15.0 TRAFFIC & TRANSPORTATION

15.1 INTRODUCTION

This chapter of the EIAR describes the assessment undertaken of the potential traffic and transportation effect from the proposed development on local residential amenity. The proposed development consists of 22 no. wind turbines with all associated site works (including a grid connection and works to accommodate turbine delivery). A full description of the proposed development is provided in Chapter 3 (Description of the Proposed Development).

Traffic and transportation impact has been assessed for the construction, operational and decommissioning phases of the proposed development. To inform this assessment baseline traffic levels have been informed by a traffic turning count surveys at key junctions.

15.1.1 Statement of Authority

This chapter of the EIAR has been prepared by Maria Rooney of TOBIN. TOBIN are in operation for over 70 years and have carried out numerous Traffic and Transportation Assessments (TTA's) for various residential, commercial, business, retail and leisure developments. TOBIN has also produced Traffic & Transport chapters for a number of EIAR's for various wind farms project.

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 the roads and transport engineering with extensive experience in the preparation of EIAR for environmental projects including Wind Farms, Waste Management Facilities, Solar Farms and numerous Quarries.

15.1.2 Relevant Guidance

This traffic chapter has been prepared in accordance with European Union (Environmental Impact Assessment Directive (2011/92/EU as amended by 2014/52/EU) and European Union (Planning and Development) (Environmental Impact Assessment) Regulations and with due regard to the following guidance:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports Guidelines (EPA, 2022);
- Traffic and Transportation Assessment (TTA) Guidelines (TII PE-PDV-02045 May 2014);
- Longford County Development Plan 2021-2027;
- Roscommon County Development Plan 2022-2028;
- Spatial Planning and National Roads Guidelines for Planning Authorities (2012); and,
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (TII PE-PAG-02017 October 2021).

15.1.3 EIAR Scoping and Consultation

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. Details of the scoping can be found in Chapter 1 (Introduction), including details of the EIA Scoping Report and pre-planning meetings.

Scoping with Longford County Council's (LCC) Roads Departments was undertaken on the 08th of November 2022, 14th of November 2022, 20th of April 2023 and 10th of November 2023. The liaison with the planning authority has facilitated agreement as to the nature and scale of the proposed development, including any required road network changes and/or enhancements. The main items identified and raised by LCC roads department during the pre-planning scoping and consultation process included the following:

- A need to assess the traffic impact associated with the construction and decommissioning phases only, as these phases have the largest associated traffic volumes.
    - The location of the assessment area is limited to the site access only.
    - TII Live traffic counters on the N63 to be used in the assessment.
- All construction traffic to the site will be via the N63, R392 and a portion of R398.

Construction traffic shall avoid the following roads, section of the R398 east of the site access, L1163, L52512, L5260, L5269, L1162 and L1170.

- Suitable quarries in the vicinity of the site (i.e. currently / projected to be licensed at time of the construction phase).
- No Road Safety Audit was required at Mountdillon site access as the site access is existing and is currently operating as an operational access.
- Discussed and agreed the construction haul route (separate from turbine delivery) with no further comments for the council.

On 16th May 2024, it was discussed and agreed with Longford County Council Roads Department that construction traffic will access Derryaroge via a new temporary site crossing (Site Access C). For operation one arm (northern arm) in Derryaroge of the new site crossing will form a staggered junction with the existing Mountdillon access in line with TII guidelines. The remaining southern arm of the new site crossing will be permanently closed post construction.

Lough Bannow (Site Access B) shall be accessed via gated access from Derryadd to Lough Bannow. The gated site accesses shall continue to be utilised during the operational phase for maintenance purposes. Site Access B will be gated and used as necessary.

A pre-planning consultation and scoping meeting with Roscommon County Council (RCC) Roads Department was undertaken on the 09th of November 2022 and 31st of March 2023. The main items identified and agreed with RCC during the scoping process included the following:

- Traffic counts at:
    - N63 / R371 / Waters Edge
    - N63 / N61 Lanesborough Roundabout.
- Swept Path analysis to consider future road improvements and Roscommon Town Public Realm (i.e. N61).

- Restriction on HV movements on L1806.

15.2 METHODOLOGY

This chapter presents the Traffic and Transport assessment of the potential for effects arising from the proposed development (during the construction, operation and decommissioning phases) on the existing road network. The assessment envisages the potential effects and proposes the mitigation measures to be put in place to reduce these effects. The assessment criteria were scoped with both Roscommon County Council (RCC) and Longford County Council (LCC). These effects and mitigation measures have been presented and are discussed below.

15.2.1 Assessment Criteria

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

This EIAR chapter follows the guidelines set out by TII in the document TII PE-PDV-02045 "*Traffic and Transportation Assessment Guidelines, May 2014"*. The Traffic and Transportation Assessment is set out as follows:

- A review of the existing and future transport infrastructure in the vicinity of the proposed development, including an assessment of 2022 background traffic flows and traffic forecasts during an assumed construction completion year of 2028;
- A description of the nature of the proposed development and the traffic volumes that it will generate during the construction phase and when it is operational;
- A description of the AILs and 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 effects of the proposed development – Section 15.5 Potential Effects;
- An identification of mitigation measures – Section 15.6 Mitigation Measures;
- An assessment of cumulative effects – Section 15.7 Cumulative Effects, and,
- An assessment of residual effects – Section 15.8– Residual Effects.

15.2.2 Criteria for Determining Significance of Effects

Impact Assessment

The significance of traffic and transport effects has been evaluated using a systematic approach, based upon identification of the importance/value of receptors and their sensitivity, together with the predicted magnitude of the impact.

The terms used to define receptor sensitivity and magnitude of impact are based on:

- A comparison of the traffic volume change from the baseline traffic (i.e. baseflow) to the baseflow with the proposed development traffic volume on the route.
- The sensitivity of the junction, determined by the importance of the surrounding road network.
- The magnitude of the impact on the junction, determined from the increase in RFC (The Ratio of Flow to Capacity) from the baseline scenario as a result of the proposed development.

The sensitivity and magnitude criteria used for this assessment are set out in the next sections.

Sensitivity of Receptor

The assessment identifies receptors that are sensitive to future changes in traffic with an impact pathway to the proposed development.

The definitions of receptor sensitivity for the purpose of the TTA are provided in Table 15.1 with respect to traffic receptors. These have been developed utilising the EPA Guidelines (2022) and professional judgement.

The sensitivity of the receptors (receiving road network) are based on the sensitivity to change, and the value or importance of a receptor.

Table 15.1: Definition of Terms Relating to Sensitivity of Traffic Receptor (Junctions and Network)

Sensitivity	Criteria
Very High	Very high importance and rarity, national scale and limited potential for substitution, i.e. the motorway road network
High	High importance and rarity, national scale and limited potential for substitution, i.e. the primary and secondary national road network
Medium	Medium importance and rarity, regional scale, limited potential for substitution, i.e. the regional road network
Low	Low importance and rarity, local scale, i.e. the local primary road network
Negligible	Very low importance and rarity, local scale, i.e. the local secondary and tertiary road network

Magnitude of Impact

The scale or magnitude of impacts (both beneficial and adverse) depends on the degree and extent to which the proposed development activities may change the environment, which usually varies according to project phase (i.e. construction, operation and decommissioning).

Factors that have been considered to determine the magnitude of impacts include:

- Level of change from baseline conditions
- Duration of impact.

The criteria for determining the magnitude of impact for the junctions (i.e. priority and roundabout junctions) are shown in Table 15.2

Table 15.2: Criteria for Determination of Magnitude of Impact for Junction Capacity

Magnitude	Definition
Very High	Above 1.0 RFC
High	• Between 0.85 and 1 RFC (regional and local roads)

Magnitude	Definition
	• Between 0.75 and 1 RFC (national roads)
Medium	• Between 0.5 and 0.85 RFC (regional and local roads) • Between 0.5 and 0.75 RFC (national roads)
Low	Between 0.5 and 0.1 RFC
Negligible	Less than 0.1 RFC

Other factors are also considered in determining magnitude, using professional judgement:

- The queue in vehicles per road arm; and
- The delay in seconds per road arm.

The criteria for defining magnitude of impact for the purpose of the TTA are provided in the below Table 15.3 for network capacity. These have been developed utilising the EPA Guidelines (2022) and professional judgement.

Table 15.3: Criteria for Determination of Magnitude of Impact for Network Capacity

Magnitude	Definition
Very High	Either of: • Change from baseflow traffic AADT above 15% • Change from baseflow HV content above 10%.
High	Either of: • Change from baseflow traffic AADT by 15% • Change from baseflow HV content by 10%.
Medium	Either of: • Change from baseflow traffic AADT by 10% to 14% • Change from baseflow HV content by 5% to 9%.
Low	Either of: • Change from baseflow traffic AADT by 5% to 9% • Change from baseflow HV content by 2% to 4%.
Negligible	Either of: • Change from baseflow traffic AADT by 0% to 4% • Change from baseflow HV content by 0% to 1%.

Significance of Effect

The significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact, as shown by the matrix presented in Table 15.4. The matrix provides a framework for the consistent and transparent assessment of predicted effects from the TTA, however, it is important to note that the assessments are based on the application of expert judgement.

The matrix provides levels of effect significance ranging from Imperceptible to Profound, as defined in the EPA (2022) EIAR Guidelines. For the purposes of this assessment, effects rated as

being 'Significant – Moderate' or above are considered to be significant in EIA terms. Effects rated as being 'Moderate' are assessed as significant or not significant subject to professional judgement, with a rationale provided for this in the main assessment. Effects identified as less than Moderate significance are not considered to be significant in EIA terms.

Table 15.4: Impact Assessment Matrix for Determination of Significance of Effect

Sensitivity of Receptor	Magnitude of Impact				
	Very High	High	Medium	Low	Negligible
Very High	Profound	Very Significant	Significant	Moderate	Slight
High	Very Significant	Significant	Significant – Moderate	Moderate – Slight	Not Significant
Medium	Significant	Significant – Moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate – Slight	Slight	Not Significant	Imperceptible
Negligible	Slight	Not Significant	Imperceptible	Imperceptible	Imperceptible

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

- The proposed geometry of the site access has been assessed using swept path analysis using Autodesk AutoCAD Vehicle Tracking for all associated construction vehicles.
- The existing geometry of the road network for the Abnormal Indivisible Loads (AILs) haul route (or referred to as the Turbine Delivery Route (TDR) in other chapters) for the longest AIL, the turbine blade components have been assessed using swept path analysis using Autodesk AutoCAD Vehicle Tracking.

A Traffic Management Plan (TMP) has been developed as part of the mitigation measures to address the potential impact of the proposed development. Refer to Appendix 15-2. A Road Safety Audit (RSA) was undertaken, and the recommendations have been incorporated into the design of the proposed development. Refer to Appendix 15-4. The significance of effects of the proposed development shall be described in accordance with the EPA guidance (2022).

For developments of this nature, the construction phase is the critical impact period, with effects experienced on the surrounding road network. These effects are both the short-term additional traffic volumes and the geometric requirements of the abnormally large loads associated with the turbine components.

The assessment methodology undertaken for this assessment is summarised as follows:

- Review of appropriate guidance to identify appropriate assessment pathways for both the construction, operational and decommissioning phases;
- Characterise the receiving environment through baseline traffic count survey at locations scoped with both RCC and LCC;
- Undertake predictive calculations to develop the traffic volumes to quantify and assess the potential effects associated with the construction phase, operational phase and decommissioning phase of the proposed development;

- Third party specialised haul route assessments, for the Abnormal Indivisible Loads (AILs), were undertaken;
- Specify mitigation measures to reduce, where necessary, the identified potential outward effects relating to traffic and transportation from the proposed development; and,
- Describe the significance of the residual traffic and transport effects associated with the proposed development.

15.2.3 Background Traffic Survey

Baseline traffic surveys were undertaken on the 22nd of November 2022 by Nationwide Data Collection (NDC) at the following junctions as discussed and agreed with LCC and RCC Roads Departments:

- Junction 1: N63 / R392 / Rathcline Road, Co. Longford, Crossroad Junction;
- Junction 2: R392 / R398 / L1155, Co. Longford, Crossroad Junction;
- Junction 3: N63 / R397 / N63, Co. Longford, T-Junction;
- Junction 4: N63 / R371 / N63 / Waters Edge, Co. Roscommon, Crossroad Junction; and,
- Junction 5: N61/ N63, Co. Roscommon, Roundabout.

The surveys undertaken distinguished between light vehicles and heavy vehicles.

15.2.4 Haul Routes

For the proposed development two types of haul routes are required for the transport of the materials to the site during the construction phase. These haul routes are the:

- Construction Haul Route for standards axle loaded vehicles; and
- Construction Haul Route for Abnormal Indivisible Loads (AILs)[1].

Construction Haul Route for AILs comprise the turbine component delivery and transformer delivery, which are specialist operations due to the size of the loads transported.

15.2.4.1 AIL Haul Route Assessment

The methodology for the AIL Haul Route Assessment is based on swept paths of the transport vehicle for the largest component to be delivered to the proposed wind farm site. The assessment was undertaken using a non-segmented 81 metres turbine blade in length carried on a superwing carrier trailer.

For the superwing carrier technology, an assessment was undertaken; Abnormal Indivisible Load Route Survey Report by Pell Frischmann, specialists in haulage of AILs. Details of this analysis are shown in Appendix 15-3.

15.2.4.2 Construction Haul Route Assessment

The methodology for the Construction Haul Route Assessment involves a desktop study to review the routes used to transport materials, equipment, and waste to and from the

[1] A load which exceeds the weight, height, width or length limit(s) outlined in S.I. No. 5 of 2003 of Road Traffic Construction Equipment and Use of Vehicles Regulations 2003. (www.rsa.ie)

construction site. An assessment of estimated construction traffic volumes along the routes was also undertaken. A summary of the traffic impact analysis is included in Section 15.5 of this Chapter, and details of the traffic impact analysis are provided within Appendix 15-1.

15.2.5 Traffic Assessment on the Network

15.2.5.1 Traffic Data

Construction Traffic Calculations - Construction Traffic Haul Route

The construction traffic has been developed based on the proposed wind farm site layout, the construction materials required, the associated construction vehicle capacities, the construction programme and construction hours for the proposed development. Due to the nature of construction activities, it is difficult to accurately calculate the forecasted development traffic on to the local environment in the absence of a detailed construction programme prepared by the Contractor. However, the traffic calculations used in this assessment, are a robust calculation based on site specific parameters with the proposed indicative construction programme developed by Bord na Móna.

Construction Traffic Calculations - Abnormal Indivisible Load (AIL) Haul Route

The trip generations associated with the delivery of the AILs are based on the number of turbines, their associated components and delivery method and delivery of the transformer to site. As outlined in Section 3.3.1.4 of Chapter 3 (Description of the Proposed Development), the turbine blades (non-segmented) will be delivered by a superwing carrier.

This EIAR chapter assesses the worst-case scenario for the traffic volume associated with the turbine components and their elements. As evident in Section15.4.3 below, the maximum movements will be associated with the non-segmented blades.

Operational Traffic Calculations

The traffic generated during this phase will be minimal, with a small number of trips to the substation and turbines for inspection, monitoring and maintenance purposes. Due to the low volume of traffic generations, it is assumed that the operational and maintenance traffic generations will be attributed to 6-8 no. LV visiting the substation area daily.

Decommissioning Traffic Calculations

The decommission phase traffic has been developed based on a similar methodology to the construction traffic calculation and takes account of infrastructure retained onsite (i.e. substation and internal site access roads for amenity use) which results in a lower traffic volume than the construction phase.

15.2.5.2 Proposed Construction Phase Vehicle Details

The construction vehicles will be standard rigid and articulated lorries for material deliveries / removal at the site. The rigid vehicles will include standard concrete trucks, flatbed trucks for delivery of building materials, excavators, tipper trucks, waste haulage and aggregate delivery trucks. The articulated vehicles will typically be used for the delivery of building materials (i.e. bricks, fencing, rebar, met masts, culverts etc).

Other vehicles include cranes and onsite construction vehicles / machinery (i.e. rollers, tipper trucks, excavators, JCBs, etc). These main construction vehicles will be standard HVs in common use on Irish roads which are significantly smaller than the abnormal load vehicles required for transporting the turbine components.

Staff are assumed to arrive and depart using Light Vehicles (LV) (i.e. car or vans) and heavy vehicle (i.e. minibus).

15.2.5.3 Junction Assessment

Traffic counts were undertaken on 22nd November 2022 at the junctions listed in Section 15.3.3 to determine background traffic flows for the current year. Background traffic flows were then forecast to the future assessment years, listed below. The potential effect as a result of the different phases of the proposed development is added to this baseflow traffic to determine the potential effect for the different assessment scenarios (i.e. traffic generations and traffic distributions).

The assessment years are based on the indicative construction programme:

- Construction Years 2027-2029.
- Operational Years 2029 - 2056.
- Decommission Year 2056.

Other considerations in determining the assessment years are,

- TII Traffic and Transportation Assessment (TTA) Guidelines which outlines the Thresholds and Sub-thresholds for undertaking a TTA, and recommends Assessment years for the:
    - Baseflow;
    - Operational Year;
    - Operational Year plus 5 years; and,
    - Operational Year plus 15 years.
- TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projects, which defines the annual growth rates to apply to the baseflow traffic until the year 2050.
- Scoping feedback with the Local Authorities (LCC and RCC).

As these traffic volumes will be low i.e. single vehicles trips, the operational phase of the proposed development will be sub-threshold and not require a TTA and this was agreed during scoping with LCC Roads Department. The decommissioning phase impact will be less than the construction phase. Hence, the assessment years will be the following:

- Baseflow Traffic in 2022 and 2028.
- Construction Phase Traffic Peak in 2028.
- Construction Phase Traffic Average in 2028.

The forecasted baseflow traffic in the year 2028 is based on Central Growth Rates for the associated county value in accordance with TII *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021),* see Table 15-5.

Table 15-5 Link-Based Growth Rates: County Annual Growth Rates (excluding Metropolitan Area)

PE-PAG-02017	Growth Rates	County	2016-2030	
			LV	HV
Table 6.2	Central Growth Rates	Longford	1.0134	1.0313
Table 6.2	Central Growth Rates	Roscommon	1.0107	1.0284

15.2.5.4 Proposed Development Traffic Generation and Distribution

Traffic Generations

As outlined in Section 15.2.4, there are two types of haul routes required as part of the proposed development; the Construction Haul Route and the AIL Haul Route. For the junction assessment, only the Construction Haul Route is assessed as the AIL will be delivered at night-time under Garda escort with potential road closures. As the traffic volumes for the AILs will be low, at night-time and potentially operating under a road closure, no / low volumes of other vehicles will be on the road. Hence, the AILs have been excluded from the Junction Assessment.

It is assumed that some staff will arrive to the site by LVs (10 staff) and the remaining via minibus (8 minibus at peak and 6 minibus on average) with approximately 15 persons per vehicle.

Traffic generation along the Construction Haul Route for the Construction Phase assessment are shown in Table 15-6.

Table 15-6 Traffic Generation along the Construction Haul Route for the Construction Phase

Scenario - Vehicle Type	Construction Activity	Programme (Duration)	One-way	Two-way
Peak Traffic - HV	Construction Activities: Substation Platform *(excluding the concrete pours)*	1 month	79	158
Peak Traffic - LV		1 month	10	20
Average Traffic - HV	All other construction activities (excluding the concrete pours)	23 months	20	40
Average Traffic - LV		23 months	10	20

Note:
(1) The total construction programme is 550 days / 2years.

(2) The peak and average traffic volumes do not include for the concrete pour for the turbine foundations, as it is assumed that this activity occurs onsite while all other activities requiring deliveries are restricted.

For full details on the traffic generation, refer to Appendix 15-1.

Traffic generation during the construction phase for the AIL Haul Route are shown in Table 15-7.

Table 15-7 Traffic Generations for Construction Phase Traffic on the AIL Haul Route

AIL Elements	No. of Turbines	Parts	Components per element	Total Components	Trips with: 3 per Convoy	Trips with: 5 per Convoy
Nacelle	22	1	22	199	67	40
Blade	22	3	66			
Tower	22	5	110			
Transformer			1			

Note:

(1) Note traffic associated with the delivery of the AILs were not assessed as these traffic movements will be night-time works during low traffic volumes and under traffic management and Garda escort.

(2) The AILs will be transported in convoys of 3 to 5 no. components per convoy.

Traffic Distributions

As presented in Table 15-6, there are two different assessments scenarios; Peak and Average traffic volumes. These assessments are based on the materials being delivered (i.e. HV movements) to site by the same traffic distributions. The worst-case scenario for the traffic distribution will be to assume all the traffic movements arrive and depart on the same route (i.e. direction). Traffic distribution is shown in Figure 15-1 below.

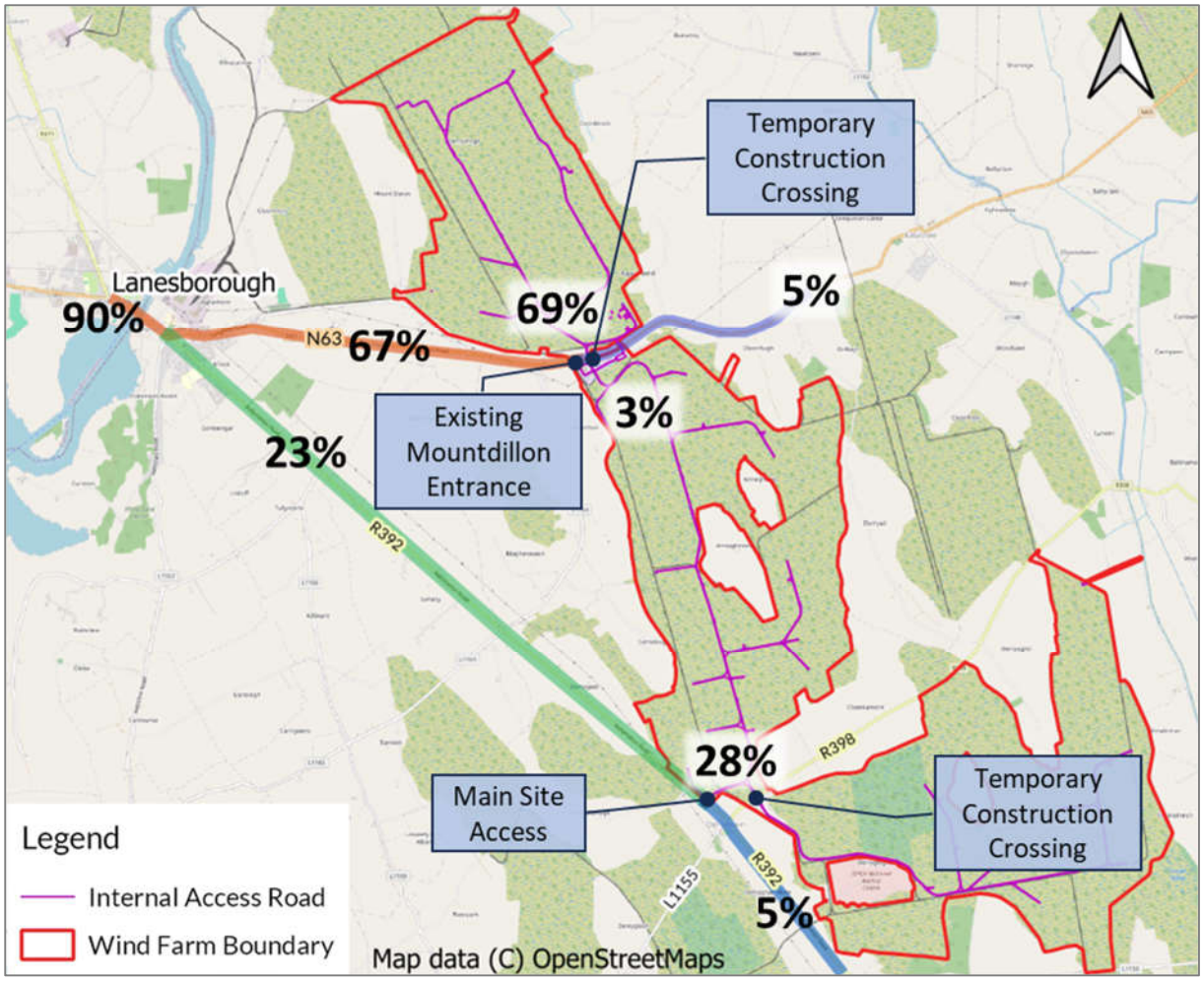


Figure 15-1: Construction Haul Route and Percentage HV Traffic Distribution

The traffic distributions are as follows on the N63:

- **West Distribution HVs** for delivery are all (i.e. 90%) assumed to arrive from the west (i.e. direction of Lanesborough) and depart west in the direction they arrived from.
- **East Distribution HVs** for delivery are all (i.e. 5%) assumed to arrive from the east (i.e. direction of Longford) and depart east in the direction they arrived from.
- **South Distribution HVs** for delivery are all (i.e. 5%) assumed to arrive from the west (i.e. direction of Ballymahon) and depart south in the direction they arrived from.
- **Staff Distributions** are assumed to match the existing distributions on the N63.

As previously mentioned, the AIL route as outlined in Section 15.2.4.1 will not be included in the junction assessment as these movements will be undertaken at off-peak traffic times, under Garda escort and traffic management.

For full details on the traffic distributions, refer to the TTA in Appendix 15-1.

15.2.5.5 Junction Modelling

The baseflow and proposed development generated traffic is input to the modelling software, Transport Research Laboratory (TRL) computer program, JUNCTION 10 – PICADY, used for the analysis of uncontrolled junctions.

The key parameters examined include:

- The Ratio of Flow to Capacity Value (RFC) - The desirable RFC Values for junctions assessed using PICADY is less than 0.85 Values over 1.00 RFC indicate that the approach arm is over capacity;
- Maximum queue length on all approach to the junctions; and
- 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 and widths, visibility, storage provision etc.); and
- Traffic demand data (usually peak hour origin/destination table with composition of heavy vehicles input.

For the purpose of this assessment, the varying vehicle types have been segregated into LVs and HVs prior to input.

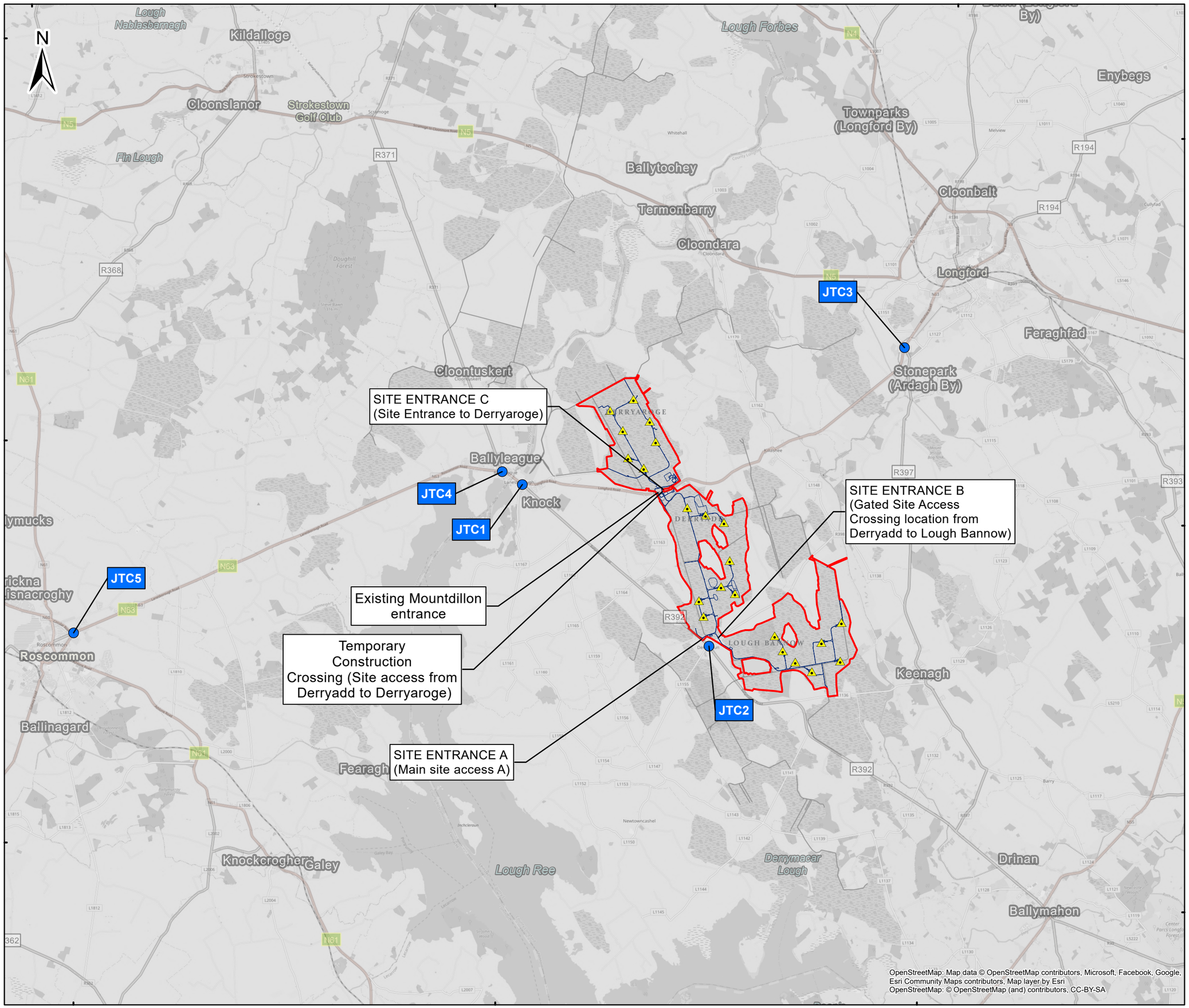
The results of the PICADY analysis are presented in the TTA (Appendix 15-1) and discussed in Section 15.5.2. The origin/destination traffic demand tables for all the different scenarios tested for the analysed junctions are provided in Appendix 15-1.

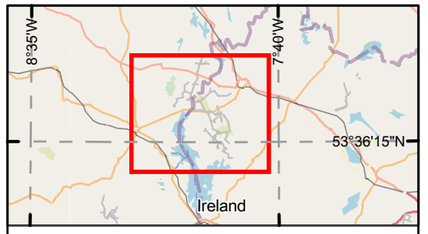
15.3 EXISTING ENVIRONMENT

This section of the report documents the baseline road network and traffic flows in the vicinity of the proposed development for the baseline year.

As noted in Section 15.2.3, traffic surveys were carried out in November 2022, as agreed with the Local Authorities. The following sections summarise the existing arrangement of the 5 junctions which are assessed in this chapter (excluding proposed new junctions that are part of the proposed development). The locations of the surveys are shown in Figure 15-2.

The following sections detail the existing environment which would be impacted by the proposed development and which also relates to the agreed Haul Roads.





Legend

- Proposed wind farm site boundary
- Final Turbine Layout
- Site Layout
- Traffic count locations

0 2.5 5
Kilometres

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

Rev	Date	Description	By	Chkd.
A	21/02/2025	First issue	E.D	J.S

Client: Bord na Móna

Project: Derryadd Wind Farm

Title: Figure 15-2 Traffic Count Location

Scale @ A3:	1:100,000	
Prepared by:	Checked by:	Date:
E.Dami	J.Staunton	February 2025

TOBIN
Tel: +353-(0)1-8030406
Email: info@tobin.ie
www.tobin.ie

Map Ref: 11399-041-JTC-ACCESS-TOB-A

Draft: A

15.3.1 Construction Haul Route

During the pre-planning consultation and scoping with LCC and RCC Roads Department, the construction haul route for the HVs was identified as via the N63. The potential source for concrete for the turbine foundation pours from local quarries to the north and east of Lanesborough. The delivery of other non-concrete materials was also assumed to predominantly arrive to site via the N63 from the direction of Lanesborough with a minor amount of material to arrive from Longford. The remainder arriving from Ballymahon along the R392.

15.3.2 Abnormal Indivisible Load (AIL) Haul Route

The port is unknown as this is often determined by the turbine manufacturer which will be subject to a competitive procurement process. It is assumed that turbine delivery will be coming from Galway Port or Foynes Port. The route analysed is via Galway Port, the route analysis starts at the N6 Eastbound Slip Road in Athlone. For the purpose of this assessment, it is assumed that the large wind farm components will be delivered via the M6 motorway in the proximity of Athlone.

The AIL Haul Route include the M6 national motorway network, the national roads N61 and N63 and the R392 regional road.

15.3.3 Junctions

Junction 1: N63 / R392 / Rathcline Road, Co. Longford, Crossroad Junction

Junction 1 is a crossroad located in Laneborough, County Longford, with arm A representing N63 (W), arm B representing N63 (E), arm C representing R392 and arm D representing Rathcline Road as illustrated in Plate 15-1.

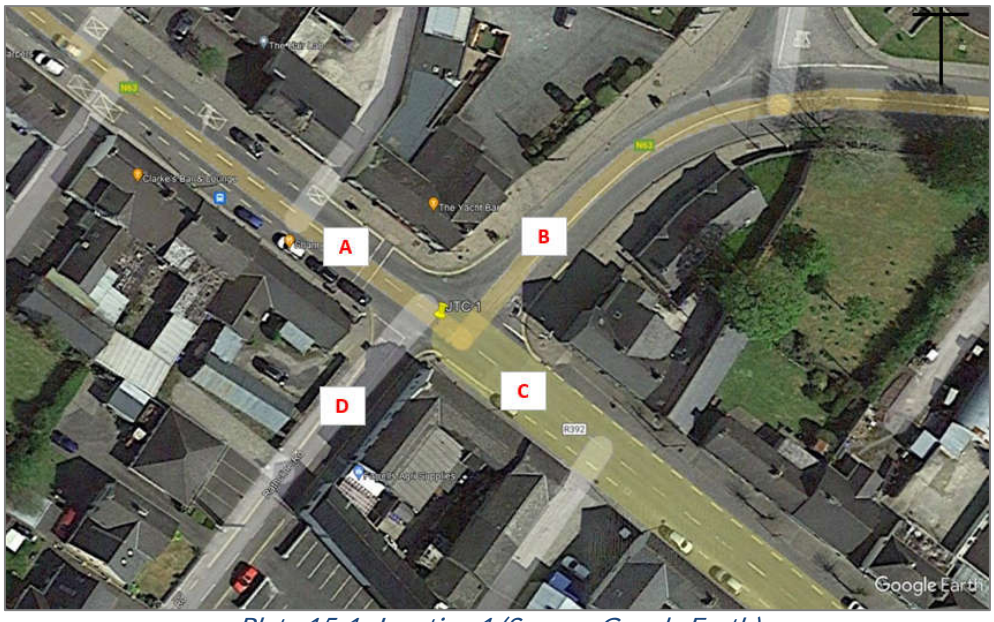


Plate 15-1: Junction 1 (Source: Google Earth)

Junction 2: R392 / R398 / L1155, Co. Longford, Staggered Junction

Junction 2 is a staggered junction located in County Longford to the south of the proposed main site access, with Arm A representing R392 (NW), arm B representing R398, arm C representing R392 (SE) and arm D representing L1155 as illustrated in Plate 15-2.

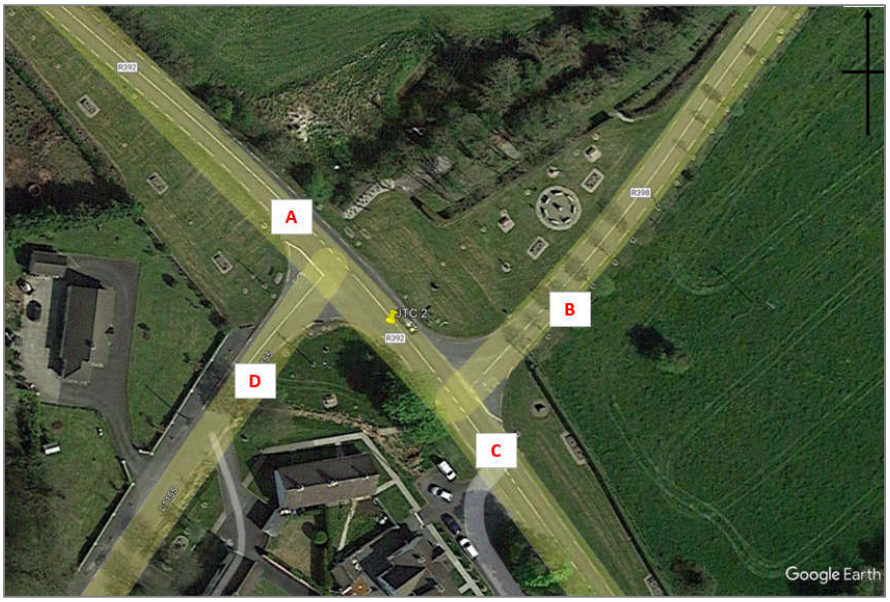


Plate 15-2: Junction 2 (Source: Google Earth)

Junction 3: N63 / R397 / N63, Co. Longford, T-Junction

Junction 3 is a T-junction located in County Longford to the south of the proposed main site access, with Arm A representing N63 (N), arm B representing R397 and arm C representing N63 (S) as illustrated in Plate 15-3.

Plate 15-3: Junction 3 (Source: Google Earth)

Junction 4: N63 / R371 / N63 / Waters Edge, Co. Roscommon, Staggered Junction

Junction 4 is a staggered junction located in County Roscommon to the west side of Laneborough, with Arm A representing N63 (W), arm B representing R371, arm C representing N63 (E) and arm D representing Waters Edge as illustrated in Plate 15-4.

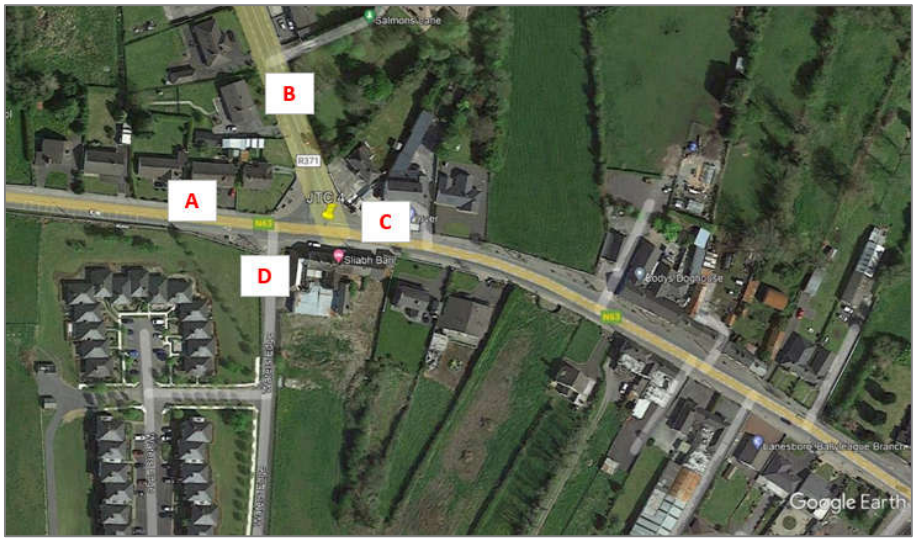


Plate 15-4: Junction 4 (Source: Google Earth)

Junction 5: N61/ N63 / Retail Park / Lanesborough St, Co. Roscommon, Roundabout

Junction 5 is a five-arm roundabout on the N61 and the N63 national roads. Four arms contain short two-lane entries to the roundabout. All arms contain with uncontrolled pedestrian crossing facilities and deflection islands on all arms. The arms of the junction are as such: arm A represents N61 (NW), arm B represents N63, arm C represents Retail Park, and arm D represents N61 (SW) and E represents Lanesborough Street as illustrated in Plate 15-5.

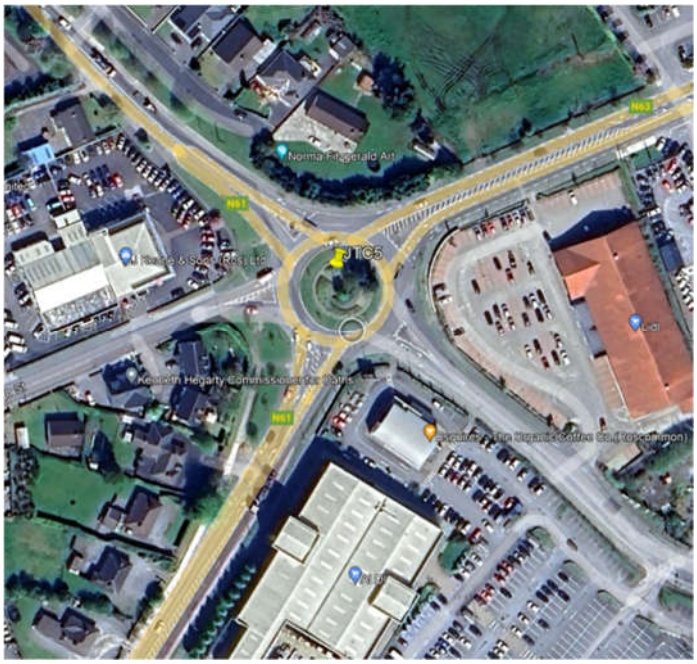


Plate 15-5: Junction 5 (Source: Google Earth)

15.4 PROPOSED DEVELOPMENT

The proposed wind farm site is approximately 12.1 km (Northern to Southern point) in length and approximately 3.8 km from east to west at its widest point. The proposed wind farm site lies between the towns and villages of Lanesborough, Derraghan, Keenagh and Killashee while the main urban centre in the region, Longford Town, is 9 km to the northeast from its nearest point.

Derryaroge Bog is 1.2 km to the south of the River Shannon and Lough Bannow Bog is immediately 0.5 km west of the Royal Canal which runs in a northwest to east direction. The closest settlements to the proposed wind farm site are Derraghan village and Lanesborough town located approximately 200 m and 500 m west respectively.

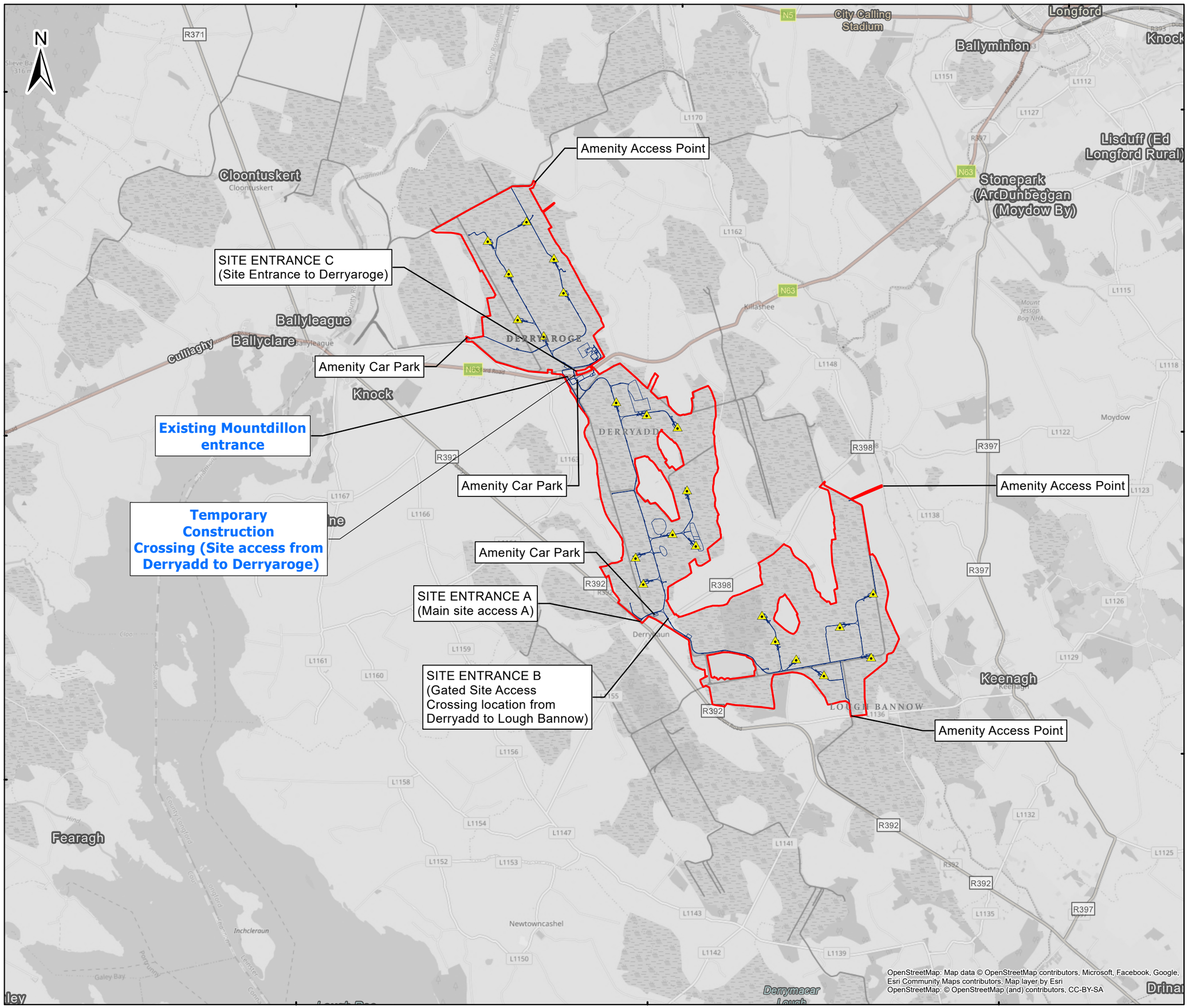
As show in Figure 15-3 The wind farm site is proposed to be accessed via 4 no. site accesses. The proposed site accesses are as follows:

- New proposed main site access (Site Access A) to the southern part of Derryadd Bog, off the R392;
- New proposed site crossing (site Access B) from the South of Derryadd Bog to the northern part of Lough Bannow Bog, off the R398;
- Proposed new temporary site crossing (Site Access C) from the northern part of Derryadd Bog (Machine pass from Mountdillon Works yard) to Derryaroge Bog, required for large component transport across the N63 into Derryaroge as well as access into Derryaroge for HV's off the N63; and,
- Existing Mountdillon Access will be utilised by Light Vehicles (LVs) and Heavy Vehicles (HVs). A staggered junction will be constructed in the operational phase in line with TII guidelines (Between Mountdillon Access and Site Access C).

The main site access A will be the main construction access to the site and will facilitate both materials delivery (stone, steel and concrete) as well as large oversize components such as turbine blades, tower sections and substation components. As illustrated in Figure 15-3.

During the operation phase, Site Access A will remain. Site Access B will be gated and used as necessary. Site access C will form a staggered junction in line with TII guidelines between the existing Mountdillon Access and Site Access C during the operation phase (see planning drawings 11399-2056).

Refer to Planning Drawings 11399-2051 to 11399-2056 for details of the site entrances during both construction and operation phases.



Legend

- Proposed wind farm site boundary
- Turbine Layout
- Site Layout

0 1 2
Kilometres

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

A	20/02/2025	First issue	E.D	J.S
Rev	Date	Description	By	Chkd.

Client: Bord na Móna

Project: Derryadd Wind Farm

Title: Figure 15-3 Proposed Construction Site Accesses

Scale @ A3: 1:60,000

Prepared by:	Checked by:	Date:
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Map Ref: 11399-040-ACCESS-LAY.INFR-TOB-A

Draft: A

15.4.1 Construction Haul Route

15.4.1.1 Site Access

There will be a total of 4 no. proposed wind farm site accesses used to transport materials and equipment to the site as described in the above section. The new proposed main site access (Site Access A) will be located on the Lanesborough to Ballymahon road (R392). The existing site access (Existing Mountdillon Access) is currently used for the machinery involved in ongoing decommissioning activities (historically used for peat extraction).

As stated above, the main site access A will be the main construction access to the site and will facilitate both materials delivery (stone, steel and concrete) as well as large oversize components such as turbine blades, tower sections and substation components. Site Access C will facilitate HV and LV deliveries to Derryaroge Bog off the N63 along with AIL crossings from Derryadd (North). Site Access B will facilitate HV and LV movements from the R398 along with AIL crossings from Derryadd (South). The existing Mountdillon access will also facilitate HV and LV deliveries to Derryadd Bog as necessary.

Based on the nature of the proposed development, various construction materials will be delivered to the site over the construction programme. The materials will be delivered by standard heavy vehicles (HVs) including rigid lorries and articulated lorries. Other vehicles that will attend the site include standard construction machinery, i.e. crane, excavator, stone crusher, and concrete trucks.

The construction traffic with the largest daily impact (i.e. peak) is the combined construction activities during month 3 of the construction programme. This traffic is associated with the importation of the aggregate for the site compound, internal haul routes, 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. Due to the process of a continuous single concrete pour per turbine foundation at each of the 22 no. turbine foundation locations, this relates to 22 days of the construction programme.

The other materials required onsite will include met masts, building materials, fencing, drainage, culverts, water treatment, substation materials, welfare facilities etc., are assumed to be sourced locally and arrive to site all assumed to travel from the direction of Lanesborough, while in reality some will travel from the direction of Longford in the east, and Ballymahon in the south.

Note, as this proposed development may not be constructed in the immediate 5 years, there is the potential that alternative sources for material may be available at the time of construction. At the construction phase the appointed contractor will liaise with LCC Roads Department.

The worst-case scenario for the traffic distribution with 90% of all materials arriving to site from west, 5% arriving to site from east, and 5% arriving to site from south has been assessed.

The traffic volumes, both peak and average on the construction haul route have been assessed.

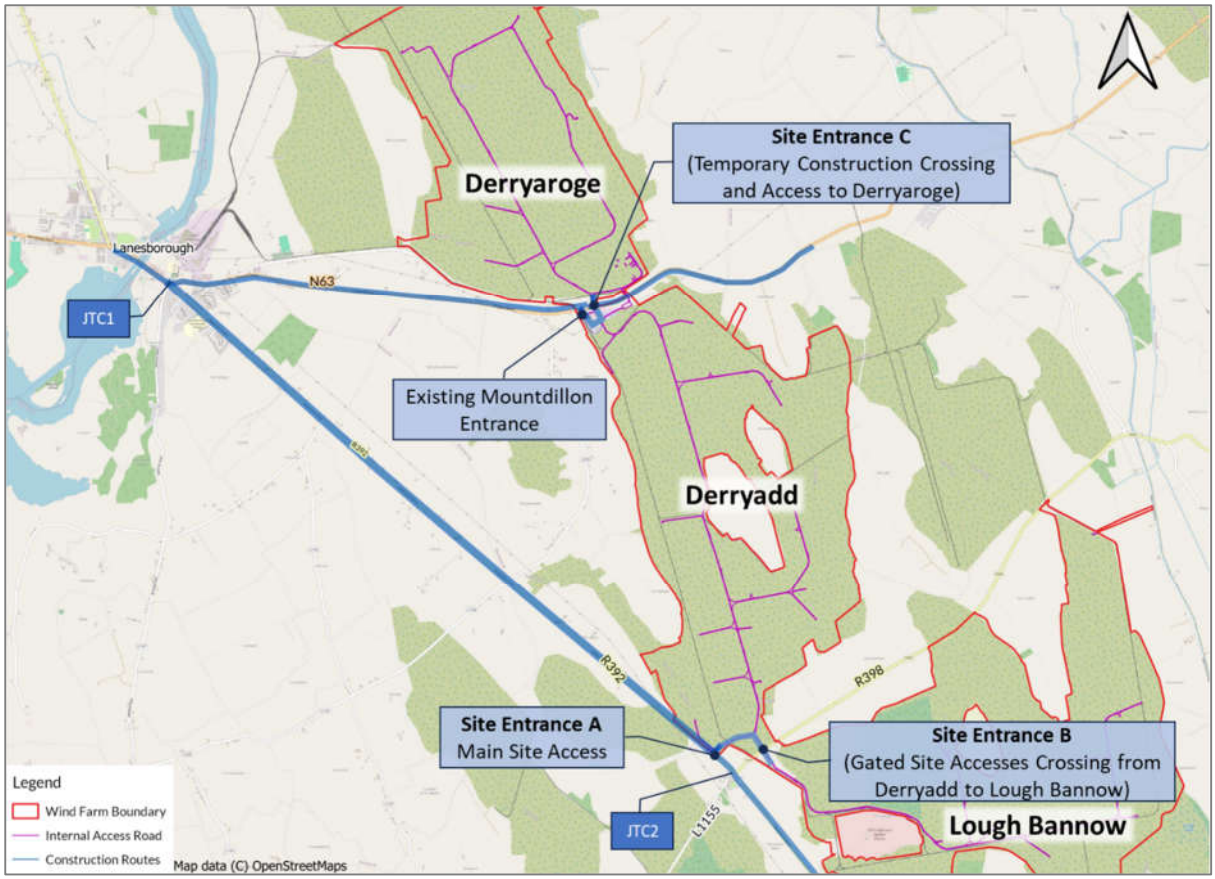


Figure 15-4: Construction Haul Route

15.4.2 Abnormal Indivisible Load (AIL) Haul Route

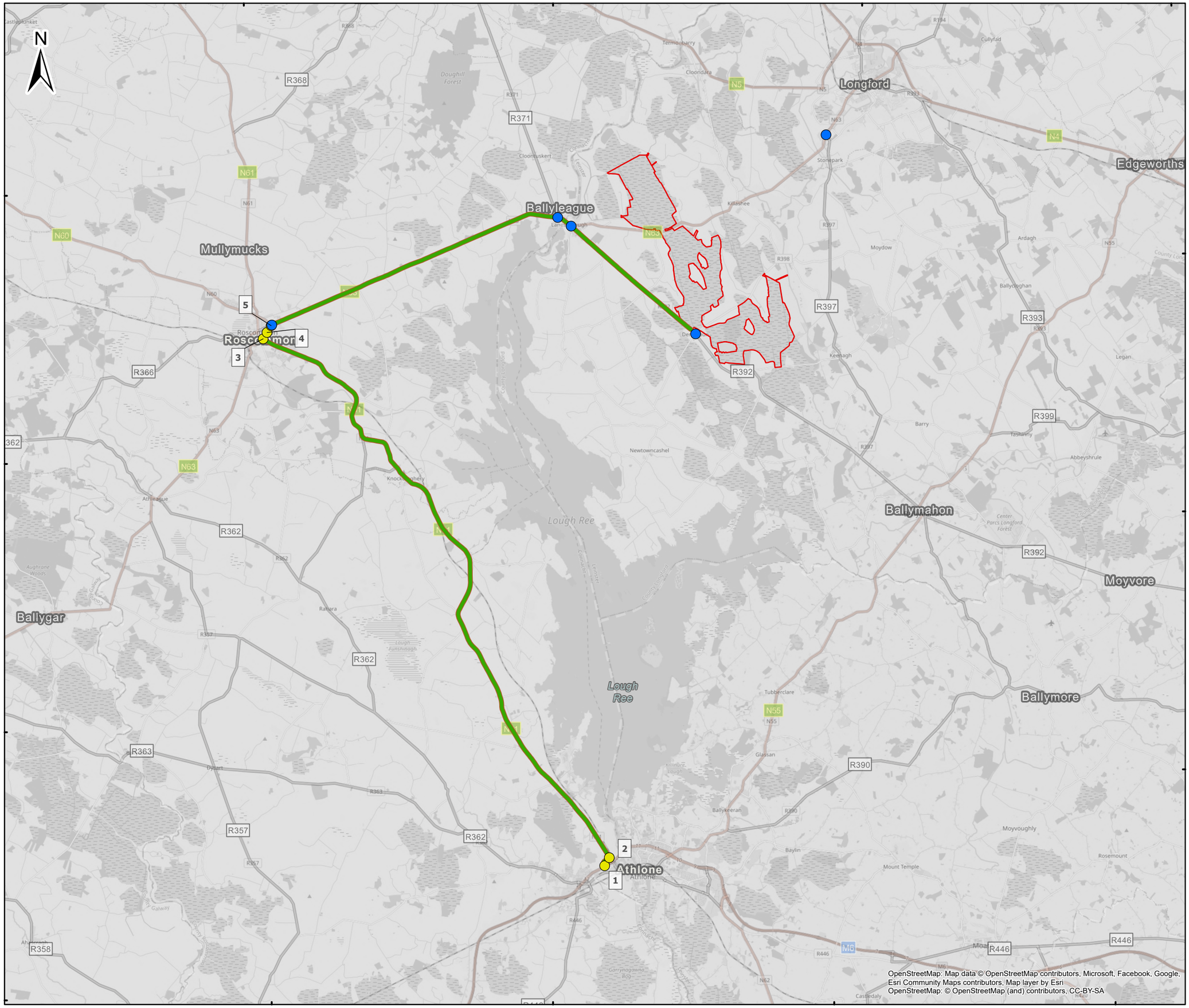
A report was carried in December 2023 by Pell Frischmann (*Derryadd Wind Farm Abnormal Indivisible Load Route Survey*) that established that the optimum delivery route from the M6 to the site for the abnormally large loads would be as follows;

- Exit the M6 at Junction 12 and travel north on N61 for approximately 48 kms to Roscommon;
- Turn right on the N61 in Roscommon at the Circle K roundabout, and continue straight through the Roscommon Mart Roundabout on the N61;
- Turn right of the N61 onto the N63 at the Lidl Roundabout in Roscommon;
- Travel east on the N63 for approximately 15 kms to Lanesborough; and
- Turn right onto R392 and travel southeast for approximately 6.5 km to proposed site access.

The assessment of the abnormal load delivery route, which is shown in Figure 15-5 covers the locations of the external road network access junctions.

The report prepared by Pell Frischmann is included as Appendix 15-3.

8°12'0"W
8°0'0"W
7°48'0"W
7°36'0"W
53°41'0"N
53°34'50"N
53°28'40"N
53°22'30"N
768000
757000
746000
588000
600000
612000
624000



Legend

- Proposed wind farm site boundary
- Traffic count locations
- Turbine Delivery Route POI
- Turbine Delivery Route

0 75 150
Kilometres

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
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A	20/02/2025	First issue	E.D	J.S
Rev	Date	Description	By	Chkd.

Client:
Bord na Móna

Project:
Derryadd Wind Farm

Title:
Figure 15-5
Abnormal Indivisible Load (AIL) Delivery Routes / Turbine Delivery Route (TDR)

Scale @ A3: 1:150,000

Prepared by:	Checked by:	Date:
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Map Ref: 11399-039-JTC-ACCESS-TOB-A

Draft: A

15.4.3 Forecasted Background Traffic Volumes

In order to determine the magnitude of the existing traffic flows, the results of a manual classified junction turning count was used. The traffic surveys were carried out by Nationwide Data Collection (NDC). The junction count was undertaken on Tuesday 22nd November 2022 between the hours 07:00 and 19:00. Count information was obtained at the following junctions:

- Junction 1: N63 / R392 / Rathcline Road, Co. Longford, Crossroad Junction;
- Junction 2: R392 / R398 / L1155, Co. Longford, Crossroad Junction;
- Junction 3: N63 / R397 / N63, Co. Longford, T-Junction;
- Junction 4: N63 / R371 / N63 / Waters Edge, Co. Roscommon, Crossroad Junction; and,
- Junction 5: N61/ N63, Co. Roscommon, Roundabout.

This survey distinguished between light vehicles and heavy vehicles. The survey indicated that the peak traffic times occurred at each junction as presented in Table 15-8 below.

Table 15-8: Traffic Survey Peak Time

Junction	AM Peak Time	PM Peak Time
Junction 1 Co. Longford	08:30 – 09:30	16:45 – 17:45
Junction 2 Co. Longford	08:00 – 09:00	16:00 – 17:00
Junction 3 Co. Longford	08:30 – 09:30	17:15 – 18:15
Junction 4 Co. Roscommon	08:15 – 09:15	17:00 – 18:00
Junction 5 Co. Roscommon	08:30 – 09:30	15:45 – 16:45

The traffic impact analysis applied the same peak hours for all junctions for a robust assessment. The peaks utilised were 08:30 hrs - 09:30 hrs, and 16:45 hrs - 17:45 hrs. This was determined as Junction 1 has the highest traffic volumes and more likely to exceed capacity in peak hours as a result of construction phase traffic.

The baseflow traffic volumes have been forecasted to the year corresponding to the average of construction period in the year 2028 (i.e. construction commencing in 2027 and programmed for 2 years). As discussed with both RCC and LCC Roads Departments, as the operational traffic is low, assessment of the operational year, design year plus 5 years and plus 15 years have not been assessed. This is in accordance with the TII *Traffic and Transportation Assessment Guidelines,* as the operational traffic will be sub-threshold.

Table *15-99* shows the forecasted baseflow traffic to the year 2028 based on Central Growth Rates for the associated route county value in accordance with TII *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021).*

Table 15-9: Forecasted Baseflow Traffic 2028

Junction	AM Peak	PM Peak
Junction 1 Co. Longford	776	758
Junction 2 Co. Longford	292	280
Junction 3 Co. Longford	700	739
Junction 4 Co. Roscommon	815	732
Junction 5 Co. Roscommon	1,889	2,139

Construction Programme

The proposed indicative construction programme is outlined in Chapter 3 (Description of the Proposed Development), Section 3.8.2 and is shown in Table 15-10.

The indicative construction programme is 2 years (i.e. 24 months or 550 days), with an arbitrary start date for construction activities selected as in 2027 and with a construction completion date in 2029.

The first phase of the civil works will include site preparation/clearance, development of the temporary construction compounds and associated fencing. The next phase will include widening existing internal access roads and building new internal access roads to facilitate the construction of the substation base, 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), blinding and arrival to site of the cranes will occur next in the programme. The concrete pours for 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.

As part of the grid connection, cable laying is proposed across the N63 utilising Horizontal Directional Drilling (HDD). No road opening is required on the N63, therefore, there are no anticipated impacts on traffic along the surrounding road network.

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

Construction Hours

Construction activities will be carried out during normal daytime working hours (i.e., weekdays 0800 hrs – 2000 hrs and Saturday 0800 hrs – 1300 hrs). However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (e.g., concrete pours) or to accommodate delivery of large turbine components along public routes, it could be

necessary on occasion to work outside of these hours. Any work outside of these hours will require agreement in advance with the Local Authority.

Construction Materials & HV Traffic Volumes

The number of HV 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 proposed 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 on 1 day as required by the construction methodology.
- The temporary construction compounds will be retained onsite after the construction phase. These will be used for amenity parking for the operational phase as detailed in the Chapter 3 (Description of the Proposed Development) and therefore will reduce HV movements associated with the construction of amenity parking.

Traffic Generations

The traffic generations are developed based on the materials / deliveries / disposals required at the site relative to the associated construction activity in the construction programme as outlined in Table 15-10.

The following Figure 15-6 shows all the construction HVs assigned to their corresponding activity and duration in the construction programme. The below figure indicates a peak HV movement in month 3 which is related to substation platform construction. The resulting peak HV volume is 79 HVs one-way.

It is noted concrete pours will occur on 22 single days for the 22 no. turbine foundations throughout months 10 to 16 of the construction programme. The construction methodology for the concrete turbine foundations requires them to be poured on a single day, resulting in all 95 HVs one-way movements for each of the 22 single days.

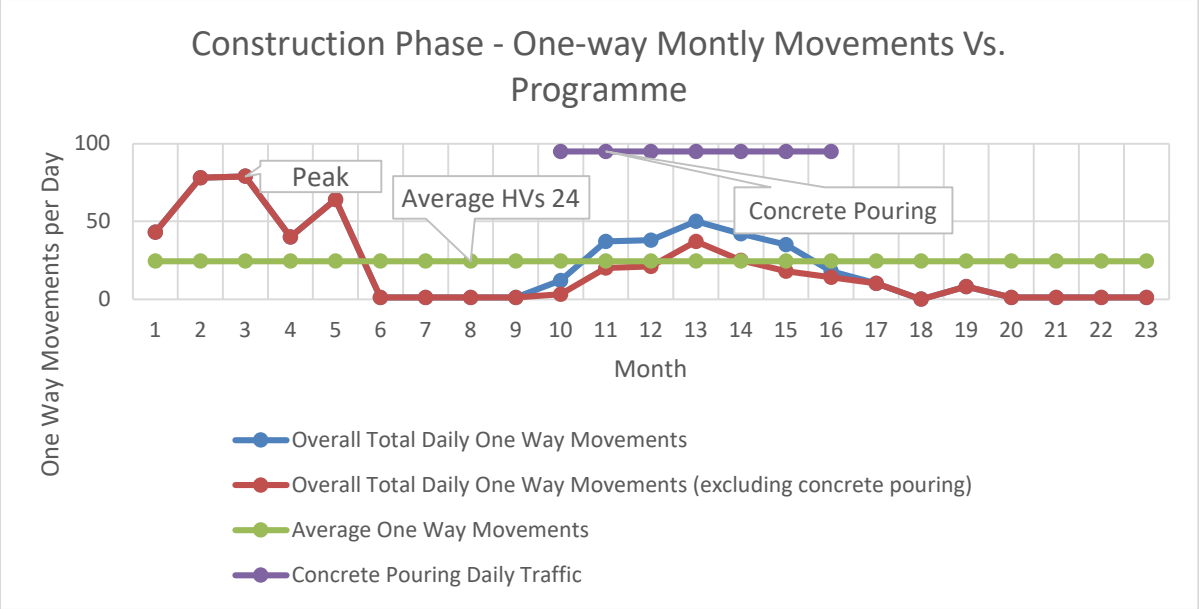

Figure 15-6 Graphical representation of the Construction Traffic over Construction Programme, representing 1-way movements per Month –HVs

Traffic Generation – Peak and Average

The construction traffic associated with the construction of the proposed development on the Construction Haul Route is assessed under two scenarios, as a peak and an average traffic generation.

Peak: The peak traffic generation will be associated with the 79 HV one-way movements and 10 LV one – way movements during the peak month (month 3) described above.

Average: The average construction traffic will be associated with the 24 HV one-way movements and 10 LV one – way movements over the 2-year construction programme.

Construction Trip Generation – Staff

The number of construction staff will vary dependant on the phase of the construction activities. At the peak construction on the proposed wind farm site, a maximum of approximately 100-120 personnel are estimated. A reduction in construction staff on site is expected when the construction activities are more technical and less labour intensive.

15.5 POTENTIAL EFFECTS

15.5.1 Do Nothing Effects

If the proposed development is not progressed the existing traffic and transportation environment will remain largely unchanged. In the absence of the proposed development increases in traffic volumes on the road network would be expected gradually over time due to annual growth rates in traffic as per the TII PE-PAG-02017.

15.5.2 Potential Effects – Construction Phase

The Construction Haul Route and the AIL Haul Route have been assessed separately as the character of the impacts are different.

Construction Haul Route

This section assesses the potential effect 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 1-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.

We acknowledge that the concrete pours will also have a high volume of traffic over the 22 days of the concrete pours, however, the envisaged traffic volumes for this activity will be lower than the estimated peak traffic for the combined activities. The proposed phasing and scheduling of the main construction task items are detailed in Table 15-10.

Table 15-10: Overall Derryadd Wind Farm Construction Traffic Volumes (excluding internal traffic movements)

	HV Volumes (External Movements Only): Total Per Month (1 Way Movements) Month Number																							
Task Description	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**Total**
Tree Felling		15	30	25	10																				80
Entrance / Site Access Track to substation	532																								532
Passing Bays/layby	25																								25
Compound Setup	369																								369
Substation Platform		1,687	1,687	843																					4,217
Battery Storage / EBOP Compound					1,383																				1,383
Site Entrance Surface Dressing					3																				3
Site Access Track Capping													399	267	267	207	206								1,346
Foundation Blinding										49	98	98	74	98	98	25									540
Foundation reinforcement										6	12	12	9	12	12	3									66
Foundation Concrete										190	380	380	285	380	380	95									2,090
Foundation Backfill											310	310	310	155											1,085
Ducting											5	18	10	10	9	4	4								60
Drainage						2	6	6	6	3	3	3	2												31
Met Mast Foundation (Concrete)															2										2
Met Mast																6			6						12
Pump station upgrade																18									18
Amenity Track Capping																			122						122
Fencing & Reinstatement Works																			6	9	15	9	6		45
Pumping Station upgrade																26			6						32
Amenity capping																			23						23
Met Mast Foundation																			2						2
Total Monthly One Way Movements	926	1,702	1,717	868	1,396	2	6	6	6	248	808	821	1,089	922	768	384	210	0	165	9	15	9	6	0	12,083
Total Monthly Two Way Movements [Two Way Movement being HV in and then HV out]	1,852	3,404	3,434	1,736	2,792	4	12	12	12	496	1,616	1,642	2,178	1,844	1,536	768	420	0	330	18	30	18	12	0	
Total Monthly One Way Movements - Excluding Concrete Day	926	1,702	1,717	868	1,396	2	6	6	6	58	428	441	804	542	388	289	210	0	165	9	15	9	6	0	
Total Monthly Two Way Movements - Excluding Concrete Day [Two Way Movement being HV in and then HV out]	1,852	3,404	3,434	1,736	2,792	4	12	12	12	116	856	882	1,608	1,084	776	578	420	0	330	18	30	18	12	0	
Average HV Two Way Movements - Excluding Concreting Day	869	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	833	

Considering 5.5 day working day per week

Peak HVs Two Way per day	156	Staff Minibus (one-way)	8	Total HVs (two way) per day	**172**
Average HVs Two Way per day	39		6		**51**

Considering 12 hours working per day

Peak HVs Two Way per peak hour	13
Average HVs Two Way per peak hour	4

Concreting day - HVs per turbine per day (one way)	95
Concreting day - HVs per turbine per day (two way)	190

Staff Level - Peak	120
Staff Level - Average	100
Assuming max of 15 staff per mini bus	
Mini bus - Peak per day [one way]	8
LVs - Peak per day [one way]	10
Mini bus - Average per day [one way]	6
LVs - Average per day [one way]	10

AIL Haul Route

This section assesses 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 have been undertaken on all the AIL route proposed and the details are included in Appendix 15-3. This section does not assess AIL traffic volumes as the AILs will be transported to site during low volume traffic flows on the network at off-peak time and under Garda escort and traffic management.

Construction Haul Route Effect

The traffic generation and distributions associated with the construction phase of the proposed development for both the peak and average traffic volumes on the surveyed junctions are shown in Table 15-11 and Table 15-12. As the construction material haul route is not expected to pass through Roscommon town, the Traffic and Transport Assessment has not analysed Junction 5.

Table 15-11: Peak Construction Phase Percentage Increase in Flows

Junction	AM Peak Traffic	AM Construction Phase Generated Peak Traffic	% Increase	PM Peak Traffic	PM Construction Phase Generated Peak Traffic	% Increase
Junction 1 Co. Longford	776	24	3%	758	24	3%
Junction 2 Co. Longford	292	4	1%	280	4	1%
Junction 3 Co. Longford	700	4	1%	739	4	1%
Junction 4 Co. Roscommon	815	24	3%	732	24	3%

Table 15-12: Average Construction Phase Percentage Increase in Flows

Junction	AM Peak Traffic	AM Construction Phase Generated Average Traffic	% Increase	PM Peak Traffic	PM Construction Phase Generated Average Traffic	% Increase
Junction 1 Co. Longford	776	16	2%	758	24	2%
Junction 2 Co. Longford	292	2	1%	280	2	1%
Junction 3 Co. Longford	700	2	0%	739	2	0%
Junction 4 Co. Roscommon	815	16	2%	732	16	2%

Junction Assessment

As shown in Table 15-11 and Table 15-12, none of the junctions impacted were above the 10% threshold set out in Traffic and Transport Assessment Guidelines (TII 2014) and therefore, these were not analysed further. Therefore, full details on the traffic distributions and further analysis are presented in the TTA in Appendix 15-1.

Description of Effects

With respect to the EPA's criteria for description of effects, the potential effects associated with this aspect of the construction phase are described below.

Table 15-13: Potential Effect - Construction Haul Route – Determination of Significance of Effect

Extent	Scenario	Significance	Quality	Duration
Junction 1	Peak Traffic	Not Significant	Negative	Temporary (3 months)
	Average Traffic	Not Significant	Negative	Short Term (23 months)
Junction 2	Peak Traffic	Not Significant	Negative	Temporary (3 months)
	Average Traffic	Not Significant	Negative	Short Term (23 months)
Junction 3	Peak Traffic	Not Significant	Negative	Temporary (3 months)
	Average Traffic	Not Significant	Negative	Short Term (23 months)
Junction 4	Peak Traffic	Not Significant	Negative	Temporary (3 months)
	Average Traffic	Not Significant	Negative	Short Term (23 months)

The assessment of effect significance considered the sensitivity of the junctions and the magnitude of the impact on the junctions assessed. The significance of effect for each junction is described in Table 15-13 based on the EPA's criteria (EPA 2022) for describing effects (Table 15.4) and application of professional judgement. It is also noted the duration is deemed temporary (less than a year) in EIA terms.

The peak generate traffic is the worst-case scenario for the proposed development. Outside of the 3-month peak, the traffic associated with the proposed development will be below this worst-case effect. During the construction programme, there will be days when construction generated traffic will be lower than the average traffic. This assessment is robust in providing worst case scenarios.

Site Entrance and Internal Site Access Roads

For the construction phase, a new temporary Derryadd site crossing (site access C) of the N63 (Derryadd to Derryaroge bog) will be utilised. The works to construct the site accesses will be completed at the start of the construction phase and, with the exception of regular maintenance to hedgerows for the visibility splays, no additional works are envisaged to be required at the site accesses for the construction phase.

The maintenance of the visibility splays will have a positive effect on the safety aspect of the access. The temporary southern arm of the construction access to Derryadd via N63 (Site Access C) will be closed off after construction works are finished.

The main site access A on the R392 and site access B, the gated site access between Derryadd and Lough Bannow on R398 will be constructed as part of the initial task of the construction phase.

AIL Haul Route Effect

The effect of the AIL deliveries on the existing road network have been assessed based on the longest component to be delivered to site, the turbine blade. The worst-case scenario for the swept path of the non-segmented blade carried on a superwing carrier trailer was undertaken at the pinch points, junctions and bends on the AIL Haul Route as outlined in Section 15.2.4

In Table 15-14, the Route refers to the section of the N63 east of Lanesborough to the site access. It is noted that the main site access A has been designed to accommodate the swept path of the superwing carrier trailer with full blade. For swept path drawings, refer to Swept Path Analysis in Appendix 15-3 of this Chapter.

Table 15-14 Swept Path Analysis – Route, Drawings reference and Actions

POI	Dwg No.	Title	Demount Signage	Public Lighting /Electric pole Removal	Hardstanding area	Prune Vegetation	Oversail
1	SK01A	N6 Junction 12 (Eastbound)	✓	-	-	✓	✓
2	SK02A	N6 Junction 12/ N61 Roundabout	✓	✓	✓	✓	-
3	SK03C	N61/ N63 Roundabout	✓	✓	✓	✓	✓
4	SK04A	N61 Roscommon Arts Centre Roundabout	✓	-	-	-	-
5	SK05A	N61/ N63 Roundabout	✓	-	✓	-	-
6 (Site Access A)	SK06A	Proposed Site Access	✓	-	✓	✓	-

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 are temporary, the land will be reinstated on completion of the works. The hardstanding areas will be laid in advance of the delivery of the Abnormal Indivisible Loads (AILs) to site and reinstated immediately after delivery of the final AIL.

The construction of the temporary TDR hardstanding areas will have a likely slight effect at each pinch point requiring hardstanding. The is due to delays caused to traffic due to the works and the associated traffic management. The hardstanding works at all the 5 no. pinch points (excluding site access A) are 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 impact.

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 impact 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 slight 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. In addition to carpark lighting columns to be hinged in third party land. These works will be undertaken simultaneously with offsite works in advance of the AIL deliveries.

The traffic generations for the AIL haulage is by convoys as outlined in Table 15-7. Of the 199 components to be transported, this will be in convoys of either 3 or 5 components per convoy, a total of 67 trips or 40 trips respectively.

Description of Effects

With respect to the EPA's criteria for description of effects, the potential associated effects associated with this aspect of the construction phase are described below.

Table 15-15: Potential Effect –– AIL Haul Route – EPA Criteria Effect

Extent	Scenario	Significance	Quality	Duration
AIL Haul Route	Advanced Works	Slight	Negative	Temporary
	AIL Convoy	Slight	Negative	Temporary

The advanced works to accommodate the haulage of the AILs will have a slight effect due to the low volume of temporary works required on the routes. The vegetation pruning, signage and overhead line works may be undertaken as maintenance works in advance of the proposed development with low volumes of traffic associated with these works.

For the transport of the AILs by convoy, the volume per convoy is low, however, the effect on the existing road environment will be slight. To allow for the long and wide vehicles to travel on some of the routes of narrower width, temporary traffic management operations will be required.

15.5.3 Potential Effects – Operational Phase

The operational phase of the proposed development is envisaged to last for 30 years. During this time, the proposed development will generate small volumes of traffic for operational and maintenance purposes.

The site of the proposed wind farm will be used during the operational phase for recreational use as outlined in Chapter 3 (Description of the Proposed Development).

Site Entrance and Internal Site Access Roads

For the operational phase, the Derryadd site crossing (site access C) of the N63 (Derryadd to Derryaroge bog) will permanently close the southern arm post construction. The Derryaroge site access (northern arm) will form a staggered junction with the existing Mountdillon access on N63.

The main site access A on the R392 and site access B the gated site access between Derryadd and Lough Bannow on R398 will remain open for operational phase. The works to construct the site accesses will be completed at the construction phase. The existing Mountdillion entrance will remain open during the operation phase. For the operation phase the overrun area for the turbine delivery will be reinstated and regular maintenance to hedgerows for the visibility splays will be required for all site accesses. Location of operational phase site accesses is shown in Figure 15-7.

Figure 15-7 Proposed Operational Phase Site Access

The maintenance of the visibility splays will have a positive effect on the safety aspect of the access. The internal access roads will be in use for maintenance and operation phase of the wind farm site and for amenity access.

Operational Traffic Effect

As previously mentioned, the construction activities for the proposed development have the potential to generate the largest traffic volumes in comparison to the operational and decommission phase of the proposed development. The construction traffic assessment indicates that there is suitable capacity during construction activities.

It is expected that the operational phase will generate a maximum of 16 no. LV movements per day (i.e., 8 arrivals and 8 departures). The Wind Farm operational traffic volumes were assessed against the TII TTA Guidelines thresholds. This assessment indicates that the operational phase of the development will be sub-threshold based on the following:

- Development traffic (i.e., 16 no. LV movements) will not exceed 10% of turning movements at junction with and on National Roads, and,
- Less than 100 trips in/out combined in the peak hours for the proposed development will be generated.

Description of Effects

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

Table 15-16: Potential Effect - Operation Traffic - EPA Criteria Effect

Extent	Scenario	Significance	Quality	Duration
N63 and R392	Operational Traffic	Imperceptible	Neutral	Long-term (30 years)

As these works are routine maintenance, the operational traffic volumes will result in a low increase in traffic with imperceptible consequence on the road network over the 30 years of operation.

15.5.4 Potential Effects - Decommissioning Phase

The design life of the wind farm is 30 years, after which time a decision will be made to determine whether or not the turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned with the exception of the substation and amenity access tracks. Further details are provided in Chapter 3 of this EIAR (Description of the Proposed Development).

It is proposed that turbine foundations and hard-standing areas will be left in place and covered with peat/soil/topsoil. It is also proposed to leave the substation and access tracks in-situ at the decommissioning phase. It is considered that leaving the turbine foundations, site access roads/tracks and hard-standing areas in situ will cause less environmental damage than removing and recycling them. The decommissioning will be managed on a phased basis and the recreational use will be restricted during these times.

If the site is decommissioned, cranes will disassemble each turbine tower and all equipment. All infrastructure including turbine components will be separated and removed off-site for re-use, recycling and waste disposal.

Due to the potential changes to baseline traffic conditions over the operational time period of the proposed development, detailed assessment of the decommissioning phase of the development is not included as part of this assessment. It is proposed that in advance of the decommissioning process a Traffic Management Plan would be prepared to ensure that traffic effects are minimised during this phase.

Decommissioning Traffic Effect

It is estimated that the volume of traffic associated with the decommissioning phase will be significantly less than the construction phase as the turbine foundation, internal site access roads/tracks and substation will be retained. The proposed car parking and internal site access roads will be used for amenity purposes and will not be removed. The large volume of stone aggregate and concrete for the concrete pours brought to site during the construction phase will not require removal. The overall traffic associated with the decommissioning phase is likely to have a slight effect.

On completion of the decommissioning works, the site will still facilitate public recreational/amenity access. The substation will form part of the national grid network and will be retained. The recreational use will have an imperceptible effect similar to that of the operational phase on the road network.

Description of Effects

With respect to the EPA's criteria for description of effects, the potential worst-case associated effects of the decommissioning phase will be similar to the construction phase effect. On this basis the effect is as outlined in Table 15-17.

Table 15-17: Potential Effects - Decommissioning Traffic – EPA Criteria Effect

Extent	Scenario	Significance	Quality	Duration
N63 and R392	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 decommissioning.

15.6 MITIGATION AND MONITORING MEASURES

The approach to mitigation has followed the mitigation hierarchy. Where possible, the aim was to design out and eliminate potential impacts completely. Where this was not practicable, impacts have been reduced through use of specific mitigation measures.

The following sections detail the embedded mitigation relevant to Traffic and Transport.

15.6.1 Construction Phase

The assessment of potential effects indicates that the proposed development will have a slight effect during the construction phase. However, to reduce the impact on the environment further the following mitigation measures will be undertaken.

To mitigate the effects of the construction traffic, the proposed development 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 HV volumes as described in the Chapter 3 (Description of the Proposed Development).

The largest traffic volume effect is associated with the haulage of the materials for the combined construction activities for Month 3 of the proposed construction programme. Key deliveries during this period are aggregate and stone. The internal site access roads have been designed to utilise existing access tracks where feasible, reducing the volume of materials required for importation to the proposed wind farm site.

The second largest volume traffic effect is associated with the concrete pours for the turbine foundations. Other scheduled construction activities, per the proposed construction program 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 as well as minimising other works/deliveries as noted.

15.6.2 Pre- and Post-Construction Pavement Surveys

The proposed development will result in slight increase in traffic volume in particular HVs during the construction phase. The weighted loading of the HVs to the proposed wind farm site has the potential to impact on the road network surface (i.e. the N63) causing deterioration of the road pavement.

To capture suitable mitigation works the developer will undertake pre-construction and post-construction visual pavement surveys on the N63. Where the surveys conclude that damage to the road surface is attributable to the construction phase of the proposed development, the developer will fund the appropriate reinstatement works to bring the road surface back to pre-construction condition as a minimum, details for which will be agreed with the Local Authorities Roads Department.

15.6.3 Traffic Management Plan (TMP)

The successful completion of the proposed development will require co-ordination and planning in order to minimise the effects of the additional traffic generated by the proposed development which are outlined in the Traffic Management Plan (TMP). The TMP is a comprehensive set of mitigation measures that will be put in place by the Contractor before and during the construction phase of the proposed development to minimise effects. The purpose of the TMP is to capture the mitigation measures in this EIAR as discussed with RCC and LCC during scoping and any future traffic mitigation as they may arise during the proposed development. The TMP proposed for the Derryadd Wind Farm is included as Appendix 15-2.

The following mitigation measures has been incorporated into the TMP:

- Haul route selection to avoid sensitive receptors and preference for national road infrastructure over regional and local road.
- The existing and widened internal access roads facilitate queuing of construction vehicles off the public road.
- Traffic Management Operatives (TMOs) will be provided by the principal contractor in accordance with their Traffic Management Plan at the site access during peak construction traffic activities, refer to the TMP.
- Traffic Management Operatives (TMOs) will be provided by the principal contractor in accordance with their Traffic Management Plan for the turbine delivery, refer to the TMP.

- A wheel wash will be provided within the site.
- Passing bays on the internal access roads and a loop layout within the proposed wind farm site to facilitate safe passing of vehicles, vehicles travelling in a forward direction (reducing higher risk reversing manoeuvres).

15.6.4 Project Delays

To avoid delays to the proposed programme all required road opening licenses and agreements with the Local Authorities and an Garda Síochána to facilitate movement of AILs will be sought by the appointed Contractor in a timely manner.

15.6.5 Operational Phase

As outlined in Section 15.5.3, due to the relatively low operational traffic associated with the proposed development, it is envisaged that the operational effect of the proposed development 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 development.

15.6.6 Decommissioning Phase

On decommissioning of the proposed development, a 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 30 years from now, a new TMP will be undertaken to take account of any road improvements and changes to the network in the future.

When the turbine blades are decommissioned, they are cut to a more manageable size. The reduced blade section lengths, tower sections and nacelle are likely to remain abnormal loads, however the swept path of the long blades will be reduced. This will reduce the impact on third parties and existing road infrastructure (i.e. signs, vehicle restraint systems etc).

As previously mentioned, the large volume of material aggregate and concrete imported to site 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 only (i.e. site access roads maintained, turbine foundations retained, substation retained, car parking hardstanding areas retained).

15.7 CUMULATIVE EFFECTS

In addition to the traffic growth factors, the traffic modelling considers the effect of committed developments in the baseline.

Consented developments that may have an effect on the same parts of the receiving road network as the proposed development were reviewed. This includes sites which have previously been granted planning permission, but which are yet to be constructed or to become operational.

A desktop review of planning applications within the public domain that have been granted planning permission was undertaken as described in Chapter 5 (Policy, Planning and Development Context).

Cumulative effects have been assessed using available information on traffic generations and distributions. These data are sourced from the planning documentation of the submitted developments included in the assessment. The information used includes TTAs, EIAR traffic chapters and desktop studies. These sources helped to identify a cumulative understanding of future baseflow traffic volumes on the road network. This understanding includes traffic counts from developments that are either pending construction or currently under construction but that have not yet been subject to a detailed TTA.

Minor developments (e.g. single dwellings, extensions, etc.) were reviewed and the nature of these projects was considered consistent with normal development and any construction-related impacts from them would be temporary in nature. Therefore, for the purpose of the assessment, traffic volumes associated with these developments were not included in the traffic model as the provision of a central growth rate, as set out in Section 15.2.2, would cover the potential increased development along the Haul Roads to be used by the proposed development.

The EIA Directive includes the consideration of existing projects within the cumulative effects assessment, and this is addressed through a consideration of the incremental impact of the proposed development within the context of the existing baseline as described, and where applicable, the carrying capacity of the environment.

There are a number of proposed developments in the vicinity of the proposed development. Other developments which result in potential cumulative (inter-project) impacts on the proposed development are identified in Appendix 15-1 (Traffic and Transportation Assessment). In general, minimal potential cumulative impacts on the traffic capacity are anticipated as a result of these projects. The nature of these projects are consistent with normal development and any construction-related impacts from them would be temporary in nature. However, the projects which have been granted permission have been allocated within committed developments in the traffic assessment and the provision of a central growth rate in the traffic model would cover the potential increased development along the routes used by the proposed development. The TTA is therefore inherently cumulative as the model factors in these future committed developments.

15.8 RESIDUAL EFFECTS

15.8.1 Construction Phase

During the construction phase mitigation measures would be implemented, as set out in the TMP and section 15.6.1.2 of this chapter, to manage and reduce temporary traffic and transport impacts during the construction phase. This mitigation would reduce the potential slight effects identified in Section 15.5, there will be residual not-significant effects on the N63 and R392, caused by the pinch points along the AIL Haul Routes. As the advanced works to accommodate the haulage of the AILs would be temporary in nature, traffic volumes would return to their pre-construction condition following the completion of the construction phase, with the exception of the expected increase in traffic associated with normal traffic growths and the changes in traffic pattern that naturally occur on road networks.

The effects are also based on the peak construction period, which would be temporary. The effects would therefore be lower over the course of the entire 2-year construction period.

15.8.2 Operational Phase

Traffic arriving and departing for the proposed development would be below TII TTA Guidelines thresholds and therefore have an imperceptible effect on the road network. As a result, the proposed development would not likely have any significant effects during the operational phase.

15.8.3 Decommissioning Phase

As stated above, when the proposed development is decommissioned, a decommissioning plan will be prepared and implemented in order to minimise the residual effects during this phase. The decommissioning phase will employ similar mitigation measures as the construction phase. When the turbine blades are decommissioned, they are cut to a more manageable size reducing the overall impact of the AILs during removal from site. As the expected volumes of traffic will be primarily associated with the transportation off-site of turbine components and materials only, the residual effect is considered to be not significant and temporary in duration.

15.8.4 Description of Effects

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

Table 15-18: Residual Effect - EPA Criteria Effect

Extent	Scenario	Significance	Quality	Duration
N63 and R392	Construction Phase	Not Significant	Negative	Temporary
N63 and R392	Operational Phase	Imperceptible	Neutral	Long-term (30 years)
N63 and R392	Decommissioning Phase	Not Significant	Negative	Temporary

15.9 SUMMARY

The EIA was undertaken on the proposed wind farm site access and the mainline route (i.e. the N63 and R392) as agreed with LCC and RCC Roads Departments. The route assessment is based on the AM and PM peak traffic on the surveyed junctions in the baseline condition and comparing against the generated traffic of the proposed development.

When considering a development of this nature, the potential traffic effects on the surrounding route, road network and site access are considered for two scenarios with regards to the construction traffic:

- The peak construction traffic; and
- The average construction traffic.

During the construction phase mitigation measures would be implemented, as set out in the TMP, to manage and reduce temporary traffic and transport impacts during the Construction Phase. This mitigation would reduce the potential slight effects identified in Section 15.5

The residual impact of transporting the AILs to the site, will be not significant and temporary in nature. Routes from Athlone to Roscommon, from Roscommon to Lanesborough, and from Lanesborough to the proposed wind farm site have been assessed in this report and are viable routes for the transport of the AILs based on the swept path analysis.

The operational phase of the proposed development will be imperceptible over the long-term duration. The decommissioning phase will have a lower impact than the construction phase and will be not significant and of a temporary duration.

There will be no significant residual effects with the adoption of the mitigation measures presented in this Chapter.

No difficulties were encountered when completing this chapter.

REFERENCES

EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports May 2022 (EPA, 2022)

Traffic and Transportation Assessment (TTA) Guidelines (TII PE-PAV-02045 May 2014)

Longford County Development Plan 2021-2027

Roscommon County Development Plan 2022-2028

Spatial Planning and National Roads Guidelines for Planning Authorities (2012)

Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (TII PE-PAG-02017).