potential for Interference Following Consultation Exercise
2rn (RTÉ Transmission Network Ltd.)	Emailed 19/01/2022 and 04/06/2026. Response received 20/01/2022 and 08/06/2026	Yes – 1 no. links located within the Proposed Wind Farm site. The potential impact is discussed below.
Air Nav	Emailed 19/01/2022 and 12/05/2026. No response received.	No
Broadcasting Authority of Ireland	Emailed 08/05/2026. No response received.	No
Commission for Communications Regulation	Emailed 19/01/2026 and 11/05/2026. Response received 26/01/2022	N/A
Department of Defence	Emailed 12/05/2026. Response received 15/06/2026.	Yes – M8 Motorway is identified as an Irish Air Corps low level route. The potential impact is discussed below.
Eir	Emailed 19/01/2026 and 11/05/2026. Response Received 21/01/2022 and 12/05/2026.	Yes – 6 no. links located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below.
EirGrid	Emailed 11/05/2026. No Response.	No
Electricity Supply Board	Emailed 11/05/2026. No Response.	No
EMR Solutions	Emailed 11/05/2026. No Response.	No
Enet Telecommunications Networks Limited	Emailed 19/01/2022 and 08/05/2026. Response received 24/01/2022	Yes – 6 no. links located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below

Consultee	Response	Potential for Interference Following Consultation Exercise
Imagine Networks Services	Emailed 19/01/2022 Response received 25/01/2022	Yes – 1 no. link located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below.
Irish Aviation Authority	Emailed 08/05/2026. Response received 12/05/2026	No
Irish Air Corps	Emailed 12/05/2026. No Response	The potential impact is discussed below (Department of Defence).
Irish Rail	Emailed 27/07/2026. Response Received 05/08/2026	No
St. Canice's Credit Union	Emailed 26/01/2022 Response received 27/01/2022	No
Three Ireland Ltd	Emailed 19/01/2022 and 12/05/2026 Response received 26/01/2022 and 12/05/2026	Yes - 10 no. links located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below.
Towercom Ltd.	Emailed 12/05/2026 Response received 19/05/2026	No
Viatel Ireland Ltd	Emailed 26/01/2022 and 12/05/2026. Response received 28/01/2022	Yes - 3 no. links located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below.
Virgin Media	Emailed 12/05/2026 Response received 12/05/2026	No
Vodafone	Emailed 19/01/2022, 22/09/2022 and 12/05/2026 Response received 26/09/2022	Yes – 18 no. links located within the vicinity of the Proposed Wind Farm site. The potential impact is discussed below.

Of the scoping responses received from telephone, broadband and other telecommunications operators, those who highlighted an initial potential interference risk are addressed below. The remaining consultees who responded to scoping, operate links either outside the Proposed Wind Farm site, and therefore are not subject to any interference risk, or do not operate any links in the area. Relevant copies of scoping responses are provided in Appendix 2-1.

2rn

2rn responded to a scoping request from MKO on the 8th June 2026, noting that they had 1 no. link traversing the Proposed Wind Farm site, however all proposed turbine locations are situated outside the operator specified setback applied to the link. A standard Protocol Document will be prepared by 2rn for the Proposed Project. should the Proposed Project be granted planning permission and prior to the construction phase.

Eir

Eir responded to a scoping request from MKO on the 12th of May 2026, noting that they had 6 no. Links in the vicinity of the Proposed Wind Farm site, of which 2 no. links traversing the Proposed Wind Farm site; however all proposed turbine locations are situated outside the operator specified setback applied to the links. Therefore, no interference with these links is anticipated.

Enet

Enet responded to a scoping request from MKO on the 24th January 2022, noting that they had 6 no. links in the vicinity of the Proposed Wind Farm site, of which 1 no. link traverses the Proposed Wind Farm site, however all proposed turbine locations are situated outside the operator specified setback applied to the link. Therefore, no interference with this link is anticipated.

Imagine

Imagine responded to a scoping request from MKO on the 25th January 2022, noting that they had 1 no. link traversing the Proposed Wind Farm site, however all proposed turbine locations are situated outside the operator specified setback applied to the link. Therefore, no interference with this link is anticipated.

Three

Three responded to a scoping request from MKO on the 12th May 2026, noting that they had 1 no. link traversing the Proposed Wind Farm site, however all proposed turbine locations are situated outside the operator specified setback applied to the link. Therefore, no interference with this link is anticipated.

Viatel

Viatel responded to a scoping request from MKO on the 28th January 2022, noting that they had 3 no. links in the vicinity of the Proposed Wind Farm site, however these do not traverse the Proposed Wind Farm site. Therefore, no interference with these links is anticipated.

Vodafone

Vodafone responded to a scoping request from MKO on the 26th September 2022, noting that they had 18-no. links in the vicinity of the Proposed Wind Farm site, of which 2 no. links traverse the Proposed Wind Farm site, however all proposed turbine locations are situated outside the operator specified setback applied to the links. Therefore, no interference with these links is anticipated.

15.2.5.2.2 *Broadcasters*

There are two broadcasters operating in Ireland, RTÉ Transmission Network (operating as 2rn) and Virgin Media.

A standard Protocol Document will be prepared by 2rn for the Proposed Project prior to the commencement of the construction phase.

A reply was received from Virgin Media on 12th May 2026 stating there will be no impact on their wireless network by the Proposed Project.

15.2.5.2.3 Aviation

As noted in Table 15-30 above, scoping responses were received from the following aviation consultees:

- The Irish Aviation Authority (IAA)
- Department of Defence (Irish Air Corps)

Pertinent information has been summarised below, however the scoping response should be referenced to for further detail:

Irish Aviation Authority

In May 2026, a scoping response was received from the IAA. The requirements of the IAA include the following:

1. *Agree an aeronautical obstacle warning light scheme for the wind farm development.*
2. *Provide as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location. Horizontal extent of turbines and blade length will also be provided.*
3. *Notify the Authority of intention to commence crane operations with a minimum of 30 days prior notification of their erection.*

The nearest licensed aerodrome to the Proposed Wind Farm site is Kilkenny Airport which is located approximately 14km to the southeast of the Proposed Wind Farm site. The closest operational airport to the Proposed Wind Farm site is Waterford Airport which is located approximately 65km to the south of the Proposed Wind Farm site.

In response to the lighting requirements requested by the IAA, the turbines will be marked on maps, lit at night and entered into aircraft navigation databases and therefore can be avoided during flight.

Department of Defence (Irish Air Corps)

The Department of Defence (DoD) replied on the 15th June 2026 and provided, having consulted with the Military Authorities, the following observations:

- *The N8 Route is identified as an Irish Air Corps low level route. The location of structures higher than 45m above the ground within 3NM of the route centreline of low level routes should be considered.*
- *The proposed wind farm may affect the Air Corps ability to access regional areas to the south especially in poor weather conditions.*
- *The cumulative effect of renewable energy developments has the potential to impeded the Irish Air Corps operability.*
- *Single turbines, structures, or turbines delineating the windfarm should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or of a type visible to Night Vision equipment. Obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850*

- *nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.*
- *In the event of negative impacts on future military radar systems, the owner will engage with the Department of Defence and will provide suitable mitigations as soon as practical.*

15.2.6 Aviation Review Statement

Following the scoping and consultation exercises undertaken in May 2026 by MKO, Cyrrus Ltd were engaged to carry out an Aviation Review Statement (ARS) for the Proposed Project in relation to potential aviation that were raised in the observation by the DoD. The ARS is included as Appendix 15-5 of this EIAR and provides a qualitative evaluation of the Proposed Project's potential to impact airspace, civil and military flight following the items outlined in the DoD's observation.

In response to the DoD, which identified the M8 as an Irish Air Corps (IAC) low-level route and raised concerns regarding turbines exceeding 45m within 3 nautical miles (NM) of the route centreline, the ARS reviewed the applicable aviation environment, IAA requirements, Standardised European Rules of the Air and the 2014 Air Corps Wind Farm/Tall Structures Position Paper (hereafter referred to as the Air Corps Position Paper). The Proposed Wind Farm is located within uncontrolled Class G airspace and Military Operating Area 5. However, it is approximately 50NM from Casement Aerodrome, outside the 20NM notification area identified in the Air Corps Position Paper and outside the Air Corps' designated low-flying training areas.

The ARS identifies that the Proposed Wind Farm is located within the Air Corps' requested 3NM buffer from the M8, with T07 situated approximately 1.8NM from the motorway at the closest point. The section of the M8 where the requested buffer would be reduced is approximately 5.15NM long, and it is estimated it would be traversed by an aircraft in between 1 minute 24 seconds to just over 3 minutes, depending on aircraft type and speed. The ARS notes that IAC operations using the motorway as a visual navigational feature would be undertaken under Visual Flight Rules and would therefore be subject to the applicable "see-and-avoid" principle and minimum-height requirements. Under these requirements, an aircraft passing within 500 feet laterally of an obstacle must fly at least 500 feet above it; the closest turbine would be approximately 10,937 feet from the M8, almost 22 times this lateral distance. The report also notes that rising terrain begins approximately 1.6NM east of the motorway, which would independently limit the practical availability of a 3NM obstacle-free corridor.

The ARS concludes that the requested 3NM buffer is a policy position contained in the Air Corps Position Paper rather than a requirement in the applicable aviation regulations or operational guidance. The ARS notes that the IAA's consultation response addressed matters including engagement with the DoD, obstacle notification, construction cranes and aviation obstacle lighting, but did not refer to the Air Corps' 3NM buffer. On this basis, the ARS considers that the limited reduction of the requested buffer from 3NM to a minimum of 1.8NM would not be significant when assessed against conventional Visual Flight Rules and obstacle-clearance criteria. The report recommends constructive engagement with the IAC and a review of its 2014 Position Paper to establish a more proportionate approach that safeguards military aviation operations while facilitating renewable energy development.

15.2.7 Likely Significant Effects and Associated Mitigation Measures

15.2.7.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, there would be no change to existing telecommunications and aviation operations in the area. However, the opportunity to capture an even greater part of County Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of

electricity from renewable resources and the reduction of greenhouse gas emissions. Furthermore, as this application includes a Biodiversity Management and Enhancement Plan (Appendix 6-4) to be implemented during the development's operation, the opportunity to enhance the site for biodiversity, at a local scale, would also be lost.

15.2.7.2 Construction Phase

The potential for electromagnetic interference from wind turbines occurs only during the operational phase of the Proposed Project. There are no electromagnetic interference impacts associated with the construction phase of the Proposed Project, and therefore no mitigation required. Potential impacts during turbine erection and commissioning are assessed in the operational phase impact assessment.

15.2.7.3 Operational Phase

15.2.7.3.1 *Telecommunications*

Pre-Mitigation Impact

Proposed Wind Farm

Consultation regarding the potential for electromagnetic interference from the Proposed Project was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. As listed in Table 15-30 above, a number of operators were identified as having links in the area. None of the Proposed Turbines are located within the areas requested to be left clear of turbines.

Proposed Grid Connection

None Identified.

Mitigation Measures

Prior to the operational phase of the Proposed Wind Farm, a testing exercise will be carried out to determine there are no impacts on any links which traverse the Site. In the event of interference occurring to telecommunications, the Guidelines acknowledge that 'electromagnetic interference can be overcome' by the use of divertor relay links out of line with the wind farm.

Residual Effect

The Proposed Project will have no residual effect on the telecommunications signal or links of any operator, due to distance from or absence of any links in the area.

Significance of Effects

There will be no significant effect on telecommunications from the Proposed Project.

15.2.7.3.2 *Aviation*

Proposed Wind Farm

As outlined in Section 15.2.6 above, the ARS notes that the Proposed Wind Farm will have a low impact on airspace, general aviation and the IAC 3 NM buffer zone from motorways. Aircraft using the motorway as a visual navigational feature would operate under Visual Flight Rules and would remain

subject to applicable “see-and-avoid” and minimum obstacle-clearance requirements. The ARS also identifies that an aircraft displaced by 3NM from the motorway would be unlikely to maintain effective visual reference to it, particularly during conditions of reduced visibility. The reduction in the requested buffer would occur along an approximately 5.15NM section of the motorway and would be experienced for a limited duration. Accordingly, it is not anticipated that the Proposed Wind Farm would prevent flight operations from continuing along this route or result in significant effects on aviation safety or IAC operations. When all the aspects above are taken as a sum, this is considered a negative, moderate, long-term effect on aviation.

However, as detailed in Section 15.2.6 above, the ARS identifies that aircrafts displaced 3NM from the motorway preclude any chance of flight with visual reference to it and recommends challenging the IAC position, as it is not envisioned that flight operations along this route would no longer be able to take place as a result of the Proposed Wind Farm. Similarly, the aviation industry is highly regulated and subject to numerous mandatory standards, checks and safety requirements, many of which are international in nature and requiring the issue of operating licences. When account is taken of the highly regulated nature of the aviation industry and its mandatory operational, licensing and safety requirements, the residual effect on aviation is considered not significant.

Proposed Grid Connection

None Identified

Mitigation Measures

The scoping response from the IAA and DoD sets out lighting requirements for turbines as detailed above. These requirements will be complied with for the Proposed Project and any further details will be agreed in advance of construction with the IAA, i.e. crane erection. The coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments.

Residual Effect

Following the implementation of the mitigation measures above, there will be a negative, slight, long-term residual effect on aviation.

Significance of Effects

There will be no significant effect on aviation operations due to the Proposed Project.

15.2.7.3.3 *Decommissioning Phase*

As stated in Section 15.2.7.3 above, the potential for electromagnetic interference from wind turbines occurs only during the operational phase of the Proposed Project. There are no electromagnetic interference impacts associated with the construction or decommissioning phases of the Proposed Project, and therefore no mitigation required.

15.2.7.4 Cumulative Effect

Chapter 2, Section 2.9 of this EIAR describes the methodology used in compiling the list of permitted or proposed projects and plans in the area, (wind energy or otherwise) considered in the assessment of cumulative effects, and provides a description of each project, including current status, and is set out in Section 2.9 in Chapter 2 of this EIAR. There are 10 no. existing wind farms, 4-no. permitted and 9-no. proposed in the cumulative study area. The closest existing wind farm is Lisdowney Wind Farm located approximately 4.5km northeast of the Proposed Wind Farm (T09). The closest proposed wind energy

development is Gathabawn Wind Farm located approximately 2.4km north of the Proposed Wind Farm (T8).

During the development of any large project that holds the potential to effect telecoms or aviation, the Developer is responsible for engaging with all relevant Telecoms Operators and Aviation Authorities to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the developer for each individual project is responsible for ensuring that the necessary mitigation measures are in place. All modern wind farms have lighting requirements agreed with IAA and the turbine locations entered into aircraft navigation databases and therefore can be avoided during flight. It is on this basis that it can be concluded that there would be no cumulative impacts relating to the Proposed Project and surrounding projects in relation to Telecommunications or Aviation.

15.3 Other Material Assets

This section of the Material Assets chapter considers other utilities or built services in the area such as electricity supply and transmission, water, gas and underground telecommunications. This section also considers waste management during the construction, operational and decommissioning phases of the Proposed Project.

In order to assess the potential for significant effects on built services and waste management in the vicinity of the Proposed Project, scoping requests were made to EirGrid, Uisce Éireann and numerous sections of Kilkenny County Council including Water Services and Environment. Refer to Section 2.7 of Chapter 2 of this EIAR for details in relation to the EIA scoping exercise.

A request for information response was received from Uisce Éireann in March 2026 which provided details in relation to specific water services within the Site. A request for information response was received from ESB Networks in February 2026 which provided details in relation to electricity infrastructure within the Site.

No gas supply lines are located within the Site, the closest gas line is located approximately 270m west of the Site at its nearest point – in the townland of Ballyconra, Co. Kilkenny.

A desktop assessment, using Eir infrastructure eMaps[2], determined the presence of existing underground broadband cabling along the Proposed 110kV Underground Cabling.

15.3.1 Existing Built Services and Utilities

The Proposed Project has been designed to avoid identified services and utilities where insofar as possible. Prior to commencement of construction detailed site investigations will be carried out to confirm design assumptions and undertake additional surveys to identify any new services and utilities and ensure they will not be impacted by the Proposed Project.

As detailed above in Section 15.1.7, as part of the design process, every effort has been made to locate the Proposed 110kV Underground Cabling off the existing road carriageway and within the hard shoulder or soft margin/grass verges, avoiding, insofar as possible, other existing underground services/utilities (Refer to Chapter 4, Section 4.8.2.2 of the EIAR). The existing carriageway of the N77 has been avoided apart from a short section measuring approximately 26m where the cabling trench crosses from west to east across the public road corridor. This equates to less than 3.5% of the approximate 760m proposed within the N77 corridor.

[2] [2] eMaps open eir Civil Engineering Infrastructure Service

The exact location of the Proposed 110kV Underground Cabling within the curtilage of the public road network may be subject to minor modification following confirmatory site investigations, to be undertaken prior to construction of the Proposed Project. A Road Opening Licence (ROL)will be sought from the Roads Authority i.e. Kilkenny County Council requiring all details to be confirmed before the licence is granted and work can commence. The agreement of such details will ensure that the Proposed 110kV Underground Cabling can be accommodated while ensuring the local authority can carry out its functions in respect of maintenance works and future services provision along this section of the N77.

15.3.1.1 Electricity

15.3.1.1.1 *Infrastructure*

Overhead lines (OHL) within the Site include medium voltage/low voltage (MV/LV) lines (10kV/20kV/400V/230V). The closest MV/LV overhead line is located approximately 220m west of the Proposed Wind Farm infrastructure at its closest point in the townland of Killoshulan, Co. Kilkenny. A number of 38kV and MV/LV (10kV/20kV/400V/230V) OHLs traverse the Proposed 110kV Underground Cabling from the Proposed 110kV Substation in the townland of Frankford or Ballykieran, Co. Kilkenny to the existing Ballyragget 110kV substation in the townland of Moatpark, Co. Kilkenny.

15.3.1.1.2 *Supply*

Ireland faces significant challenges to its efforts to meet European Union (EU) targets for renewable energy by 2030 and its commitment to transition to a low carbon economy by 2050. The need to decarbonise the economy and reduce emissions has always been imperative, however in recent years the urgency involved has become clearer to all stakeholders. The primary driver behind the Proposed Project is the need to provide additional renewable energy to offset the use of fossil fuels within the electricity generating sector. Further detail can be found in Chapter 2, Section 2.2 of this EIAR. The Proposed Project comprises the provision of a wind farm of 10 no. wind turbines, which is capable of generating and providing a significant amount of renewable energy onto the national grid and capture an additional part of County Kilkenny's valuable renewable energy resource.

15.3.1.2 Water

15.3.1.2.1 *Infrastructure*

Uisce Éireann services are located within the Site. Uisce Éireann services are located along the southern portion of the Proposed Wind Farm site – where the site interacts with the R693 Regional Road. There will be no impact on the Uisce Éireann services from the Proposed Project.

A search of private well locations on the GSI well database (www.gsi.ie) shows there are 7 no. private wells (farm and domestic) located down-gradient of the Proposed Wind Farm site towards the general east. The wells consist of dug wells and boreholes. A high portion of the wells to the southeast are dug wells which is consistent with a shallow groundwater table and the presence of springs along the Nuenna River channel.

Also located to the southeast of the Proposed Wind Farm site are 2 no. separate EPA groundwater monitoring locations which comprise of clusters of deep and shallow wells at each location (NU1 & NU2). All the wells located to the southeast of the Proposed Wind Farm site (including the EPA wells and Well A) exist within the mapped Clomantagh Killoshulan (Balief) Group Water Scheme (GWS) Source Protection Area (SoPA).

Due to the nature of the Proposed 110kV Underground Cabling being within the carriageway of public roads outside the Proposed Wind Farm site, no assessment on potential wells located along the cable route was carried out due to the lack of potential affects

15.3.1.3 Broadband Services

15.3.1.3.1 *Infrastructure*

A desktop assessment using Eir infrastructure eMaps found existing broadband services in the public road corridor along the Proposed 110kV Underground Cabling. An analysis of the services found the broadband cables are potentially located on both sides of the verge of the public road corridor. There are underground broadband services located within the public road of the Proposed Wind Farm.

15.3.2 Waste Management

A Waste Management Plan (WMP) has been prepared and forms part of the Construction and Environmental Management Plan (CEMP) in Appendix 4-3 of the EIAR.

The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Project. Disposal of waste will be a last resort.

All waste generated on Site will be contained in waste skips at a waste storage area on-site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The expected waste volumes generated on-site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all wastes streams generated on-site will be deposited into a single waste skip. This waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The nearest licensed waste facility to the Proposed Wind Farm site is Dunmore Recycling and Waste Disposal located approximately 14.5km to the southeast of the Site.

Site personnel will be instructed at induction that under no circumstances can waste be brought to the Site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on Site is forbidden.

It is not anticipated that any significant volume of waste will be generated within the Site during the operational phase of the Proposed Project as only a small number of operational and maintenance personnel will be present on within the Proposed Wind Farm site certain times. Any waste generated due to the operation and maintenance of the Proposed Project will be disposed of in a covered skip, located within the on-site substation compound. The waste material will be transferred to a MRF by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal.

15.3.3 Likely Significant Effects and Associated Mitigation Measures

15.3.3.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed the opportunity to generate renewable energy and electrical supply to the national grid would be lost. All existing built services within the Site would remain unchanged. However, the opportunity to capture an even greater part of County Kilkenny's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. Furthermore, as this application includes a Biodiversity Management and Enhancement Plan (Appendix 6-4) to be implemented during the

development's operation, the opportunity to enhance the site for biodiversity, at a local scale, would also be lost.

15.3.3.2 Construction Phase

15.3.3.2.1 *Electricity*

There is potential for OHL and underground electricity and services to be impacted through interference or breakage during the construction phase, specifically during the delivery of turbine components and the laying of grid connection cables along the public road corridor. There will also be a requirement, to temporarily relocate the overhead line pole-set at the proposed site entrance during the turbine delivery phase. This will have a temporary, moderate negative impact on local electricity supply. Working in the vicinity of overhead electricity lines, in the absence of the correct safety measures and procedures has the potential to have a significant, negative impact on health and safety.

Mitigation Measures

- Goal posts will be established under overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks[3]
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on the routes and operating voltages of OHLs running across the proposed main site entrance. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to site.
- Barriers will run parallel to the OHL at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- Prior to the delivery of turbines to the Proposed Wind Farm site, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.9 above for details.
- When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. OHL proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site.
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.
- All health and safety measures as detailed in Section 5 of CEMP (Appendix 4-3) and Chapter 5 Population and Human Health will be adhered to during the construction, operation and decommissioning phases.
- Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.

[3] *https://www.esbnetworks.ie/docs/default-source/publications/code-of-practice-for-avoiding-danger-from-overhead-electricity-lines.pdf*

- Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.
- Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.
- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks

Residual Effect

With the implementation of the above measures, the residual effect is considered to be a temporary, slight negative impact on local electricity supply and a short term, slight negative impact on health and safety.

Significance of Effects

There will be no significant direct or indirect effect on electricity supply from the Proposed Project during the construction phase.

15.3.3.2.2 *Water*

The Uisce Éireann services are unlikely to be impacted by the Proposed Project. Uisce Éireann services are located along the R693 Regional Road where the road meets the proposed site entrance in the townland of Barna, Co. Kilkenny. There will be no impact on the Uisce Éireann services from the Proposed Project.

Due to the local hydrogeological/hydrological regime and with the application of the mitigation outlined in Section 9.5.2.1 of Chapter 9, no significant effects on the Clomantagh/Killoshulan GWS or local private wells will occur.

Mitigation Measures

- In advance of any construction activity, the contractor will undertake pre-commencement surveys to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider.

Residual Effect

With the implementation of the above measures, the residual impact is considered to be a temporary, slight negative residual effect on local water supply and a short term, slight negative residual effect on health and safety.

Significance of Effects

There will be no significant direct or indirect effect on water supply from the Proposed Project during the construction phase.

15.3.3.2.3 Broadband Services

The construction of the Proposed Project will be unlikely to have a significant impact on broadband services such as the Eir broadband service in the public road network as the Proposed 110kV Underground Cabling has been designed to avoid existing underground electricity cables and other services and can be described as mitigation by design, therefore there is no potential to give rise to effects on electrical and other services.

Mitigation Measures

Notwithstanding the above, specific measures are incorporated into the CEMP, included as Appendix 4-3 of this EIAR, to ensure that the construction of the Proposed Project will not have effect on underground electrical cables and built services at the Site. The mitigation measures include the following:

- Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.
- Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.
- Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.
- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.

Residual Effect

Following the implementation of the above mitigation measures, there will be a short-term imperceptible negative residual effect on broadband services during the construction phase of the Proposed Project.

Significance of Effects

Based on the assessment above there will be no significant effects.

15.3.3.2.4 Operational Phase

There will be no operational phase impacts or associated effects on built services and waste management associated with the Proposed Project.

15.3.3.2.5 Decommissioning Phase

The wind turbines proposed as part of the Proposed Wind Farm are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Wind Farm will be decommissioned fully as described in Chapter 4 and the accompanying decommissioning plan in Appendix 4-6.

It is not intended that the Proposed 110kV Underground Cabling will be removed at the end of the useful life of the Proposed Wind Farm. By the time the decommissioning of the Proposed Wind Farm is to be considered, the Proposed 110kV Substation and Proposed 110kV Underground Cabling will likely form an integral part of the local electricity network. Therefore, it is intended that the Proposed Grid Connection (including the proposed new access and maintenance tracks) will be retained as permanent structures and will not be decommissioned.

The works required during the decommissioning phase are described in Section 4.10 in Chapter 4 of this EIAR. Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent. Based on the assessment outlined above in Section 15.3.3.2, there will be no significant effects on existing and built services, or waste management as part of the decommissioning phase.

15.3.4 Cumulative Impact Assessment

The potential cumulative impact of the Proposed Project and other relevant developments has been carried out with the purpose of identifying what influence the Proposed Project will have on the surrounding environment when considered cumulatively and in combination with relevant existing permitted or proposed projects and plans in the area, in the vicinity of the Proposed Project site, as set out in Section 2.9 in Chapter 2 of this EIAR.

The potential for cumulative effects with these nearby developments are not significant from the perspective of built services and waste management. The construction of the underground electrical cabling connection route for the Proposed Project would be subject to a ROL, as would any other similar nearby grid connection works. The timing of these works would therefore be controlled by the ROL process and would not overlap. It is also likely that the construction phases of these projects will not overlap with the construction phase of the Proposed Project.

On the basis of the assessment above, the Proposed Project will have no impact on built services and waste management. It is on this basis that it can be concluded that there would be a short-term, imperceptible cumulative impact on built services and waste management from the Proposed Project and permitted or proposed projects and plans in the area as set out in Section 2.9 in Chapter 2 of this EIAR.