

16 TRAFFIC & TRANSPORTATION

16.1 INTRODUCTION

This chapter of the EIAR describes the assessment undertaken of the potential traffic and transportation impact from the proposed project. The proposed project consists of 15 no. wind turbines with all associated site works (including a proposed grid connection route (GCR) and works areas on the proposed turbine delivery route (TDR)). In order for this EIAR chapter to be consistent with other EIAR chapters, the term TDR will be used in place of Abnormal Indivisible Load¹ (AIL) haul route, which would normally be used in traffic assessments. The term AIL may still be used when referring to the various large components to be transported to site (turbines and transformer).

FuturEnergy Ireland proposes to develop the proposed project, which includes a proposed wind farm, TDR and GCR in Co. Waterford. The proposed wind farm site is located 4 km northeast of Cappoquin and 13 km northwest of Dungarvan. It is proposed to supply the power from the proposed project to the Irish electricity network via tail-fed 110kV underground cables to the existing Dungarvan 110kV substation in the townland of Killadangan, Co. Waterford.

The full proposed project has been considered and has been addressed as part of this EIAR. A full description of the proposed project is provided in Chapter 2 – Description of the proposed project.

Traffic and transportation impact has been assessed for the construction, operational and decommissioning phases of the proposed project. The proposed wind farm site access will be via the local road L5055, and assessment baseline traffic levels have been measured at the N72/L1027 Crossroads Junction, located south-west of the proposed wind farm site.

16.1.1 Statement of Authority

This chapter of the EIAR has been prepared by Juliana Cardoso and Maria Rooney of TOBIN Consulting Engineers. TOBIN Consulting Engineers are in operation for over 70 years and have carried out numerous Traffic and Transport Assessments (TTAs) for various residential, commercial, business, retail, and leisure developments. TOBIN has also produced Traffic & Transport chapters for a number of EIARs for various wind farm projects.

Juliana Cardoso (Graduate Engineer at Roads and Transportation) has a Bachelor of Engineering in Civil Engineering and a Master of Science in Transportation Engineering. She is a Member of Engineers Ireland with three years' work experience, and she has undertaken numerous Traffic and Transport Assessments (TTA) and EIAR Traffic Chapters for various wind farm projects.

Maria Rooney (Senior Engineer at Roads and Transportation) has a Bachelor of Engineering in Civil Engineering and a Master of Engineering in Roads and Transport Engineering. She is a Chartered Member of Engineers Ireland, and she has over ten years' work experience in roads

¹ Abnormal Indivisible Load - a load which cannot be divided or broken down e.g. containers, large equipment etc. and exceeds the weight, height, width or length limit(s) set out in the above road traffic regulation. (www.rsa.ie)

and transport engineering with extensive experience in the preparation of EIAR and EIS for environmental projects including wind farms, solar farms, and numerous quarries.

Other contributors to this chapter were Nationwide Data Collection (NDC) and Roadplan Consulting.

NDC provides specialist data collection services for transport planning, traffic engineering and market research, and commenced trading in the UK and Ireland in 2008. NDC carried out traffic counts for the proposed project.

Roadplan Consulting carried out the Road Safety Audit (RSA) for the proposed project. Roadplan provides engineering consultancy services in road design, road safety and transportation assessment, and was established in 2003. Dermot Donovan is the RSA team leader, Dermot has over 30 years' experience in the planning, design and implementation of roads and transportation schemes, mostly in consultancy, but also with public bodies and civil engineering contractors in various roles, including with the National Roads Authority (now Transport Infrastructure Ireland), local authorities and private companies in Ireland and the UK.

16.1.2 Relevant Standards

The following relevant standards and policies have been adhered to in the preparation of this chapter:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Traffic and Transport Assessment Guidelines (TII PE-PDV-02045, May 2014)
- Waterford City and County Development Plan 2022-2028
- Kilkenny City and County Development Plan 2021-2027
- Spatial Planning and National Roads Guidelines for Planning Authorities (2012)
- Project Appraisal Guidelines Unit 5.2 - Data Collection (TII PE-PAG-02016, Dec 2023)
- Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections (TII PE-PAG-02017, Oct 2021)
- Guidelines for Managing Openings in Public Roads (Department of Transport, Tourism and Sport, 2017)
- Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions) (TII DN-GEO-03060, May 2023)
- Rural Road Link Design (TII DN-GEO-03031, May 2023).

16.1.3 EIAR Scoping

Scoping is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information.

Scoping with Waterford County Council's Roads Department was undertaken between the 8th of May and 25th of September 2023. The assessment approach for this chapter as detailed in Section 16.2, traffic count period, locations, and study area for the Traffic and Transportation Assessment (TTA) was agreed. Further correspondence was sent on the 25th of September 2023 outlining the proposed GCR, construction material haul routes, passing bays location, and the works areas on the proposed TDR from Belview port to the proposed wind farm site.

Kilkenny County Council's Roads Department was also contacted on the 20th of September 2023 as the proposed TDR starts in Belview Port in Co. Kilkenny and continues through two roundabouts in Kilkenny. The two roundabouts, Slieverue and Luffany on National Road N29,

will require temporary works to accommodate the deliveries. These works include hard standing areas and temporary removal of existing road signage.

Kilkenny County Council stated they are looking to establish a route through the N29 roundabout at Slieverue to accommodate future abnormal loads without significant works and costs. Kilkenny County Council recommended to liaise with Southlink N25 Ltd (Operation and Maintenance Contractor), as Luffany Roundabout forms part of the N25 Waterford By-pass Scheme that is managed under a PPP by Southlink N25 Ltd, which carry out Operation & Maintenance services on behalf of Celtic Roads Group (Waterford) DAC. Southlink was contacted on the 29th of September 2023 and did not raise any issue with the proposed route.

During the on-going liaising with Waterford County Council's Roads Department, WCC had no objection with the issues raised during scoping. The main items identified during the scoping process and addressed in the assessment included the following:

- A need to assess the traffic impact associated with the construction phase, as it has the largest associated traffic volumes.
 - The scope of the TTA is limited to the local roads L1027/L5055,
 - Traffic count was undertaken at N72/L1027 Crossroads,
 - All trips to the proposed wind farm site will be via the local road L1027/L5055.
- Suitable quarries in the vicinity of the site were presented in order to determine construction material haul routes during construction phase.
- Proposed TDR and temporary works required were presented.
- Proposed passing bay's location were presented on local road L5055.
- Scope of the Road Safety Audit:
 - At the proposed wind farm site access,
 - 3 no. crossing point locations where the internal access roads cross the local road network (the L5054, L5055 and L1026),
 - Proposed TDR accommodation works.

16.2 METHODOLOGY

16.2.1 Background and Objectives

The construction phase has the greatest impact period, with impacts experienced on the surrounding road network. These impacts are both the short-term additional traffic volumes and the geometric requirements of the AILs associated with the turbine components. To minimise the impact of the proposed project during the construction phase, a Traffic Management Plan (TMP) has been prepared and is included in Appendix 2-4 of this EIAR.

The assessment methodology undertaken for this traffic and transportation assessment is summarised as follows:

- Review of appropriate guidance to identify appropriate assessment pathways for the construction, operational and decommissioning phases.
- Characterise the receiving environment through baseline traffic count survey at location scoped with the Local Authority.
- Undertake predictive calculations to develop the traffic volumes to quantify and assess the potential impacts associated with the construction, operational and decommissioning phases of the proposed project.
- Undertake assessment of works areas of proposed TDR.

- Specify mitigation measures to reduce, where necessary, the identified potential outward impacts relating to traffic and transportation from the proposed project.
- Describe the significance of the residual traffic and transport effects associated with the proposed project.

16.2.2 EPA Description of Effects

The effects of the proposed project have been described in accordance with the EPA - Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022). Details of the methodology for describing the significance of the effects are provided in Chapter 1 – Introduction, Section 1.6 Legislative Context and Development Guidelines.

16.2.3 Assessment Criteria

The following sections review best practice guidance that is commonly adopted in relation to developments such as the proposed project under consideration here.

This EIAR chapter follows the TII document Traffic and Transportation Assessment Guidelines (TII PE-PDV-02045, 2014). The TTA is set out as follows:

- A review of the existing and future transport infrastructure in the vicinity of the proposed project, including an assessment of 2023 background traffic flows and a traffic forecast during an assumed peak construction phase in 2027,
- A description of the nature of the proposed project and the traffic volumes that it will generate during the construction phase,
- A description of the AILs and construction vehicles that will require access to the site and a review of the traffic impacts on the proposed delivery routes,
- A review of the potential impacts of the proposed project - Section 16.3 Potential Effects,
- An identification of mitigation measures - Section 16.4 Mitigation Measures,
- An assessment of residual impacts - Section 16.5 Residual Effects, and
- An assessment of cumulative impacts - Section 16.6 Cumulative Effects.

The geometric design elements of the proposed project have been assessed in accordance with the best practice guidelines and standards as outlined below:

- A swept path analysis has been carried out considering the proposed site access geometry using Autodesk AutoCAD Vehicle Tracking for associated construction vehicles.
- A swept path analysis on the existing geometry of the road network has been carried out for the works areas of the proposed TDR (for the longest AIL, which are the turbine blade components) using Autodesk AutoCAD Vehicle Tracking.

16.2.4 Assessment

16.2.4.1 Traffic Survey

Two junctions had been previously scoped with Waterford County Council. Traffic counts were planned to be carried out at the N72/L1027 Crossroads and L5054/L5055 T-junction (i.e., located southbound and northbound of site access, respectively), and a speed survey was planned to be undertaken on local road L5054.

However, as Waterford County Council were informed on the 30th of May 2023, equipment was vandalised during the traffic counts, and it was not possible to collect traffic count data at

L5054/L5055 T-junction and speed data on L5054 due to the high risk of further vandalism. It was considered that the data collected provided sufficient information on the key roads being assessed. A Senior Executive Engineer in Waterford County Council did confirm by phone that they would not require further counts/surveys. The construction material haul route will utilise the N72/L1027 Crossroads Junction and will access and egress the proposed wind farm site through the site access located on Local Road L5055, the TTA considered one location, the N72/L1027 Crossroads Junction. Therefore, the construction-generated traffic analysis was not impacted by this incident.

A classified Junction Turning Count (JTC) was carried out by Nationwide Data Collection on Wednesday the 24th of May 2023 between 07:00 and 19:00. JTC survey was undertaken at the following junction:

- Junction 1: Existing N72/L1027 Crossroads Junction

The data collection is in accordance with the TII Project Appraisal Guidelines Unit 5.2 - Data Collection (TII PE-PAG-2016, 2023). Data was collected in May, a representative month, avoiding national and local holiday periods (e.g. summer months), and any other abnormal periods; on Wednesday, a neutral period, which has been defined as Mondays to Thursdays; and for a period of 12 hours: JTC surveys for national road projects should at a minimum record and classify data over a 12-hour period, generally between 07:00 and 19:00.

JTC survey segregated traffic flow between light good vehicles (LGV) and heavy good vehicles (HGV). The results of this survey indicated that the peak traffic through the Junction 1 occurred between AM Peak (08:30 and 09:30) and PM peak (16:30 and 17:30). As the worst-case scenario, the traffic at these peak hours were assessed on the TTA. Traffic count location is presented on Figure 16-1.



Figure 16-1: Traffic Count Location – Junction 1 (Map data ©2023 Google)

16.2.4.2 Haul Routes

For wind farm projects there are two types of haul routes required for the transport of the materials to the site during the construction phase. These haul routes are:

- Construction material haul route for standard axle loaded vehicles (Figure 16-2) and
- Construction haul route for AILs i.e. works areas of the proposed TDR (Figure 16-3)

The turbine component delivery and transformer delivery are a specialist operation due to the size of the loads transported. The AIL vehicles will accommodate transport of the tower, nacelle, blades, and substation transformer.

16.2.4.2.1 Construction Haul Route

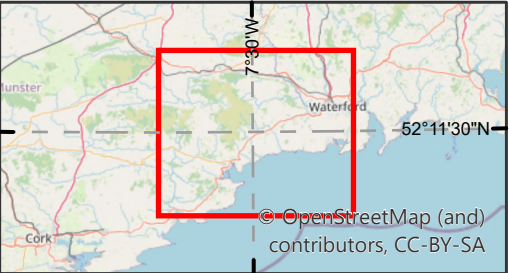
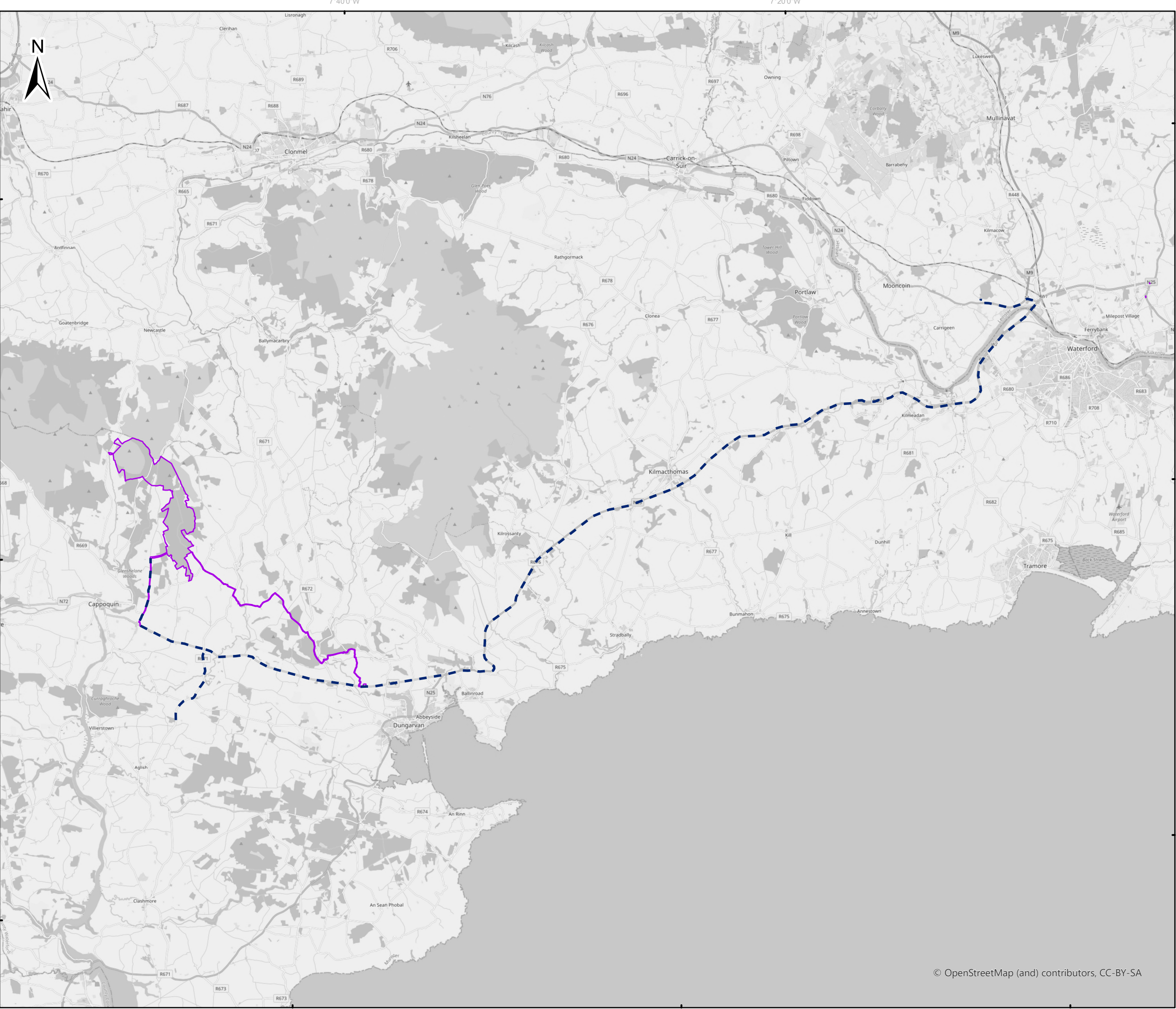
Based on the nature of the proposed project, various construction materials will be delivered to the site over the construction programme. The materials will be delivered by standard heavy good vehicles (HGVs) including rigid lorries and articulated lorries. Other HGVs that will attend the site include lowloaders for standard construction machinery (i.e., crane, excavator, stone crusher), concrete trucks, tipper trucks, and the construction staff that will arrive by light good vehicles (LGVs).

The construction traffic with the highest daily impact (i.e., peak) is the combined construction activities from July to September in 2027 (i.e., from the 7th to the 9th month of the first construction year) as outlined in the construction programme (Table 16-2). This traffic is associated with the importation of the aggregate for the site compound, internal site roads, turbine hardstanding areas and the steel and blinding for the turbine foundations. The second largest impact is associated with the concrete pours for the turbine foundations. This is due to the requirement for a continuous single concrete pour per turbine foundation in a day, and it will only occur on 15 no. days during the 2-year construction programme.

Other materials required onsite will include met mast, building materials, fencing, drainage, culverts, substation materials, welfare facilities materials etc., which are proposed to be sourced locally, transported through the construction haul routes and N72/L1027 Crossroads Junction, and arrive to the proposed wind farm site via the L5055.

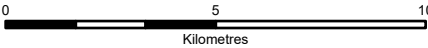
The worst-case scenario for the traffic distribution with all (i.e., 100%) of all materials arriving to site from the east at N72/L1027 Crossroads Junction (i.e. Affane Cross) has been assessed. The worst-case scenario considered the construction haul routes presented on Figure 16-2 and all routes approach Affane cross from the east.

The traffic volumes, both peak and average on the construction haul route are assessed in this traffic assessment.



Legend

- Proposed project
- Construction haul route



NOTES

- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
- ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
- ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \
- WORK COMMENCES\
- ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

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Rev	Date	Description	By	Chkd.	

Client: **FuturEnergy** Ireland

Project: **Scart Mountain Wind Farm**

Title: **Figure 16-2
Construction haul route**

Scale @ A3:	1:180,000	
Prepared by:	Checked by:	Date:
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16.2.4.2.2 The Works Areas of the Proposed TDR

For the proposed project, the works areas of the proposed TDR has been assessed based on several considerations including the following:

- Wind Turbine Specification.
- Ports suitable to receive the turbine components.
- Desk study and site visit of alternative proposed TDR.
- Swept path analysis of pinch points / junctions on the proposed TDR.

The alternative routes studied by the Applicant are discussed in Chapter 3 - Reasonable Alternatives, Section 3.3.3.1 Turbine Delivery. The following route is proposed as the proposed TDR:

Belview Port to the Site

Belview Port in Co. Kilkenny is the proposed port for the import of the turbine components. The route selected for the AILs utilises the national road network as much as feasible from the port to the site. The proposed TDR on the national road network is a type 1 and type 2 single carriageway, with wide carriageway widths, hard shoulders, and hard strips, and a dual carriageway, with a minimum of two lanes and hard shoulder in each direction.

The route commences at the Port of Waterford (Belview Port) from the harbour along Belview Port Road until the National Road N29, passing through Slieverue Roundabout and continuing northeast until Luffany Roundabout.

The route continues to the west on the National Road N25, crossing Thomas Francis Bridge, passing through Carrick Road Roundabout, and continuing along the N25 until the National Road N72.

In Dungarvan, the route continues on the N72 until the N72/L1027 Crossroads Junction. At the junction, the route continues north on Local Road L1027 for 1.1 km and then on Local Road L5055 for 2.5 km to the proposed wind farm site.

The final part of the proposed TDR is via the local road L5055, a single carriageway with no hard shoulders. Waterford County Council has been advised of the proposed TDR during the scoping process. The proposed TDR is shown in Figure 16-3 and the swept path analysis is included in Appendix 16-2.

Traffic generation for the proposed TDR during the construction phase is shown in

Table 16-1. The turbines' nacelle, blades and tower, and transformer will be transported by AILs in convoys of 3 to 5 loads, during night-time, under traffic management and Garda escort.

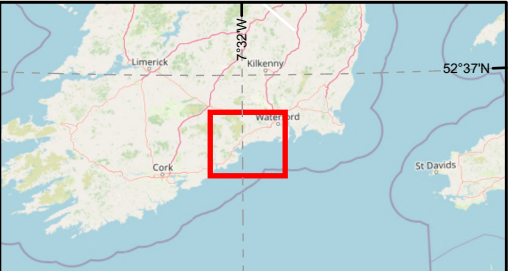
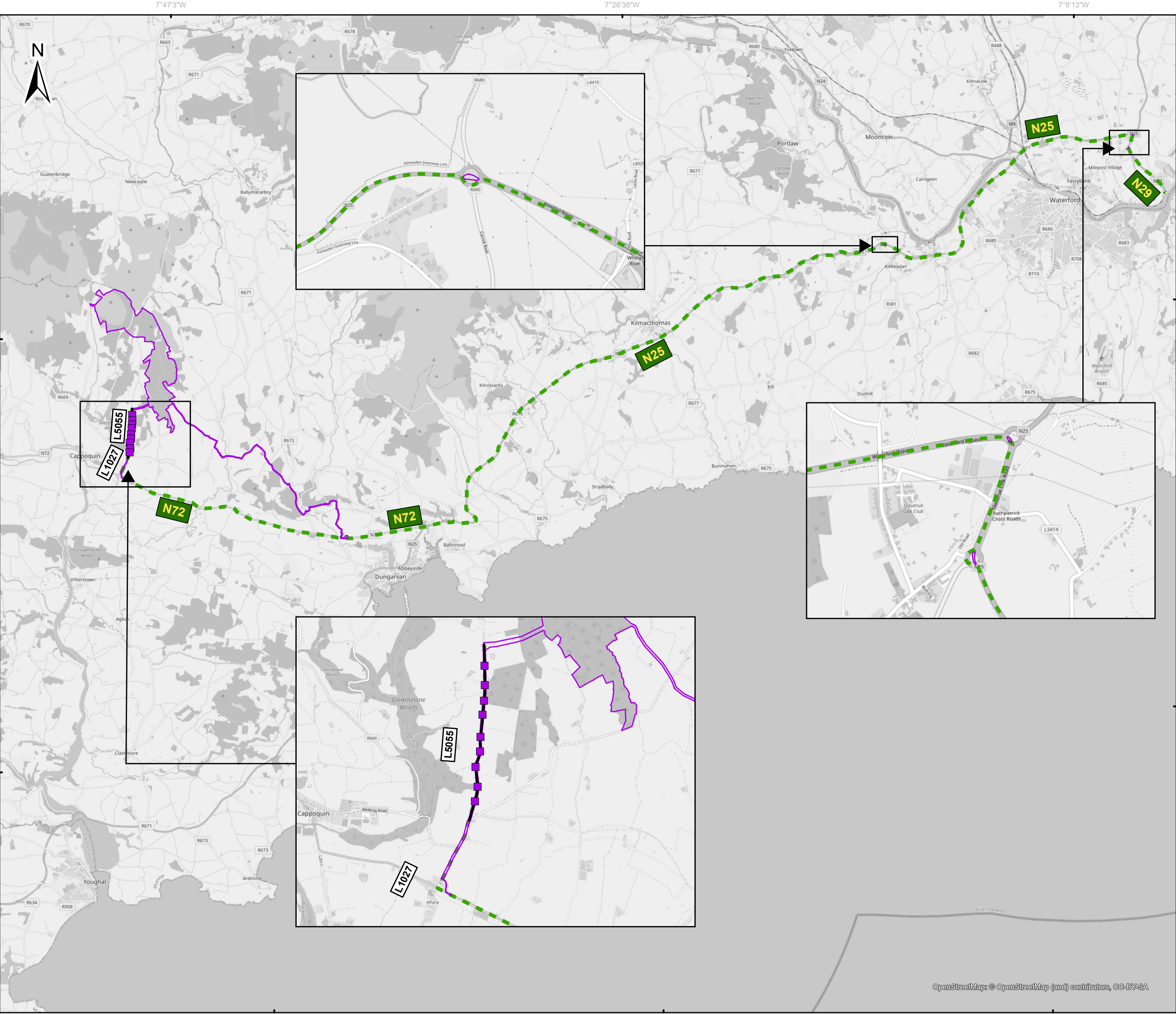
Table 16-1: Traffic Generation during Construction Phase – AIL

AIL Elements	No. of Turbines	Parts	Components per element	Total Components	Trips with: 3 per Convoy	Trips with: 5 per Convoy
Nacelle	15	1	15	120	40	24
Blade	15	3	45			
Tower	15	4	60			

Transformer	1	1
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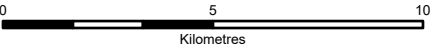
Note:

- (1) Traffic associated with the delivery of the AILs were not assessed as this traffic will be during night-time, with low traffic volumes and under traffic management and Garda escort.
- (2) The turbine elements will be transported in convoys of between 3 (minimum) to 5 (maximum) no. AILs per convoy.



Legend

- Proposed project
- Roads requiring widening works
- Proposed Turbine Delivery Route
- Locations of Proposed Passing Bays



NOTES					
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\					
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\					
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \					
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Client: **FuturEnergy** Ireland

Project: **Scart Mountain Wind Farm**

Title: **Figure 16-3
Proposed Turbine Delivery Route**

Scale @ A3:	1:180,000	
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16.2.4.3 Construction Traffic

Methodology

The construction traffic has been projected based on the proposed wind farm site layout, the construction materials required, the associate construction vehicle capacities, the construction programme and construction hours for the proposed project.

Construction Programme

The phasing and scheduling of the main construction task items for the proposed project are detailed in Chapter 2, Section 2.9 Construction Management.

The construction phase is anticipated to take 24 months with construction envisaged to commence in January 2027.

The first phase of the civil works will include site preparation and clearance, the development of the temporary construction compounds, and associated fencing. The next phase will include widening existing internal access tracks and building new internal access tracks to facilitate the construction of the substation base, the opening of borrow pits, and access for the operation of peat deposition areas.

The delivery of the materials for the hardstanding areas (i.e., parking, substation, lay down areas for turbine components, etc.), blinding, and arrival at the site of the cranes will occur next in the programme. The concrete pours for the foundation at the substations and turbine locations are sequenced next. The substation construction and associated electrical works, including cable laying, will overlap with the hardstanding and foundation works.

Prior to the final phase of commissioning the substation and turbines, the turbine components will be delivered to the site and erected by cranes. In parallel with these activities, backfilling and landscaping work will be undertaken.

As the construction activities progress inward from the site access, various phases will become active and will overlap with each other in different areas within the site at different phases of the construction programme.

Construction Hours

Construction activities will be carried out during normal daytime working hours (i.e., weekdays 07:00 – 19:00 hrs and Saturday 07:00 – 14:00 hrs). However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e., concrete pours which may last for up to 12 hours or to accommodate delivery of large turbine components along public routes), it will be necessary on occasion to work outside of these hours. Any such out-of-hours work will be agreed upon in advance with the Local Authority and An Garda Síochána for AIL deliveries.

Construction Materials & HGV Traffic Volumes

The number of HGV movements has been calculated considering the associated materials for each construction activity, the associated vehicle type for the delivery of these materials and, the duration of the construction activities in the construction programme.

- All construction deliveries (excl. concrete pours) have been averaged over the Monday-Friday and half day Saturday working week.
- Concrete pours for each foundation will occur during 1 working day as required by the construction methodology.

Traffic Generations

The traffic generations are developed based on the materials / deliveries / disposals required at the site and attributing these deliveries to the associated construction activity according to the construction programme.

Table 16-2 and Figure 16-4 show the number of construction HGVs assigned to their corresponding activity and duration in the construction programme. The below indicates a peak HGV movement in July to September 2027 (i.e., 3 months, from the 7th to the 9th month of the first construction year), when the following activities are occurring simultaneously: site compounds, site roads, turbine hardstands, and turbine foundations. The resulting daily peak HGV volume is 15 HGVs one-way, excluding the concrete pour volumes.

The construction methodology for the concrete turbine foundations occurs over 15 days requiring each of the foundations to be poured on a single day, resulting in 142 HGVs arriving onsite per day. Considering the working hours, it is expected an average of 12 HGVs arriving on site per hour during concrete pours.

To mitigate the impact of the construction traffic on the road network and surrounding environment, during the days for the concrete pours (i.e., 15 days) all other construction HGVs will be limited to essential deliveries and programmed to occur on other days of the construction programme.

During the peak construction phase (i.e., 3 months, from the 7th to the 9th month of the first construction year), HGV movements will be 15 HGVs one-way per day; during other months, an average of 10 HGV movements one-way per day is proposed. As the worst-case scenario, these HGV movements were considered in the AM and PM peak hours and have been taken forward into the assessment of the potential impact.

Construction Trip Generation – Staff

The number of construction staff will vary depending on the phase of the construction activity. At the peak construction phase, 116 people are estimated, during off-peak activities 87 people are estimated on site. A reduction in construction staff on site is expected when the construction activities are more technical and less labour intensive.

Traffic Generation – Peak and Average

The proposed traffic associated with the construction of the proposed project is assessed under two scenarios, as a peak and an average traffic generation. The generated traffic considered HGV and LGV trips. All staff members are assumed to arrive at the site by LGVs with an occupancy of 1 person per vehicle.

Peak: The peak traffic generation will be associated with the 15 HGV and 116 LGV one-way daily movement over the 3-month period described above.

Average: The average construction traffic will be associated with the 10 HGV and 87 LGV one-way daily movement over the 2-year construction programme.

The two scenarios were assessed, the proposed peak and average generated traffic were added to the baseline traffic determined by the traffic count survey in order to analyse the potential effect of the proposed project generated traffic on road network.

Table 16-2: Construction Programme 1-way HGV Construction Volumes per Day Excluding Turbine Foundation Concrete Pours

Month	2027												2028											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Site Health and Safety																								
Site Compounds	6	6	6				6	6	6															
Site Roads	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
Turbine Hardstands					5	5	5	5	5	5	5	5	5	5	5	5	5	5						
Turbine Foundations																								
Substation Construction & Electrical Works										3	3	3	3	3	3	3	3	3	3					
Backfilling & Landscaping																								
Turbine Delivery and Erection																								
Substation Commissioning																								
Turbine Commissioning																								
Total HGV 1-way/day	10	10	10	4	9	9	15	15	15	12	12	12	12	12	8	8	8	8	3	0	0	0	0	0
Total HGV 2-way/day	20	20	20	8	18	18	30	30	30	24	24	24	24	24	16	16	16	16	6	0	0	0	0	0
Average HGV 1-way	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Average HGV 2-way	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

LGV 1-way/day	87	87	87	87	87	87	116	116	116	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
LGV 2-way/day	174	174	174	174	174	174	232	232	232	174	174	174	174	174	174	174	174	174	174	174	174	174	174	174

Notes:

- (1) The turbine deliveries for the proposed project will occur during night-time with traffic management and Garda escort. As this traffic will be isolated from other daily traffic movements, it has not been added into the daily traffic volumes in this table.
- (2) This construction traffic table is a simplified traffic volume; a more detailed delivery schedule will be developed by the appointed contractor.
- (3) The above quantities assume that some materials are obtained from the borrow pits onsite, decreasing the amount of HGV required from offsite. Approximately 90,000 m³ will be excavated from the borrow pits onsite.

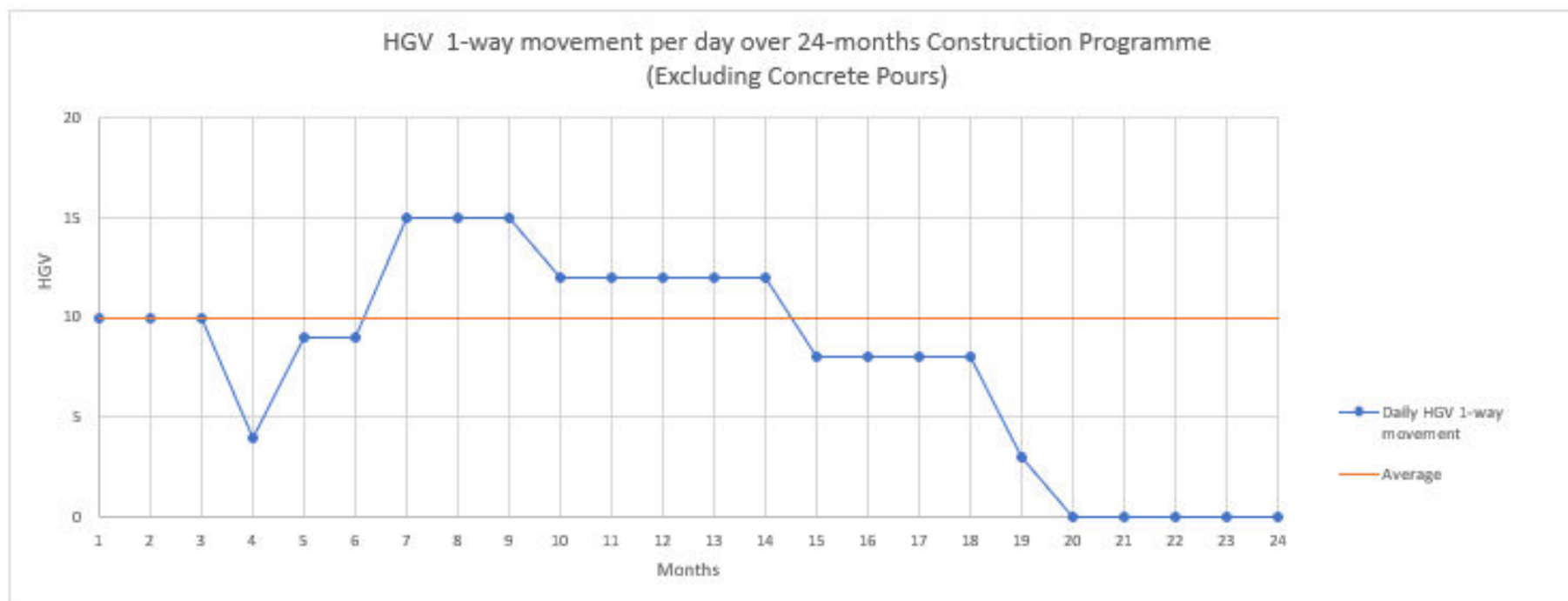


Figure 16-4: Graphical representation of the Construction Traffic over Construction Programme, representing 1-way movement per Day - Excluding Concrete Pour HGVs

16.2.4.4 Operational Traffic

Once the proposed project is operational, most of the traffic generated will be formed by small vehicles for maintenance purposes. When maintenance is required, it is expected that the operational phase will generate a maximum of 6 no. LGV movements per day (i.e., 3 arrivals and 3 departures).

In the unlikely event that a turbine requires a large replacement part, such as a blade or tower section, this will need to be agreed upon with Waterford City and County Council and involve the relevant consents obtained.

16.2.4.5 Decommissioning Traffic

During the decommissioning phase, turbine components will be separated, broken down, and removed off-site. These components will be transported by HGVs. Turbine foundations will be kept on site, the upper sections of the foundations projecting above ground will be removed, and the remainder of the foundations will be covered by soils typical of the surrounding environment and then re-seeded or left to re-vegetate according to ecological requirements.

The on-site substation and 110kV grid connection will not be removed at the end of the useful life of the proposed project as it will form part of the national electricity network. Therefore, the substation will be retained as a permanent structure and will not be decommissioned.

Considering that turbine foundation, hardstanding areas, and access tracks will be left in situ, and the substation and grid connection route will not be decommissioned, the traffic volume generated during decommissioning phase will be lower than during the construction phase and decommissioning phase effect will be slight negative.

16.2.4.6 Junction Assessment

Traffic counts were carried out and a seasonal adjustment check was undertaken to determine if the traffic on the date of the traffic count survey is representative of the annual average traffic for the year. The data from the Traffic Monitoring Unit - TMU N72 160.0 W, located on N72 between Dungarvan and Cappoquin, in Co. Waterford was analysed. Since the traffic count on the day of the survey was 11.7% higher than the Annual Average Daily Traffic (AADT)², a seasonal adjustment was not required.

The traffic count data was forecasted using the TII Project Appraisal Guidelines Unit 5.3: Travel Demand Projections for central growth rates (Table 16-3) and scenarios with and without the proposed project were assessed. The assessment is presented in Appendix 16-1 Traffic and Transport Assessment (TTA).

16.2.4.6.1 Assessment Years

The assessment years are initially based on the Project Programme:

- Construction Year 2027-2028.
- Operational Year 2029 – 2063.
- Decommission Year 2064.

² Annual Average Daily Traffic (AADT) is the total volume of traffic in vehicles passing a point or segment of a road for one year, divided by the number of days in the year.

Other considerations in determining the assessment years are:

- TII Traffic and Transportation Assessment (TTA) Guidelines (TII PE-PDV-02045, 2014)
 - o Outlines the thresholds and sub-thresholds for undertaking a TTA
 - o Recommends assessment years
- TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projects (TII PE-PAG-02017, 2021)
 - o Defines the annual growth rates to apply to the baseflow traffic until the year 2050.
- Scoping with the Local Authority

Considering the advisory thresholds for TTA presented in the TII publication PE-PDV-02045 (May 2014), the traffic of the construction phase exceeds 10% of the traffic on the adjoining road. For this reason, the construction phase of the proposed project will be a threshold, and the production of TTA is recommended.

The operational phase of the proposed project will not meet the requirements presented in the TII publication PE-PDV-02045, 2014. The proposed project traffic (i.e., 6 no. LGV movements) will not exceed 10% of turning movements at junction with and on National Roads, and the proposed project operational phase will generate less than 100 trips in/out combined in the peak hours. Therefore, the operational phase does not meet the thresholds criteria and does not require a TTA.

Regarding the decommissioning phase, turbine foundation, hardstanding areas, and access tracks will be left in situ, and the substation and grid connection will not be decommissioned. Therefore, the traffic volume generated during decommissioning phase will be lower than the construction phase and does not require a TTA. In addition, the decommissioning phase is proposed to happen in 2064, this year is not covered by the TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projects (TII PE-PAG-02017, Oct 2021), which presents the growth rates for each County up to 2050. As a result, the decommissioning phase was not assessed.

The worst-case scenario is the construction phase and therefore this has been assessed. The assessment years will be the following:

- Base year: 2023
- Peak construction phase: 2027
- Average construction phase: 2027.

Error! Reference source not found. shows the growth rates for Waterford County, split into Light Good Vehicles (LGV) and Heavy Good Vehicles (HGV). The derived growth factors were applied to 2023 traffic flows to determine background traffic flows for the future assessment year (2027).

Table 16-3: County Waterford Annual Growth Rates (TII PE-PAG-02017, Oct 2021)

County	2016 - 2030	
	LGV	HGV
Waterford	1.017	1.036

16.2.4.6.2 Proposed Project Traffic Generation

As outlined in section 16.2.4.2, there are two types of haul routes in this EIAR. The Construction Haul Route and the works areas of the proposed TDR. For the junction assessment, only the Construction Haul Route is assessed, as the AIL will be delivered at night-time under Garda escort.

On the Construction Haul Route, the peak and average traffic volumes do not include for the concrete pour for the turbine foundations, because this activity will occur in 15 days during the 2- year construction programme and only essential deliveries will be scheduled to occur on the same day as the concrete pours. The peak construction HGV movements will be 15 HGV one-way per day and an average of 10 HGV movements one-way per day. As worst-case scenario, all staff members are assumed to arrive at the site by LGVs with an occupancy of 1 person per vehicle. Staff members are assumed to arrive at the AM peak hour and depart at PM peak hour.

16.2.4.6.3 Proposed Project Traffic Distribution

As outlined in the Trip Generation section above, there are two different assessment scenarios. Peak Traffic and Average Traffic. These assessments are based on the materials being delivered (i.e., HGV movements) to site by the same traffic distribution. The worst-case scenario for the traffic distribution will be to assume that all the traffic movements will arrive and depart on the same route.

The traffic distributions are as follows at the N72/L1027 Crossroads:

- East Distribution HGVs for delivery are all (i.e., 100%) assumed to arrive from the east (i.e., direction of Dungarvan and Waterford) and depart in the same direction they arrived from.
- Staff Distribution is assumed to match the existing distribution at the N72/L1027 Crossroads.

Full details on the traffic distribution are presented on the Traffic and Transportation Assessment on Appendix 16-1.

16.2.4.6.4 Junction Modelling

The baseflow and proposed project generated traffic is inputted into the modelling software, Transport Research Laboratory (TRL) computer program JUNCTION 10 PICADY, a widely accepted tool recommended in TII PE-PDV-02045 (May 2014) and used for the analysis of priority junctions.

The key parameters examined in the results of the analysis are the Ratio of Flow to Capacity Value (RFC value – desirable value for PICADY should be no greater than 0.85 – values over 1.00 indicate the approach arm is over capacity), the maximum queue length on any approach to the junctions and the average delay for each vehicle passing through the junction during the modelled period.

PICADY requires the following input data:

- Basic modelling parameters (usually peak hour traffic counts synthesised over a 90-minute model period),
- Geometric parameters (including lane numbers & widths, visibility, storage provision etc.),
- Traffic demand data (usually peak hour origin/destination table with composition of heavy goods vehicles input).

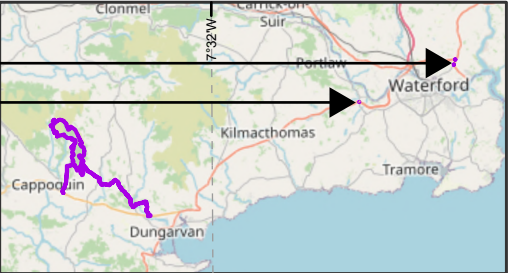
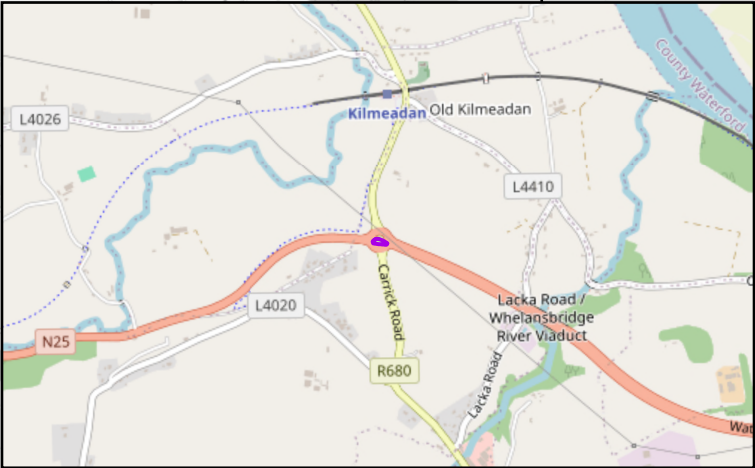
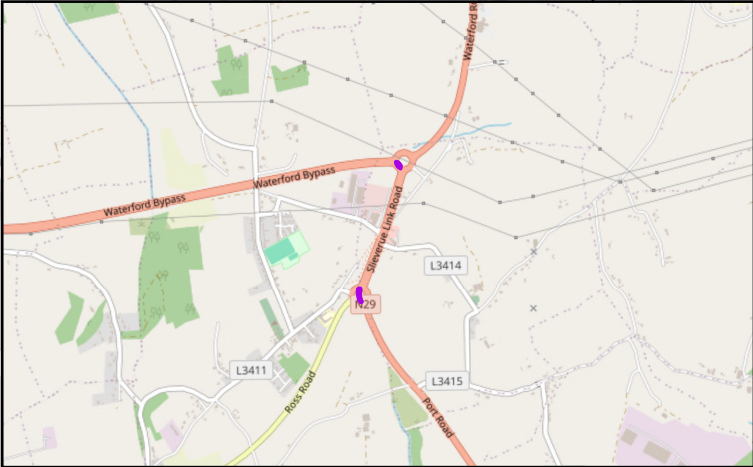
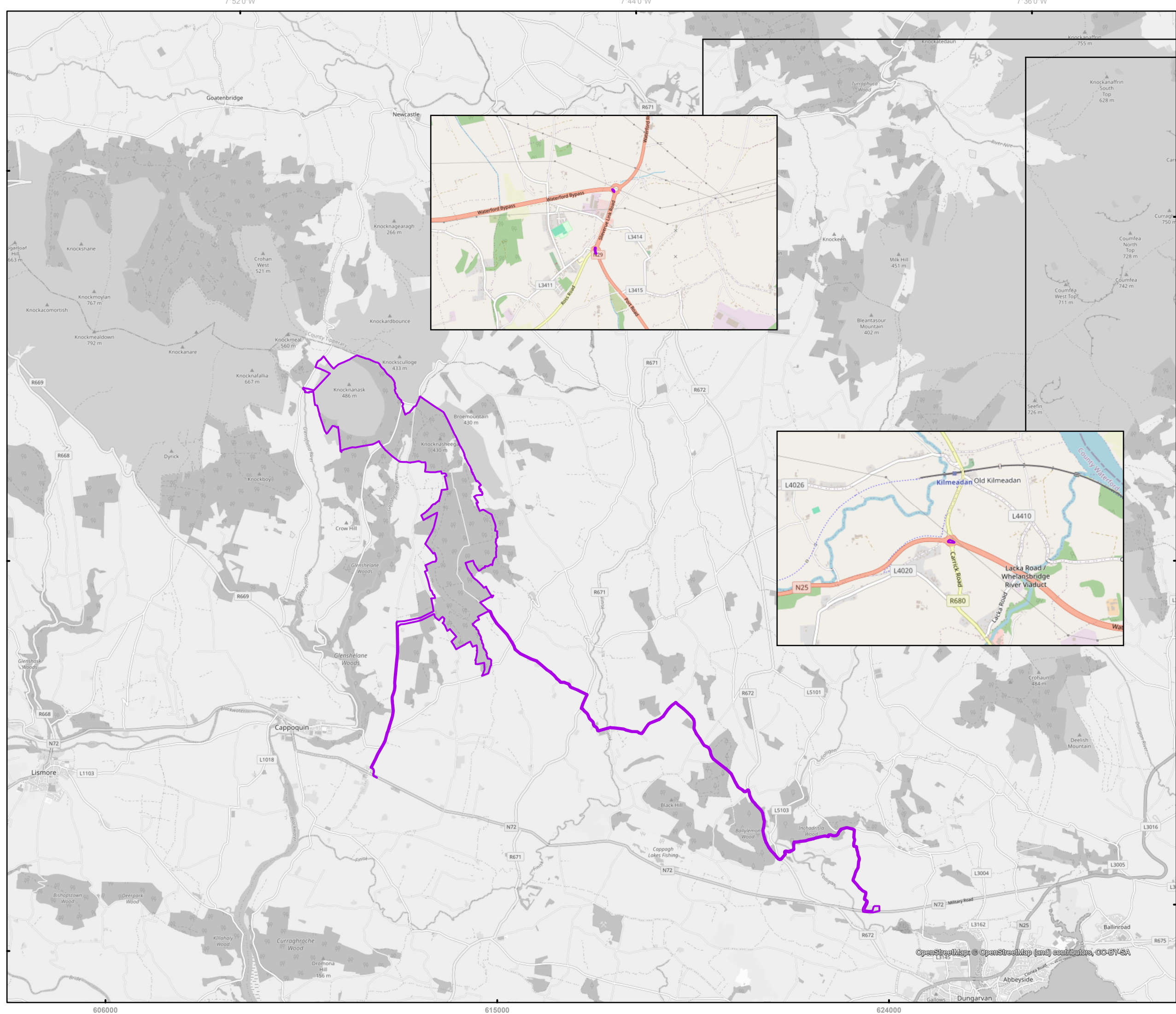
For the purpose of this Report, the vehicle types have been segregated into LVs and HGVs prior to input. Traffic volumes input into the assessment software were in number of vehicles and, HGV composition was set to the percentage of that arm.

The results of the PICADY analysis are presented in the TTA and discussed in section 16.3.2. The origin/destination matrices for the scenarios assessed are provided in the TTA's Annexes.

16.2.5 Site Location

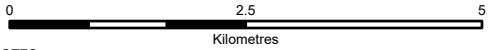
The proposed wind farm site is located in County Waterford, adjacent to the County Tipperary border, 4 km northeast of Cappoquin, 11 km northeast of Lismore and 13 km northwest of Dungarvan.

Access to the proposed wind farm site is via the L5055, continuing the L1027 Local Road Network from the N72 National Secondary Road, with the condition of these roads generally being good. Within the proposed wind farm site, there are existing forest roads which provide good coverage around the site and are well maintained and in good condition.



Legend

Proposed project



NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

A	13/12/2024	First issue	S.P	J.S	
Rev	Date	Description	By	Chkd.	

Client:

FuturEnergy Ireland

Project:

Scart Mountain Wind Farm

Title:

Figure 16-5
Proposed project extent

Scale @ A3: 1:80,000

Prepared by: S.Pezzetta
Checked by: J.Staunton
Date: December 2024

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Map Ref:

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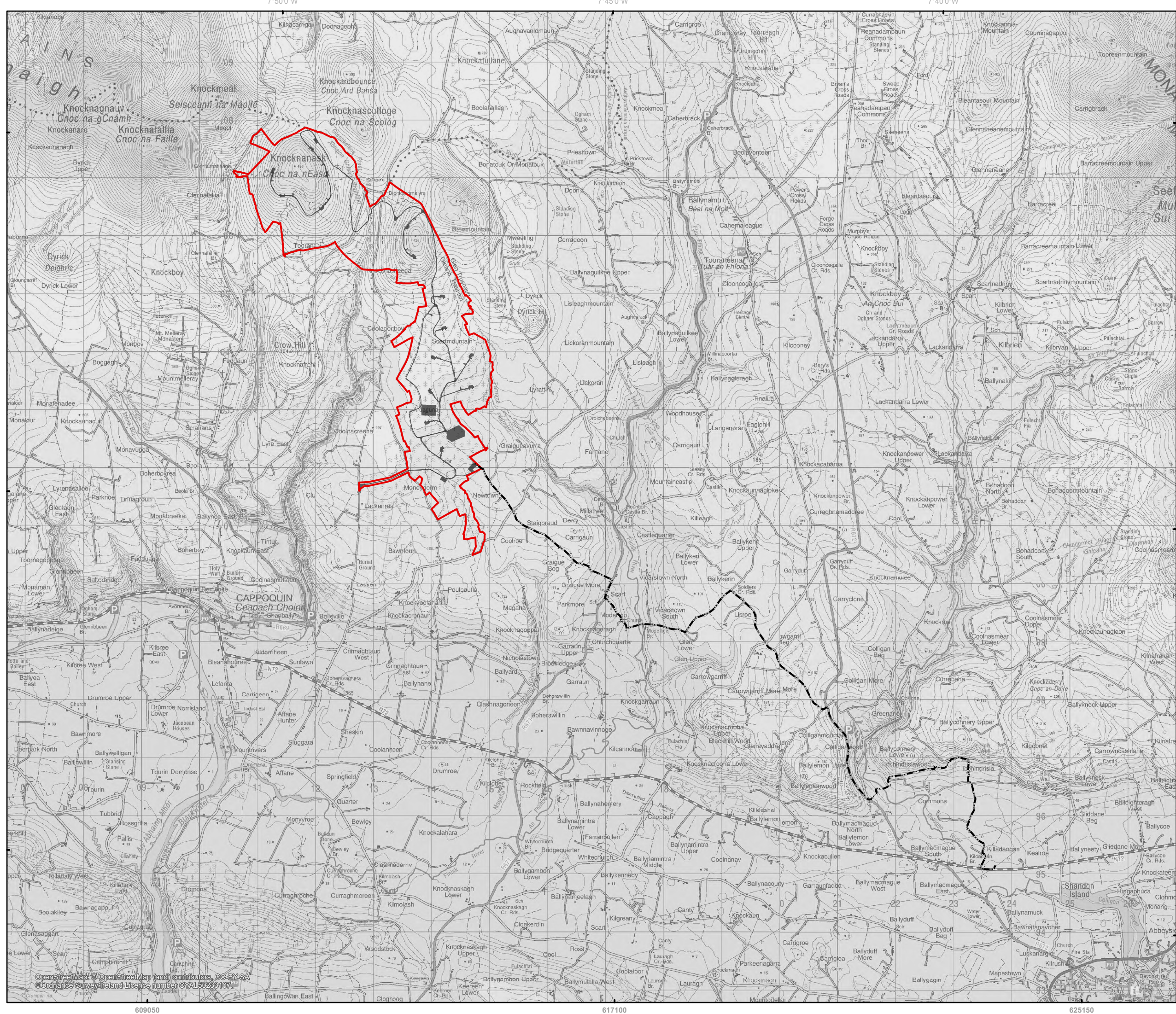
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16.2.6 Grid Connection Route

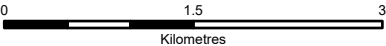
The proposed GCR is: L5056, R671, L1032, L5065, R672, L5103, L3003, and L7001, and N72, provided in Figure 16-6. The overall length of the proposed GCR between the proposed substation and the existing substation is 16 km, most of which is located within the public road corridor with a short section being within the proposed wind farm site, and the remainder being located within Coillte and other private lands.

All cables will be laid in underground ducts. Ducts will be installed mostly by open trenching. The sequence of operations for installing ducts in trenches is to firstly strip off the ground material and topsoil (if present). A trench is then formed to the required depth and width. The ducts are generally laid on a bed of Cement Bound Granular Mixture (CGBM) and surrounded with CGBM. Where contaminants are found (or where bitumen-based materials are present) in excavated material, it will be removed from site by a licensed operator and disposed at an appropriately licenced facility. The top of the trench will generally be finished at ground level with stone as per EirGrid/ESB specifications (or in the case of trenches within public roads, it will be finished in a suitable road surface (at a minimum to the pre-existing standard) that will be agreed with the local authority in advance of works. Once fixed into position, the substation and the proposed GCR will all be commissioned. They will remain powered off until the turbines are being commissioned and the wind farm enters service,

The grid connection construction methodology is described in Chapter 2 Description of the Proposed Project, Section 2.8.



- Legend**
- Proposed Wind Farm Site
 - Proposed infrastructure footprint within the proposed wind farm site
 - Proposed Grid Connection Route



- NOTES**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 - ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 - ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

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Rev	Date	Description	By	Chkd.

Client: **FuturEnergy** Ireland

Project: **Scart Mountain Wind Farm**

Title: **Figure 16-6
Proposed Grid Connection Route**

Scale @ A3: 1:60,000

Prepared by: S.Pezzetta
Checked by: J.Staunton
Date: December 2024

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Map Ref: 11303-006-PGR-S.BO-TOB-A

Draft: A

16.2.7 Existing Road Network

The following section details the existing environment of the road networks that will be potentially impacted by the proposed project considering the proposed TDR and construction material haul routes and proposed GCR. The proposed TDR is: N29, N25, N72, L1027, and L5055; and the proposed GCR is: L5056, R671, L1032, L5065, R672, L5103, L3003, and L7001, and N72.

N09

The N09 is a national primary road. On the construction material haul route, the N09 runs for a short section from Quarry Roundabout to Grannagh Junction Roundabout, between N24 and N25 in County Kilkenny. The section of the road along the construction haul route is a Type 1 Dual Carriageway³ with hard shoulders. The speed limit is 100km/h, and the pavement is in good condition with road markings, signage and, drainage present throughout the road.

N24

The N24 is a national primary road. On the construction material haul route, the N24 runs for a short section from local road L7434 to Quarry Roundabout, in County Kilkenny. The section of the road along the construction material haul route is a Type 1 Single Carriageway⁴, with hard shoulders. The rural speed limit is typically 100km/h, with short sections of 80km/h. The pavement is in good condition with ghost island at junctions and road markings, signage and drainage present throughout the road.

N25

The N25 is a national primary road. On the proposed TDR , the N25 runs from Luffany Roundabout to Dungarvan. The section of the road along the AIL Haul Road is a Type 1 Dual Carriageway with hard shoulders up to Carrick Road Roundabout (R680) and then the road becomes a Type 1 Single Carriageway, with hard shoulders. The speed limit is 100km/h, and the pavement is in good condition. In rural areas, the larger junctions have ghost island and road markings, signage, drainage are present throughout the road.

N29

The N29 is a national primary road from Belview Port to Luffany Roundabout on N25. The section of the road along the proposed TDR is a Type 1 Single Carriageway with hard shoulders up to Slieverue Roundabout and then the road becomes a Type 1 Dual Carriageway, with two lanes and hard shoulder in each direction. The speed limit is 100km/h, the pavement is in good condition and N29 has road markings, signage, drainage throughout with street lighting at junctions.

N72

³ Type 1 Dual Carriageway - A divided all-purpose road with a minimum of two lanes and hard shoulder in each direction constructed to the geometric standards of DN-GEO-03031 and CC-SCD-00006. (TII DN-GEO-03031, May 2023)

⁴ Type 1 Single Carriageway - An all-purpose road with a 3.65m lane in each direction constructed to the geometric standards of DN-GEO-03031 and CC-SCD-00001. (TII DN-GEO-03031, May 2023)

The N72 is a national secondary road. The proposed TDR runs from Dungarvan to Cappoquin in County Waterford. The road is a Single Carriageway with no hard shoulders next to L1027 junction. The speed limit is 80km/h. Next to regional road R672 junction, the speed limit is reduced to 60 km/h and there are ghost islands. After the R672 junction, the speed limit is 100 km/h. The road surface is maintained in good condition and N72 has road markings, signage, drainage throughout the road.

R671

The R671 is a regional road Type 3 Single Carriageway⁵, with 6.0m carriageway width with grass verges to both sides. Road marking (i.e., centreline and road edge) and road signage are present on the R671. Drainage on this road is by over the edge drainage in rural sections. No street lighting is present in the vicinity of the site. The rural typical speed limit is 80km/h, with short sections of 50km/h. On the construction material haul route, the R671 runs for a short section to N72.

R672

The R672 is a regional road Type 2 Single Carriageway⁶, with 7.0m carriageway width with grass verges to both sides. Road marking (i.e., centreline and road edge) and road signage are present on the R672. Drainage on this road is by over the edge drainage in rural sections and speed limit is 80 km/h.

L1027

The L1027 is a local primary road Type 3 Single Carriageway with a priority T-junction with the N72 in Sunlawn, Co. Waterford. The local road has a varying road width. At the junction with the N72, the road width is wide, with 13m. At the junction, road markings, signage, and street lighting are present. The rural typical speed limit is 80km/h. L1027 has grass verges on both sides and road signage. Drainage on this road is by over the edge drainage in rural sections. On the construction material and proposed TDR, the L1027 runs for a short section from N72 to L5055.

L1032

The L1032 is a local primary road, single carriageway. L1027 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections.

L2018

The L2018 is a local primary road Type 3 Single Carriageway with a priority T-junction with the N72 in Ballynahemery, Co. Waterford. The local road has a varying road width. At the junction with the N72, the road width is wide, with 13m. At the junction, road markings, and signage are present. The rural typical speed limit is 80km/h. L2018 has grass verges on both sides and, drainage on this road is by over the edge drainage in rural sections. On the construction material haul route, the L2018 runs for a short section to N72.

L3003

⁵ Type 3 Single Carriageway – An all-purpose road with a 3.00m lane in each direction constructed to the geometric standards of DN-GEO-03031 and CC-SCD-00003. (TII DN-GEO-03031, May 2023)

⁶ Type 2 Single Carriageway – An all-purpose road with a 3.50m lane in each direction constructed to the geometric standards of DN-GEO-03031 and CC-SCD-00002. (TII DN-GEO-03031, May 2023)

The L3003 is a local primary road, single carriageway. L3003 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. The proposed GCR will run through L3003 for 300m.

L5055

L5055 is a local secondary road, single carriageway. L5055 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. On the construction material and proposed TDR, the L5055 runs from L1027 to the site access.

L5056

L5056 is a local secondary road, single carriageway. L5056 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. No road markings, street lighting, or signage are present on the local road.

L5065

L5065 is a local secondary road, single carriageway. L5065 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. No road markings, street lighting, or signage are present on the local road.

L5103

L5103 is a local secondary road, single carriageway. L5103 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. No road markings, street lighting, or signage are present on the local road. At the junction with the regional road R672, road markings, and signage are present.

L7001

L7001 is a local secondary road, single carriageway. L7001 has grass verges on both sides, and drainage on this road is by over the edge drainage in rural sections. No road markings, street lighting, or signage are present on the local road. At the junction with the N72, road markings, and signage are present.

16.2.8 Existing Road Safety

A Stage 1 Road Safety Audit was carried out on the following locations:

- the proposed wind farm site access,
- in three public road crossing points where the internal site roads cross local roads (i.e. L1026, L5054, and L5055) and,
- along proposed TDR where works will be required (Drawings 11303-2300 to 11303-2323).

Road Safety Audit report is provided in **Error! Reference source not found.**2. The RSA recommended that adequate temporary signage and traffic management should be provided to inform road users at all locations where existing signs have been temporarily removed, and traffic management should be in place where AILs tyre paths occupy the opposing lane of the road, preventing traffic from undertaking the AILs. RSA recommendations will be implemented.

16.3 POTENTIAL EFFECTS

16.3.1 Do Nothing Effects

If the proposed project did not progress, the existing traffic and transportation environment would remain largely unchanged, with increases in traffic volumes on the road network gradually over time due to annual traffic growth rates as per the TII PE-PAG-02017 (Oct 2021).

Forestry operations and agricultural activity will continue, and construction traffic associated with the maintenance of the existing conifer plantation within the proposed wind farm site will remain at current levels.

16.3.2 Potential Effects – Construction Phase

This section outlines the potential effect of the construction phase on the existing road infrastructure and the existing traffic capacity. The construction traffic (i.e., additional HGVs, light vehicles, and abnormal loads) has the potential to impact on the existing road infrastructure as a result of access to the site, drainage, existing road infrastructure, and traffic flow capacities on the haul routes (HGVs and AILs), road pavement condition, and during the proposed GCR works (i.e., trenching).

The Construction material haul route and the proposed TDR have been assessed separately as the character of the impacts are different.

Construction material haul route: This section assesses the potential effects of standard construction related traffic on the road network. The construction traffic is assessed on both:

- the short-term peak construction traffic volumes over the 3-month period when the combined construction activities result in the peak traffic volumes on the road network and
- the long-term average construction traffic volumes over the remaining months of the construction programme.

Concrete pours will also have a high volume of traffic over the 15 days of the turbine foundation concrete pours. However, the envisaged hourly traffic volumes for this activity will be lower than the estimated peak traffic (i.e., 15 HGVs one-way movement at AM and PM peak hours) assessed for the combined activities. In addition, concrete pours will happen for 15 days during the 2-year construction programme. The works at other areas within the proposed wind farm site will continue during these concrete pours. But, in order to mitigate concrete pour effects only essential deliveries will be scheduled to occur on the same day as the concrete pours.

Proposed TDR: This section is assessed on the potential effects that the haul of the AILs will have on the existing road network infrastructure. The focus of this assessment is on the longest turbine component, the turbine blade. Swept path analysis has been undertaken and the details are included in Appendix 2-2.

16.3.2.1 Construction Material Haul Route Effect

The potential effects of the traffic generation and distributions associated with the construction phase of the proposed project for both the peak and average traffic volumes on the N72/L1027 Crossroads Junction were analysed according to assessment criteria outlined in section 16.2.4.6.

Table 16-4: Construction Material Haul Route - Potential Effect

Road	Scenario	Construction Traffic			Difference		
		ADT	%HGV	HGV	Total % ADT Increase	%HGV	Total % HGV Increase
L1027	Baseflow 2027	1,251	5.4%	68	-	-	-
	Peak Construction	1,513	6.5%	98	21%	1.0%	44%
	Average Construction	1,445	6.1%	88	16%	0.7%	29%
N72 E	Baseflow 2027	5,702	7.3%	416	-	-	-
	Peak Construction	5,890	7.6%	446	3%	0.3%	7%
	Average Construction	5,840	7.5%	436	2%	0.2%	5%

As presented in Table 16-4, the peak construction activities increase the background traffic volumes the most by 21%, with an associated percentage increase in HGV movements on the L1027 of 44%. This impact of peak traffic is of short duration, over 3 months, with a temporary moderate negative effect on the road network.

The average construction traffic potential effect is lower, with a total traffic volume increase of 16% of the baseflow in the year 2027 and a 29% increase in HGV content. The impact of these movements is longer over the remaining 21 months of the construction programme. The average traffic potential effect will be slight negative and of short-term.

Table 16-5: Junction Assessment Summary – Baseflow and Proposed Project

	AM						PM					
	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS
	Base Year 2023											
Stream B-ACD	0.2	7.58	0.14	A	1.55	A	0.1	7.79	0.11	A	1.4	A
Stream A-BCD	0	5.6	0.02	A			0	4.76	0.01	A		
Stream D-ABC	0	7.92	0.05	A			0	8.16	0.03	A		
Stream C-ABD	0.1	5.23	0.06	A			0.2	4.96	0.1	A		
	No Development - Construction Phase (2027)											
Stream B-ACD	0.2	7.84	0.16	A	1.59	A	0.1	8.09	0.13	A	1.43	A
Stream A-BCD	0	5.57	0.02	A			0	4.74	0.01	A		
Stream D-ABC	0.1	8.18	0.05	A			0	8.36	0.03	A		
Stream C-ABD	0.1	5.26	0.07	A			0.2	4.96	0.11	A		
	With Proposed Development - Peak Construction Phase (2027)											
Stream B-ACD	0.3	9.81	0.22	A	3.37	A	0.7	11.45	0.4	B	3.69	A
Stream A-BCD	0	5.66	0.02	A			0	4.79	0.01	A		
Stream D-ABC	0.1	9.58	0.09	A			0	8.69	0.03	A		
Stream C-ABD	0.6	7.22	0.3	A			0.3	6.03	0.18	A		
	With Proposed Development - Average Construction Phase (2027)											
Stream B-ACD	0.2	9.21	0.2	A	2.84	A	0.5	10.16	0.33	B	2.96	A
Stream A-BCD	0	5.63	0.02	A			0	4.77	0.01	A		
Stream D-ABC	0.1	9.23	0.08	A			0	8.58	0.03	A		
Stream C-ABD	0.4	6.57	0.24	A			0.3	5.7	0.16	A		

As shown in

Table 16-5 the assessment scenario without the proposed project the RFC value is significantly below 0.85 (maximum of 0.16 RFC) and the junction will operate with a free flow Level of Service (LOS) "A".

The traffic volumes at the junction due to additional construction traffic does not impact on the junctions LOS. The junction's LOS as an "A" rating is maintained. The increase in construction traffic will result in an increase in the RFC value. However, this increase is low with a maximum RFC level of 0.4 and the maximum junction delay of 3.69 seconds.

This effect is likely to be moderate negative with a temporary duration for the peak traffic and a short term slight negative effect for the average construction traffic.

16.3.2.1.1 Description of Effects

The potential effects associated with the construction phase, according to EPA's guidelines, are presented below.

Table 16-6: Construction Material Haul Route – EPA Criteria Effect

Extent	Scenario	Significance	Duration
N72/L1027 Junction Assessment	Peak Traffic	Moderate Negative	Temporary (3 months)
	Average Traffic	Slight Negative	Short-term (21 months)

This assessment considers only peak and average activities. The peak is the worst-case scenario, as any potential effects will be lower than this level outside of the peak period. Outside of the 3-month peak, the traffic associated with the proposed project will be below the traffic associated with the peak period.

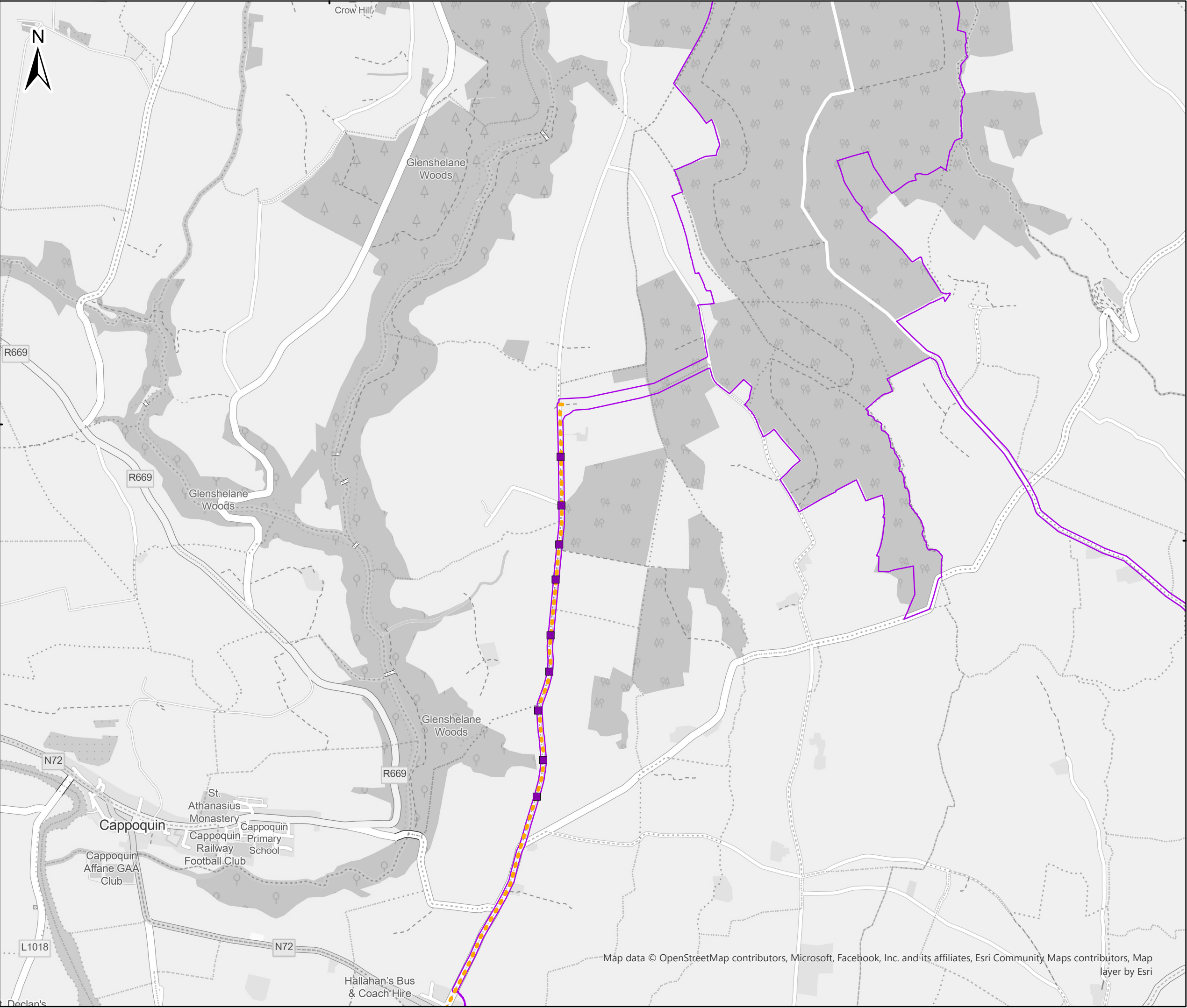
16.3.2.2 Passing Bays Effect

9 no. passing bays are proposed on the local road L5055 to allow traffic to pass easily while travelling to and from the site access. The L5055 is a single carriageway with grass verges on both sides, and no hard shoulders. The passing bay's location was determined considering:

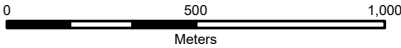
- the forward visibility along the road,
- the private lands' site access,
- sufficient space between the edge of the road and the boundary to private lands to increase the road width to a maximum width of 6.5m, and
- the maximum distance of 250 metres between passing bays, according to section 9.9 Passing Bays on TII DN-GEO-03031 (2023).

The passing bays design is in accordance with the TII Publication DN-GEO-03031 Rural Road Link Design (May 2023). The passing bays are proposed to be 40m long (including 10m tapers) and the overall width including the carriageway to be 6.5m (maximum). The passing bay's locations are presented on Figure 16-7.

The potential effects associated with the construction of the passing bays involves minor advanced works including hardstanding areas and pruning vegetation. However, considering the safety along the road, passing bays are important to accommodate the two-way passing traffic.



- Legend**
- Proposed project
 - Locations of Proposed Passing Bays
 - Proposed Turbine Delivery Route



NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING/
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE/
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES/
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

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Rev	Date	Description	By	Chkd.

Client: **FuturEnergy** Ireland

Project: **Scart Mountain Wind Farm**

Title: **Figure 16-7
Proposed Passing bay Locations
on Local Road L5055**

Scale @ A3:	1:20,000	
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16.3.2.2.1 Description of Effects

The potential effects associated with passing bays construction and the safety along the road L5055, according to the EPA's guidelines, are presented below.

Table 16-7: Passing bays – EPA Criteria Effect

Extent	Scenario	Significance	Duration
Passing bays on L5055	Advanced Works	Moderate Negative	Temporary
	Safety - Operation	Significant Positive	Permanent

The temporary advanced works to build the passing bays require hardstanding areas and pruning vegetation with low volumes of traffic associated. Its potential effects are moderate negative over a temporary duration.

Passing bays are important to facilitate a two-way traffic movement, allowing vehicles to travel on narrow width roads. Its potential effects will be significant positive over a permanent duration.

16.3.2.3 Proposed TDR Effect

The effect of the AIL deliveries on the existing road network had been assessed based on the longest component to be delivered to the proposed wind farm site, the turbine blade. The route had been assessed from Belview Port to the proposed wind farm site. The swept path analysis typically indicate locations where temporary works are required to accommodate the component deliveries. These works will result in low volumes of traffic similar to maintenance works by the Local Authority and will be undertaken for a short period of time. Table 16-8 presents the temporary works required to accommodate the proposed TDR. Minor advanced works have been identified along the route including temporary hardstanding areas, temporary removal or relocation of existing signage, and pruning of vegetation.

Table 16-8: Swept Path Analysis –Drawings and Actions

Drawing No	Title	Demount Signage	Public Lighting /Electric pole Removal	Hardstanding area	Prune Vegetation	Oversail
11303-2300	Waterford Port/N29 Swept Path Analysis	-	-	-	-	-
11303-2301	Slieverue Roundabout / N29 Swept Path Analysis	✓	-	✓	✓	✓
11303-2302	Luffany Roundabout/N29-N25 Swept Path Analysis	✓	✓	✓	✓	✓
11303-2303	Carrick Road Roundabout/N25 Swept Path Analysis	✓	-	✓	✓	✓
11303-2304	Splitter Islands/N25 Swept Path Analysis	-	-	-	-	-
11303-2305	Splitter Islands/N25 Swept Path Analysis	-	-	-	-	-
11303-2306	Splitter Island/N25 Swept Path Analysis	-	-	-	-	-
11303-2307	N25 Swept Path Analysis	-	-	-	-	-
11303-2308	N72/N25 Junction Swept Path Analysis	✓	✓	-	-	✓
11303-2309	N72 Swept Path Analysis	-	-	-	✓	-
11303-2310	N72/R672 Junction Swept Path Analysis	✓	-	-	-	✓
11303-2311	Splitter Island/N72 Swept Path Analysis	-	-	-	-	-
11303-2312	N72 Swept Path Analysis	-	-	-	-	-
11303-2313	N72/L1027 Affane Junction Swept Path Analysis	✓	✓	✓	✓	✓
11303-2314	L1027 Swept Path Analysis	✓	-	-	✓	✓
11303-2315	L1027 Swept Path Analysis	✓	-	-	✓	✓
11303-2316	L1027 Swept Path Analysis	-	-	-	✓	✓
11303-2317	L5055 Swept Path Analysis	-	-	-	✓	✓
11303-2318	L5055 Swept Path Analysis	-	-	-	✓	✓
11303-2319	L5055 Swept Path Analysis	-	-	-	✓	✓
11303-2320	L5055 Swept Path Analysis	-	✓	-	✓	✓
11303-2321	L5055 Swept Path Analysis	-	-	-	✓	✓
11303-2322	L5055 Swept Path Analysis	-	✓	-	✓	✓
11303-2323	L5055 Swept Path Analysis	-	-	✓	✓	✓

At construction phase, the appointed Contractor and Haulage Company will be responsible for the temporary traffic management, agreements, and licensing with the Local Authorities and An Garda Síochána. The hardstanding areas will be temporary in nature and the land reinstated on completion of the works. The hardstanding areas will be laid in advance of the delivery of the AILs to site and reinstated immediately after delivery of the final AIL.

The construction of the temporary proposed TDR works areas will have a likely temporary moderate negative effect at each pinch point requiring hardstanding. The negative effect is due to delays caused to traffic due to the works and the associated traffic management. The hardstanding works at all the pinch points is envisaged to take less than 2 weeks in total, with works at each pinch point varying from 1 day to 4 days. The removal of the hardstanding will be similar in nature and duration to the construction with a similar potential effect. On completion of the reinstatement of the hardstanding at all pinch points, it will result in a reversible effect.

During the haul of the AILs limited works will be required at the hardstanding areas (i.e., laying mats, ramps at kerbs / islands, removal of temporary bolt down kerbs etc.) immediately in advance of the AIL movement through the pinch points. These works will be undertaken under traffic management and have a brief moderate negative effect lasting less than a few hours.

At locations requiring removal of traffic signs, these will be made demountable with retention sockets instead of fixed posts in foundation. This will facilitate the temporary removal of the sign face and post immediately in advance of the AIL movement through the pinch point location and erecting after the AIL convoy has passed the pinch point. Reducing the duration of effect at these locations and allowing for them to be readily open to background traffic without the need for significant temporary traffic management.

The making of street furniture demountable will be undertaken in conjunction with the hardstanding works and under the same traffic management. The potential effect of this work will be a moderate negative brief / temporary effect. The temporary works (i.e., removing signs and posts) will be required immediately in advance of the AIL passing the pinch points. These works will be undertaken under traffic management and have a brief moderate negative effect lasting less than a few hours. Once the AIL convoy passes the pinch point, under this same traffic management the signs and posts will be reinstated within the retention sockets and the road open to traffic. The effect will be reversible between AIL delivery and on completion of AIL delivery.

The oversail works are primarily hedgerow and vegetation cutting performed by a single tractor with minimal traffic management. These works will be undertaken simultaneously with offsite works in advance of the AIL deliveries.

16.3.2.3.1 Description of Effects

The potential effects associated with proposed TDR, according to the EPA's guidelines, are presented below.

Table 16-9: Proposed TDR – EPA Criteria Effect

Extent	Scenario	Significance	Duration
Proposed TDR	Advanced Works/Maintenance Works	Moderate Negative	Temporary
	AIL Convoy	Moderate Negative	Brief/Temporary

The advanced works to accommodate the haulage of the AILs will be moderate due to the low volume of permanent works required on the route. The vegetation pruning, and signage removal/relocation will be undertaken as maintenance works with low volumes of traffic associated.

For the transport of the AILs by convoy, the volume per convoy is low (i.e., 3 to 5 AILs). However, the effect on the existing road environment will be moderate. To allow the vehicles to travel on some of the roads of narrower width, temporary traffic management operations will be required.

16.3.3 Potential Effects – Operational Phase

The operational phase of the proposed project is envisaged to last for 35 years. During this time, the proposed project will generate small volumes of traffic for operational and maintenance purposes.

16.3.3.1 Site Entrance and Internal Access Tracks

For the operational phase, the proposed wind farm site will be accessed by the L5055. The works to construct this access will be completed at the start of the construction phase and, with the exception of regular maintenance for hedgerows for the visibility splays, no works are envisaged to be required at the site access. Therefore, the maintenance traffic volumes will result in minimal increase in traffic with a long-term imperceptible effect on the road network.

The maintenance of the visibility splays will have a positive effect on the safety aspect of the access. The internal access tracks will be in use for additional purposes to the operation of the proposed project (e.g., for forest/agricultural access). Both the forestry and agricultural activities are existing operations and have a neutral effect.

16.3.3.2 Operational Traffic Effect

The construction activities for the proposed project have the potential to generate the largest traffic volumes in comparison to the operational and decommissioning phases of the proposed project. The construction traffic assessment indicates that there is suitable capacity during construction activities.

When maintenance is required, it is expected that the operational phase will generate a maximum of 6 no. LGV movements per day (i.e., 3 arrivals and 3 departures). The proposed project operational traffic volumes were assessed against the TII TTA Guidelines thresholds (PE-PDV-02045, May 2014). This assessment indicates that the operational phase of the proposed project does not meet the threshold and sub-threshold criteria due to the low traffic volume generated during the operational phase. Therefore, the operational phase traffic volumes will result in minimal increase in traffic with a long-term imperceptible effect on the road network.

16.3.3.3 Description of Effects

The potential effects associated with the operational phase, according to the EPA's guidelines, are presented below.

Table 16-10: Operational Phase – EPA Criteria Effect

Extent	Scenario	Significance	Duration
L1027 / L5055	Site Entrance and Internal Access - Maintenance Traffic	Imperceptible	Long-term (35 years)
	Site Entrance and Internal Access - Safety	Significant Positive	Long-term (35 years)
	Operational Traffic	Imperceptible	Long-term (35 years)

16.3.4 Potential Effects – Decommissioning Phase

The operational life of the wind farm is 35 years, it is proposed that turbine foundations and hardstanding areas will be left in place and left to vegetate naturally. It is also proposed to leave the access tracks in situ at the decommissioning phase (i.e., for forestry, agricultural use).

When the site is decommissioned, cranes will disassemble each turbine tower and all equipment. Turbine components will be separated, broken down, and removed off-site. These components will be transported by HGVs.

The on-site substation and proposed GCR will not be removed at the end of the useful life of the proposed project as it will form part of the national electricity network. Therefore, the substation will be retained as a permanent structure and will not be decommissioned.

The decommissioning phase will be a year beyond the available parameters for forecasting traffic data. In addition, considering that turbine foundation, hardstanding areas, and access tracks will be left in situ, and the substation and proposed GCR will not be decommissioned, the traffic volume and traffic effect generated will be significantly lower than during the construction phase.

The traffic management of the decommissioning phase will be informed by the road conditions at the time of decommissioning. It is not possible to predict the changes to the public road infrastructure and policies in 30-40 years' time. It is therefore proposed that in advance of the decommissioning process a Traffic Management Plan will be prepared to ensure that traffic effects are minimised during this phase.

It is estimated that the volume of traffic associated with the decommissioning phase will be significantly lower than the construction phase as the turbine foundation, hardstanding areas internal access roads, substation, and proposed GCR will be retained. The large volume of stone aggregate and concrete for the concrete pours brought to site during the construction phase will not require removal. A TTA was not undertaken for the decommissioning phase, as the traffic volumes would be lower than those considered for the construction phase and effects associated with this phase will be no greater than those identified for the construction phase. The overall traffic associated with the decommissioning phase is likely to have a slight adverse temporary effect.

On completion of the decommissioning works, the site will still facilitate agricultural and forestry use. These uses will have a not significant effect on the road network as they are existing operations occurring in the absence of the proposed project.

16.3.4.1 Description of Effects

The potential effects associated with the worst-case effects of the decommissioning phase will be lower than the construction phase effect. On this basis, the effect is outlined in Table 16-11.

Table 16-11: Decommissioning Traffic – EPA Criteria Effect

Extent	Scenario	Significance	Duration
L1027 / L5055	Decommissioning Phase	Slight Negative	Temporary

The above effects should be noted as the worst-case scenario, as a number of deliveries for the construction of infrastructure will not be required at the decommissioning phase.

16.3.5 Potential Effects - Grid Connection Route

16.3.5.1 Construction Phase

The proposed GCR works will have 15.5 km of grid connection by underground cable into the Dungarvan 110 kV Substation.

The progress of the grid connection works will be 250 m per week, with no more than 100 m of trench open at any one time. The proposed GCR works will require a temporary road closure of local roads and a temporary lane closure of regional roads for trenched crossings and the longitudinal cable run.

The trench will be suitably backfilled at the end of the working day, with the provision of suitable temporary surfacing material, as may be requested by the local authority. Such closures will only be undertaken following consultation with the local authority and following any requests for notifications by the local authority. A road opening licence will also be applied for the principal contractor to the local authority.

Grid connection works will result in disruption for local road users. However, diversions will be provided as work progresses, local accesses will be maintained, and activities will be carried out at off-peak times. The Contractor will carry out such temporary lane or road closures only for the duration of the working days. At the time of this construction work and in advance of the required lane or road closure, the appointed Contractor shall consult and comply with the Roads Authority, An Garda Síochána and other Emergency services to agree a suitable diversion route prior to implementing the closure.

16.3.5.2 Operational Phase

During operational phase, the proposed GCR will require routine maintenance. The operational traffic volumes will result in a low increase in traffic with imperceptible consequences on the road network over the 35 years of operation.

16.3.5.3 Decommissioning Phase

The on-site substation and proposed GCR will not be removed at the end of the useful life of the proposed project as it will form part of the national electricity network. Therefore, the substation and proposed GCR will be retained as a permanent structure and will not be decommissioned.

16.3.5.4 *Description of Effects*

The potential effects associated with the proposed GCR, according to the EPA's guidelines, are presented below.

Table 16-12: Grid Connection Route – EPA Criteria Effect

Extent	Scenario	Significance	Duration
GCR	Construction Works	Moderate Negative	Temporary
	Maintenance Works	Imperceptible	Long-term (35 years)
	Decommissioning Phase	Imperceptible	Temporary

Due to the temporary lane and road closure required during the grid connection advanced works, the proposed GCR will have a moderate effect on the road network. Once the works are completed, routine maintenance will be required, resulting in a low increase in traffic with imperceptible consequences on the road network over the 35 years of operation. Thereafter, as the proposed GCR will not be decommissioned, imperceptible effects are expected.

16.4 MITIGATION MEASURES

The assessment indicates that the proposed project will present a significance of effects varying from imperceptible to moderate negative effects. In order to reduce those effects, the following mitigation measures will be implemented.

16.4.1 *Construction Phase*

To mitigate the effect of the construction traffic, the proposed project will utilise all available resources within the existing site to reduce the requirement for importation of materials to site. Excavation of stone material from the borrow pits within the proposed wind farm site to provide construction material will reduce the HGV volumes required.

The greatest traffic volume effect is associated with the haulage of the materials for the site compounds, site roads and turbine hardstands from July to September 2027. Key deliveries during this period are aggregate and stone which may be sourced from the borrow pits onsite. The internal access tracks have been designed to utilise existing forestry access tracks where feasible, reducing the volume of materials required for importation to the site.

The second greatest volume of traffic effect is associated with the concrete pours for the turbine foundations. The works at other areas within the proposed wind farm site will continue during these concrete pours, but only essential deliveries will be scheduled to occur on the same day as the concrete pours, and local authorities and the community will be informed in advance of the foundation pours.

16.4.1.1 *Traffic Management Plan (TMP)*

The Traffic Management Plan (TMP) is a comprehensive set of mitigation measures that will be implemented by the Contractor before and during the construction phase of the

proposed project to minimise its effects. The purpose of the TMP is to capture the mitigation measures in this EIAR as discussed with Waterford County Council and Kilkenny County Council during scoping and any future traffic mitigation as they may arise during the proposed project. The TMP proposed for the proposed project is included in **Error! Reference source not found..**

The following mitigation has been incorporated into the TMP:

- Traffic movements will be limited to 07:00 - 19:00 Monday to Friday and 07:00 – 14:00 Saturday, unless otherwise agreed in writing with Waterford County Council.
- HGV movements will be restricted during peak road network hours (including school hours) from 08:30 – 09:30 and 16:30 – 17:30 Monday to Friday, unless otherwise agreed in writing with Waterford County Council.
- HGV movements for the proposed project shall be directed away from sensitive areas (i.e., schools, urban centres).
- No parking shall be permitted along the access route for unloading or activities that result in blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding the works and traffic on the road network.
- Measures to remove queuing of construction traffic on the adjoining road network, including turning space and queuing of convoy HGVs will be provided within the sites.
- Wheel wash equipment will be used on site to prevent mud and stones from being transferred from the site to the public road network.
- Activities generating dust will be minimised where practical during windy conditions. Loads will be covered on arrival and departure from the site, where required.
- Clear construction warning signs will be placed on the public road network to provide advance warning to road users of the presence of the construction site and slower-moving vehicles making turning manoeuvres.
- Access to the construction site will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security/site personnel, and site visitors will all receive a suitable Health and Safety site induction.
- Security gates will be sufficiently set back from the public road, so that vehicles entering the site will stop well clear of the public road.
- The final TMP will also include provisions by the appointed Contractor, for details of the construction practice for the proposed project, including:
- Traffic Management Co-ordinator – a competent traffic management co-ordinator will be appointed for the duration 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 to Waterford County Council in advance of the delivery of the turbine components to the site,
- Information to locals – residents in the area will be informed of any upcoming traffic related matters, e.g., temporary lane/road closures or any night deliveries of turbine components, via posters in public places. Information will include the contact details of the Applicant's representative, 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,
- Pre and Post Construction Condition Survey – a pre-condition survey of roads on approach to the site will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after the works are completed. The timing of these surveys will be agreed with Waterford County Council,
- Liaison with Local Authorities – liaison with Waterford County Council and Kilkenny County Council, including the roads and transport section, through which the delivery route traverses, and An Garda Síochána, during the delivery phase of the AILs, wherein an escort for all convoys may be required;
- Temporary Alterations – implementation of temporary alterations to road network at critical junctions,
- Travel plan for construction workers – a travel plan for construction staff and sub-contractor construction staff,
- Temporary traffic signs – As part of the traffic management measures, temporary traffic signs will be put in place.
- TMOs will be present at site access point during peak delivery times under supervision of Co-Ordinator, and
- Delivery Times of Large Turbine Components – TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.

16.4.1.2 Traffic Effect

To mitigate the effect of the construction traffic, the Traffic Management Plan in Appendix 2-4 will be implemented in full by the appointed Contractor. During the construction phase, all available resources within the existing site will be utilised to reduce the requirement for the importation of materials to the site. Excavation of stone material from two borrow pits within the proposed wind farm site to provide capping material will reduce the HGV volumes required.

In addition to the borrow pits, the internal access tracks have been designed to utilise existing forestry access tracks where feasible, reducing the volume of materials required for importation to the site.

The largest traffic volume is associated with the concrete pours for the turbine foundations. The works at other areas within the proposed wind farm site will continue during these concrete pours, but only essential deliveries will be scheduled to occur on the same days as the concrete pours. To mitigate this effect, liaison with local authorities and the community in advance of the foundation pours will occur.

16.4.1.3 Junction Visibility

Adequate visibility is available from the site access onto the Local Road L5055, of 4.5 m 'x-distance' and 'y-distance' of 160 m and, in three points where internal route cross local roads (i.e., local roads L5054, L5055 and L1026). On these three crossing points, adequate visibility is available of 4.5 m 'x-distance' setback from road and 'y-distance' of 55 m. Visibility sightlines are in accordance with Waterford City and County Development Plan and TII DN-GEO-03060 (May 2023).

Maintenance of the hedgerows within the visibility splays will be undertaken to maintain the required visibility splays and mitigate the potential for overgrown vegetation which may result in inadequate visibility at the access and crossing points during the construction activities, see Drawings No. 11303-2020 to 11303-2023.

Adequate visibility at the site accesses will mitigate the potential increased likelihood for collisions between construction generated traffic and existing road network traffic.

16.4.1.4 Junction Swept Path Analysis

In accordance with the TII DN-GEO-03060 (May 2023) swept path analysis has been undertaken at the site access for a worst-case construction vehicle (i.e., articulated truck with 16.5m long), in addition to those undertaken for the AIL as outlined in Table 16-8. The swept path of the maximum legal articulated vehicle accessing/departing the site are available in Drawing No. 11303-2020.

The swept path analysis of the longest AIL, the turbine blade, were undertaken following identification of potential pinch points in the route assessment report as presented in drawings in Appendix 16-2. The swept path analysis used an 81.5m blade length which is the maximum blade length to be used in the proposed project, thus the worse-case scenario for this analysis.

The proposed site access design has been developed to take cognisance of the swept path of all vehicles arriving to and departing from the site. The gate has been positioned to allow for a large vehicle to wait clear of passing traffic on the L5055, to avoid potential collision between a passing vehicle and one stopped to open the gates at the site access.

At the approach to the site access, the internal access tracks are proposed at a widened width of 7.0m, to accommodate safe clearance width between two large construction vehicles passing.

16.4.1.5 Haul Routes

Mitigation measures on the proposed haul roads:

- Selection of a viable route with the lowest impact on the road network.
- Avoidance where possible of sensitive receptors and urban settings:
 - The site access route encourages the use of the existing infrastructure in the area while avoiding the local road and potential sensitive receptors.
 - Proposed TDR along national roads with largest capacity to accommodate the vehicles.
 - The typical construction materials (i.e., gravel, aggregates, concrete, etc.) are obtained from borrow pits onsite and from local quarries in the proximity of site.
 - Restricting HGV movements during peak sensitive times on the road networks (i.e., at school times)
- To mitigate the effect of the AIL delivery on the road network, the advanced works will be undertaken (i.e., hardstanding, making signs demountable, utility diversions etc). The hardstanding works areas will be temporary in nature and removed once the final turbine is delivered to site.

To mitigate potential effects of the AIL deliveries, these deliveries will be undertaken under Garda and traffic management escort during off-peak (i.e., night-time) hours. The arrangement of the appropriate abnormal load licences will be obtained by the appointed contractor in a timely fashion on procurement of the AIL. The appointed contractor will liaise with the relevant road's authorities and, An Garda Síochána on the delivery schedule for the AILs.

16.4.1.6 Pre- and Post-Construction Pavement Surveys

The client will undertake pre-construction and post-construction visual pavement surveys on the construction material haul routes and proposed TDR. Where the surveys conclude that damage on the roadway is attributable to the Construction Phase of the proposed project, the Applicant will fund the appropriate reinstatement works to bring the road back to pre-construction condition, details for which will be agreed with the Roads Authorities.

16.4.1.7 Project Delays

All required road opening licences, agreements with the Local Authorities, and An Garda Síochána to facilitate the movement of AILs will be sought by the appointed Contractor in a timely manner to avoid delays to the proposed project.

A delay to the project construction programme will have a negative effect by increasing the duration of construction vehicles on the road network and potentially extending traffic management timeframes.

16.4.2 Operational Phase

As outlined in Section 16.3.3, due to the relatively low operational traffic of the proposed project, it is envisaged that the operational effect of the proposed project will be imperceptible when compared to the existing background traffic. As such, no mitigation measures are proposed for the operation and maintenance of the proposed project.

In the event that a turbine requires replacing in the future, the proposed TDR at the construction phase will be considered, and the swept path analysis will take into account any road improvements and changes to the network.

16.4.3 Decommissioning Phase

Before the decommissioning of the proposed project, a detailed decommissioning plan will be prepared and implemented to minimise the effects during this phase. The decommissioning phase will employ similar mitigation measures as the construction phase.

As the decommissioning phase is envisaged to be over 35 years from now, a detailed TMP will be undertaken and will consider any road improvements and changes to the network. The plan will also consider the future baseline traffic in order to minimise the decommissioning phase effects in the vicinity.

The turbine components will be separated and removed in manageable sizes. The reduced blade section lengths, tower sections, and nacelle will be transported by HGVs. This will reduce the impact on third-party lands and existing road infrastructure.

As previously mentioned, the large volume of aggregate and concrete imported will remain onsite. The principal expected volumes of traffic will be primarily associated with the transportation off-site of turbine components and a significantly reduced volume of materials.

16.4.4 Grid Connection Route

The proposed GCR is from the proposed wind farm site to the existing substation near Dungarvan. To mitigate the effect on the road network, at the time of the construction work and in advance of the required Road Closure, the appointed Contractor will consult and comply with the Roads Authority, An Garda Síochána and other Emergency services to agree a suitable diversion route prior to implementing a Road Closure.

To mitigate the effect of the cable laid within the public road, the reinstatement works will be backfilled and reinstated as soon as practicable. The reinstatement works will be undertaken in accordance with the Guidelines for Managing Openings in Public Roads from the Department of Transport, Tourism and Sport (2017), also known as the “Purple Book”. The proposed reinstatement and construction details and phasing will be agreed with associated Local Authorities in advance of the works. The Contractor will be responsible for arranging for the required road opening licences.

16.5 RESIDUAL EFFECTS

16.5.1 Construction Phase

With the adoption of the mitigation measures, the significance of the residual effects is therefore predicted to be imperceptible / not significant on the road network. On the proposed TDR, following the delivery of the turbine components, the temporary works will be reinstated (i.e., all street furniture demounted will be re-erected, and hardstanding areas will be reinstated to existing conditions). Therefore, there will be a not significant residual effect.

16.5.2 Operational Phase

During the operational phase, the potential effects of the proposed project will be imperceptible. Therefore, the significance of the residual effects will also remain imperceptible.

16.5.3 Decommissioning Phase

During the decommissioning phase, the expected volumes of traffic will be primarily associated with the transportation off-site of turbine components and materials. The decommissioning will employ similar mitigation measures as the construction phase. Therefore, the residual effects will be no greater than those identified for the construction phase; the residual effects will be not significant.

16.5.4 Grid Connection Route

Brief lane or road closures will be required during the construction phase for trenched crossings and the longitudinal cable run. The proposed GCR will be reinstated in accordance with the "Purple Book"- Guidelines for Managing Openings in Public Roads from the Department of Transport, Tourism and Sport (2017). After the reinstatement, the residual effects caused by the cable laying will not be significant.

16.5.5 Description of Effects

The residual effects associated with the proposed project, according to the EPA's guidelines, are presented below.

Table 16-13: Residual Effect - EPA Criteria Effect

Extent	Scenario	Significance
L1027 / L5055	Construction Phase	Not significant
	Operational Phase	Imperceptible
	Decommissioning Phase	Not significant
GCR	Construction Phase	Not significant

16.6 CUMULATIVE EFFECTS

16.6.1 Construction Phase - Cumulative Developments

Cumulative Developments are referred to in roads terminology as per the TTA Guidelines as Committed Developments. According to TII PE-PDV-02045 (May 2014), the TTA should consider all committed developments within the vicinity of the site. This includes sites which have previously been 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. Committed developments are considered in the TTA assessment to get a cumulate understanding of the future baseflow traffic volumes on the road network, that have not been captured within the traffic counts as these developments are pending construction or operation.

The location of any offsite replanting (alternative afforestation) associated with the project will be greater than 10km from the proposed wind farm site. This was also considered here, but was found to have no significant cumulative effects due to this location requirement.

According to TTA Guidelines, a planning history search had been carried out to identify key relevant planning applications in County Waterford and Tipperary in the vicinity of the proposed wind farm site. The following is a list of applications within the planning system with the potential to result in cumulative effects on the road network:

- **ABP Ref. 300004-17** - 10-year permission for construction of Solar PV Energy development, substation, transformer, solar panels and all associated infrastructure and site works. Permission granted on 19/02/2019.
- **ABP Ref. 303576-19** - 10-year permission for proposed Solar Farm inclusive of a single electrical control building, up to eight no. inverter units, a temporary construction area and ancillary facilities at Poulbautia, Cappoquin County Waterford. Permission granted on 28/05/2019.
- **ABP Ref. 301926-18** - 19 No. Dwellings (Completion of 7 and permission for 12 more), Railway Gardens, Townparks East, Lismore. Permission granted on 22/10/2018.
- **ABP Ref. 311670-21** - 10 km underground grid connection infrastructure on N72 road to connect Solar Farm to ESB Substation. A Natura Impact Statement has been prepared in respect of the application. Permission granted on 09/01/2023.
- **ABP Ref. 310782-21** - 218 no. residential units (176 no. houses, 42 no. apartments), creche and associated site works in Duckspool, Dungarvan, Co. Waterford. Permission granted on 26/10/2021.
- **ABP Ref. 309412-21** - Amendments to Knocknamona Wind farm previously authorised under ABP Ref No. PL93.244006. The application is accompanied by an EIAR and AA Reporting. Revised EIAR and NIS received with appeal. Previous Planning Application Ref. 14600109 to erect 12 no. wind turbines, overall height of up to 126.6 metres, 1 no. meteorological mast up to 80 metres in height with wind measuring equipment attached, access roads, electrical substation compound, equipment and control building and ancillary site works. Permission granted on 28/09/2022.
- **ABP Ref. 317265-23** - Construction of Dyrick Hill Windfarm comprising 12 no. wind turbines and related works. This is directly adjacent to our proposed wind farm site. The application has been recently refused, although the possibility of a judicial review is still open, so it has therefore been still considered in this EIAR.
- **ABP Ref. 318446** - The proposed development area of the ten turbine Coumnaagappul Wind Farm is located 16 km North of Dungarvan and 4 km North of Kilbrien Village in County Waterford. A decision is still due for this application.

It is not known if the construction phase of the projects listed above will overlap with the construction phase of this proposed project. As worst-case, if the construction phase did overlap, all the projects except Dyrick Hill would utilise a different haul route. In addition, the operational phase of wind farms, solar farms, and grid connection do not generate a significant number of trip movements. The potential cumulative of these developments have been reviewed in the Traffic and Transport Assessment (TTA) as committed developments.

ABP Ref. 300004-17 and ABP Ref. 303576-19 are solar energy developments, and their construction phase is proposed to occur prior to the proposed project. In addition (and in the unlikely event that the construction phases overlap), the construction phase of solar farms generate low number of trips, are of a shorter period than wind farms, and the haul routes of these projects will not utilise the same local roads as the current proposed project.

ABP Ref. 301926-18 is a permission to construct 12 dwellings in Lismore. This development is located within an existing residential area and is proposed to be accessed by Railway Gardens. The additional traffic resulting from these dwellings would not result in a significant increase in traffic on the local road network in Lismore. Therefore, this development traffic will not impact

Local Roads L5055 and L1027 and junction N72/L1027 during construction or operational phases.

ABP Ref. 311670-21 is a 10-kilometre underground grid connection on N72 that extends from Drumroe East to Killadangan in Dungarvan. The construction period is not specified, but roadworks can interfere with the construction phase of the proposed project and might cause some delays on the road. In the planning application, it is stated that prior to the commencement of development, a fully detailed Construction Traffic Management Plan (CTMP) will be prepared by the Contractor in order to minimise the overall level of disruption and delays experienced. Once the roadworks are completed, the cumulative effects will not be significant.

ABP Ref. 310782-21 is a permission to 218 no. residential units at Duckspool, Dungarvan. Once the development is complete, it is expected to increase vehicular traffic along the L3168 road and on the local road network in Dungarvan. The Traffic Impact Assessment assessed the potential impact of the development on 3 junctions: (1) N25/L3168; (2) L3168 / Cluain Na Greine / Tournore Court Roundabout and (3) R675/L3168 roundabout. The traffic generated by this development will not have an impact on the N72 in the vicinity of the proposed project, and therefore, it will not have a significant cumulative effect with the Proposed Project.

ABP Ref. 309412-21 is a wind farm to be constructed on Knocknaglogh Lower, Barranastook Upper, Dungarvan. The construction routes will not overlap with the proposed project, and the cumulative effect will not be significant.

There is another proposed wind farm development located directly adjacent to the proposed project. Dyrick Hill Wind Farm (ABP Ref. 317265-23 – Construction of Dyrick Hill Windfarm comprising 12 no. wind turbines and related works) which has been recently refused planning permission, but is still considered in this EIAR given the potential for judicial review. The proposed TDR is to be the same from Belview Port up to N72 when AILs will turn on to the regional road R672 to the site access. In the unlikely event that both projects proceed with the same construction programme there is potential for partial cross-over of turbine deliveries within the National road network. Once the turbines reach the regional and local road network they would take different routes to each proposed wind farm site. As the National road network has sufficient capacity for these AILs, there would be no likely cumulative effects from turbine delivery for both proposed projects. Both proposed projects could potentially use the same quarries in the unlikely event they both proceed with the same construction programme. The EIAR Traffic and Transport Chapter for the proposed Dyrick Hill project assessed 3 junctions: (1) R671 / R672; (2) N72 / R671 and (3) N72 / R672. Therefore, similar to turbine delivery, construction vehicles from the proposed Dyrick Hill project could potentially be on the National road network during the same period. However, construction vehicles for both proposed projects will not utilise the same regional and local road network. As the National road network has sufficient capacity for these trips, there would be no likely cumulative effects from delivery of construction materials for both proposed projects.

16.6.2 Operational Phase

The cumulative effect on roads and traffic will be the use of the infrastructure for existing agricultural and forestry activities, and the proposed operational activities at the proposed wind farm site. As outlined in Section 16.3.3 the traffic volumes associated with these activities will be low and will have a likely slight negative long-term effect on the road network in the vicinity of the wind farm.

16.6.3 Decommissioning Phase

Turbine components will be separated, broken down, and removed off-site. These components will be transported by HGVs, which will reduce the impact on third-party lands and the existing road network in comparison with the construction phase, where transportation by AILs is required. The expected volume of traffic will be primarily associated with the transportation off-site of turbine components and materials. Therefore, no significant cumulative effects on roads and traffic are envisaged.

The other cumulative effect of agriculture traffic is baseflow traffic, which will generate low levels of traffic. The overall effect of decommissioning phase traffic will be slight and temporary.

16.6.4 Grid Connection Route

The cumulative effect on roads and traffic will be the use of the infrastructure for the proposed GCR as it will form part of the national electricity network.

Description of Effects

The potential effects associated with the cumulative effect of the projects in the vicinity, according to the EPA's guidelines, are presented below.

Table 16-14: Cumulative Effect - EPA Criteria Effect

Extent	Scenario	Significance	Duration
L1027 / L5055	Construction Phase	Not Significant	Short-term
	Operational Phase	Slight negative	Long-term (35 years)
	Decommissioning Phase	Slight negative	Temporary
GCR	Construction Phase	Not significant	Short-term

16.7 SUMMARY

This chapter assesses the potential impacts of the proposed project on the surrounding road network and its capacity. For developments of this nature, the construction phase is the critical impact period, with impacts experienced on the surrounding road network.

The construction traffic impact assessment for the proposed project was developed based on the site layout, the construction materials required and the construction programme. In addition to this construction traffic, the works required off site to accommodate a project of this nature were also considered, such as advanced works on the proposed TDR, passing bays and grid connection.

Considering the advisory thresholds for TTA presented in the TII publication PE-PDV-02045 (May 2014), the N72/L1027 Crossroads Junction during the construction phase had been assessed. Due to the low generated traffic during the operational phase of the proposed project, the operational phase will not meet the threshold criteria and does not require a TTA. Regarding the decommissioning phase, the volume of traffic generated during decommissioning will be

lower than the construction phase. In addition, decommissioning is proposed to happen in 2064, in a year beyond the available parameters for forecasting traffic data provided in TII PE-PAG-02017 (Oct 2021). However, considering that the traffic volume generated will be lower than during the construction phase, the decommissioning phase effect will also be lower.

The potential traffic effects on the road network are considered for two scenarios regarding the construction phase traffic:

- Peak construction traffic, and
- Average construction traffic.

The N72/L1027 Crossroads Junction assessment based on ADT and the percentage of HGVs on the road network indicated the following potential effects:

- Peak construction traffic has a moderate negative effect over a temporary duration (i.e., 3 months), and
- Average construction traffic has a slight negative effect over a short-term duration (i.e., 21 months).

The impact of transporting the AILs to the proposed wind farm site, will be moderate and temporary in nature. To mitigate potential impacts of the AIL deliveries, these deliveries will be undertaken under Garda and traffic management escort during off-peak (i.e., night-time) hours.

The impact of the proposed project's operational phase will be imperceptible over its long-term duration, and the decommissioning phase will have a lower impact than the construction phase. The impact of the decommissioning phase will be slight negative for a temporary duration.

The residual effects will be as per the potential effects with the adoption of the mitigation measures as outlined in the EIAR. The residual effects will be imperceptible/not significant on the road network.

The review of the cumulative developments indicates that the projects in the vicinity will not overlap their construction haul routes and timelines with the proposed project. In addition, the operational phase of developments such as solar farms, wind farms, and grid connection do not generate a significant increase in traffic volumes once they are operational. Therefore, the cumulative effect will be not significant/slight negative at junction N72/L1027, as assessed on the TTA report.

To minimise the impact of the proposed project during the construction phase a TMP has been prepared. The proposed site layout incorporates passing bays, widened approaches to the site access, internal access track loops and compounds to assist with the traffic management and delivery on the site by providing adequate locations clear of the public road for vehicles to queue, facilitating larger HGVs onsite to pass each other safely and reducing the high-risk reversing manoeuvres on site.

16.8 REFERENCES

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Traffic and Transport Assessment Guidelines (TII PE-PDV-02045, May 2014)
- Waterford City and County Development Plan 2022-2028

- Kilkenny City and County Development Plan 2021-2027
- Spatial Planning and National Roads Guidelines for Planning Authorities (2012)
- Project Appraisal Guidelines Unit 5.2 - Data Collection (TII PE-PAG-02016, Dec 2023)
- Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections (TII PE-PAG-02017, Oct 2021)
- Guidelines for Managing Openings in Public Roads (Department of Transport, Tourism and Sport, 2017)
- Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions) (TII DN-GEO-03060, May 2023)
- Rural Road Link Design (TII DN-GEO-03031, May 2023)

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