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INTRODUCTION

- 14.1 This Chapter of the Environmental Impact Assessment Report (EIAR) considers the potential for significant environmental effects associated with the Proposed Development with respect to traffic and roads.
- 14.2 The assessment focuses on the construction, operational and decommissioning phases of the Proposed Development on traffic generation. Potentially significant traffic related environmental effects may result from two forms of potential impact:
- the transport configurations made for the movement of wind turbine components (including blade, tower sections and nacelle), transported as abnormal loads. Abnormal indivisible loads (AILs) are those which exceed the length, weight or height criteria defined in 'Road Traffic (Permits for Specialised Vehicles) Regulations 2009, S.I. No. 147 of 2009', and 'Road Traffic (Specialised Vehicle Permits) (Amendment) Regulations 2010, S.I. 461 of 2010'; and
 - the import of general construction materials transported via 'conventional' heavy goods vehicles (HGVs) and low loaders.
- 14.3 The assessment detailed within this Chapter is based around worst-case assumptions made for the purpose of forming a robust assessment of the Proposed Development within the parameters identified in **Chapter 2: Description of the Proposed Development**. Minimum and maximum hub height and rotor diameter parameters being proposed and all design permutations within that range as set out in Chapter 2 in this EIAR are being applied for.
- 14.4 This Chapter does not focus on the transport configurations made for the movement of wind turbine components to the site during the construction phase. The potential route impacts have been considered in the separate Turbine Route Delivery (TDR) Works Report document prepared by SLR Consulting which is available as **Appendix 14.1** found in Volume 3 of this EIAR and includes a detailed review of the preferred delivery route to site from the port of Dublin and any road route constraints with swept path analysis. The TDR report identifies the temporary works required to accommodate the turbines in transport and has been used to inform this Chapter. Site visits were undertaken to review the route on the 15th February 2022, when the route from the port of delivery was driven, and on 16th February 2023 when the roads within the study area were considered.
- 14.5 During operation, the Proposed Development will generate regular maintenance trips which are not anticipated to lead to any variation in the baseline traffic flows beyond that of everyday fluctuation. Given that there is a 35-year lifetime for the Proposed Development, the focus of the assessment within this Chapter is the construction phase.
- 14.6 During the decommissioning of the site there will be traffic generated by the activities which will include dismantling the turbines and restoration of the site. There will be no need to import or export large volumes of material, and the turbine components will be broken down into smaller constituent parts for removal, with no abnormal load transport required. As such, there will be significantly fewer vehicle trips generated during the decommission phase than the construction phase.

SCOPING AND CONSULTATION

- 14.7 SLR prepared scoping material for discussion with the determining authority and with other relevant stakeholders and organisations, including Transport Infrastructure Ireland, Westmeath and Meath County Councils Roads departments. A scoping report was distributed to consultees in November 2022. The consultees (listed in **Appendix 1.2** of this EIAR) were invited to contribute to the EIAR by suggesting baseline data, survey methodologies and potential impacts that should be considered as part of the impact assessment process and in preparation of the EIAR.
- 14.8 Account has been taken of the scoping responses received and **Table 14-1** summarises the identified key issues with the access, traffic and transport of the Proposed Development, and where these issues have been addressed in this Chapter.
- 14.9 A further site visit undertaken on the 16th February 2023. At this time meetings were also held with the National Roads Design Office on 29th September 2022 and 16th February, and with WMCC Road Engineers, with all parties reviewing the proposed access arrangements for the N52 and local road (L5542). It was confirmed that the proposed route and access arrangements raised no concerns and was generally acceptable for the delivery of the turbine components.

Table 14-1 Scoping Key Issues

Consultee and Date	Summary of Key Issues	Where addressed in Chapter
Transport Infrastructure Ireland Response dated 22 nd November 2022	Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes, e.g. N52 Cavestown to Kilrush Constraints Study Area.	As set out in below.
	A Traffic and Transport Assessment be carried out in accordance with relevant guidelines.	Paragraph 14.33 onwards
	Clearly identify haul routes proposed and fully assess the network to be traversed.	Existing road network described in paragraph 14.18.
	Consideration of possible improvements to N52 in the vicinity of the site.	Proposed access arrangements are submitted with this application
Westmeath County Council – Roads Department	Roads Department. Ensure that adequate visibility splays are provided.	Discussed on 20 th October 2023.
Westmeath County Council – Roads Department / National Road Design Office	Tie in with proposed re alignment of N52 Access arrangements and cable trenches Turbine setback	Discussed and approach agreed. Proposed access arrangement

Consultee Date	and	Summary of Key Issues	Where addressed in Chapter
			submitted with this application. See paragraphs 14.63 to 14.65
Meath County Council – Roads Department		Written response to preliminary Scoping request received. Traffic / Transportation Management Plan required	Appendix 14.3

Statement of Authority

- 14.10 This chapter has been prepared by Joanna Read, BSc MSc MCIHT, employed by SLR Consulting. Joanna has 20 years' experience in the field of transport planning. Joanna has nine years' experience with preparing environmental impact assessment chapters and nine years' experience with energy projects. Joanna has over twenty years' experience preparing transport assessments for a range of development types.

Limitations / Difficulties Encountered

- 14.11 The assessment of the potential impacts to the baseline traffic relies on the accuracy of the traffic flow data. The traffic counts have been undertaken by an experienced survey company (Tracsis) and the data are considered to be reliable.
- 14.12 It has not been possible to obtain personal injury accident (PIA) data; the Road Safety Authority (RSA) is currently in the process of reviewing its road traffic collision (RTC) data sharing policies and procedures and as such it is not making the RTC data available. As a result, it has not been possible to obtain PIA data specifically for the roads within the study area.

REGULATORY BACKGROUND

- 14.13 A review of the national, regional and local planning guidance relevant to this Chapter is summarised below.

Planning Policy and Development Control

- National Planning Framework
- Regional Spatial and Economic Strategy for the Eastern and Midlands region (Eastern and Midlands Regional Assembly 2019)
- Meath County Development Plan 2021-2027
- Westmeath County Development Plan 2021-2027

Guidelines

- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports', (EPA, 2022);

- Traffic and Transportation Assessment Guidelines, (National Roads Authority, 2014);
- Wind Energy Development Guidelines (Department of Housing, Local Government and Heritage, 2006)
- Draft Revised Wind Energy Guidelines (Department of Housing, Local Government and Heritage, 2019);
- 'Environmental Assessment of Traffic and Movement' (IEMA, July 2023);
- Spatial Planning and National Road, Guidelines for Planning Authorities (TII, 2012); and
- Construction of National Road Schemes (National Roads Authority, 2006).

Technical Standards

- Rural Road Link Design – DN-GEO-03031 (Transport Infrastructure Ireland, 2017);
- Design Manual for Roads and Bridges, now Standards for Highways Highways Agency (1997).

RECEIVING ENVIRONMENT

Study Area

- 14.14 The Main Wind Farm Site is located within the administrative boundary of Counties Westmeath and Meath, approximately 1km southwest of the village of Clonmellon and c. 2.8km northeast of Delvin. The site can be accessed directly from existing agricultural entrances and access tracks from the N52, a national primary road and local roads to west and northwest of the N52. The main access to the site will be gained from the L5542.
- 14.15 The Proposed Substation Site is on the western outskirts of Clonmellon, Co Meath, 200m from the settlement boundary in the townland of Galboystown.
- 14.16 The study area for the transportation assessment includes the N52 from the junction with the N4 to the east of Mullingar to Clonmellon, and the L5542 as the minor road from the N52 west to the site access locations. In addition, the L6821 Killallon Road which extends west from the N52 at Clonmellon to the substation access will also be included.

Baseline Conditions

- 14.17 The Proposed Development is located on land to the north west of the N52 approximately 6km north east of Delvin and 2.5km south of Clonmellon, as shown in **Figure 14-1**. The main towns and villages within the vicinity of the Proposed Development include: Clonmellon, Delvin, Caddagh Cross, Killulagh and Cloghan. The following townlands are located along the turbine delivery route: Carnybrogan, Ballinlig, Cavestown and Rosemead, Clonarney, Robinstown Little, Robinstown Great Moyleroe Little, Moyleroe Big, Mitchelstown, Castletowndelvin, Clonyn, Billistown, Cartenstown, Ballynacor, Hiskinstown, Williamstown (Rochford), Williamstown (Briscoe), Ballygillin, Reynella, Crosserdree, Balrath North, Tevrin, Killynan (Pratt), Killynan (Cooke), Mountrobert, Macetown, Rathconnell, and Ballagh. Access to the Proposed Development is to be provided in four separate locations, with one access point directly from the N52, two access points located along the L5542 which extends north west from the N52 and access to the Proposed Substation from the L6821 Killallon Road which extends west from the N52 at Clonmellon.

Existing Road Network

- 14.18 The study area for this assessment has been defined as the N52, the L6821 and the L5542 leading to the access points for the Main Wind Farm Site (3 no. access points proposed) and the Proposed Substation (1 no. access proposed). The roads included in the study area are:
- The N52 from the junction with the N4;
 - The L5542 from the junction with the N52; and
 - The N52 north of the Proposed Development to the Proposed Substation Site at Clonmellon.
 - The L6821 which provides access to Proposed Substation at Clonmellon.
- 14.19 The majority of construction traffic will travel to the site along the routes as described above and so much of the wider network has been excluded from this assessment. The wider road network is likely to include the N4 in both directions and the N52 north of Clonmellon.

Existing Traffic Flows

- 14.20 Baseline traffic flow surveys were undertaken by Tracsis who installed an automatic traffic counter (ATC) within the study area, specifically on the N52 close to Access Point 2 (AP2), as shown in **Figure 14-2**. Traffic data was not obtained for any other locations within the study area as it is likely that the construction traffic will disperse, with reduced impacts, as it travels away from the study area.
- 14.21 The ATC collected data continuously over the seven-day period between Monday 27th November 2022 and Sunday 4th December 2022, a period which lies outside of any school, public or bank holidays. The full traffic survey results are provided in **Appendix 14-2** found in Volume 3 of this EIAR and a summary of the average weekday traffic is provided in **Table 14-2**. The data includes directions and two-way flows.

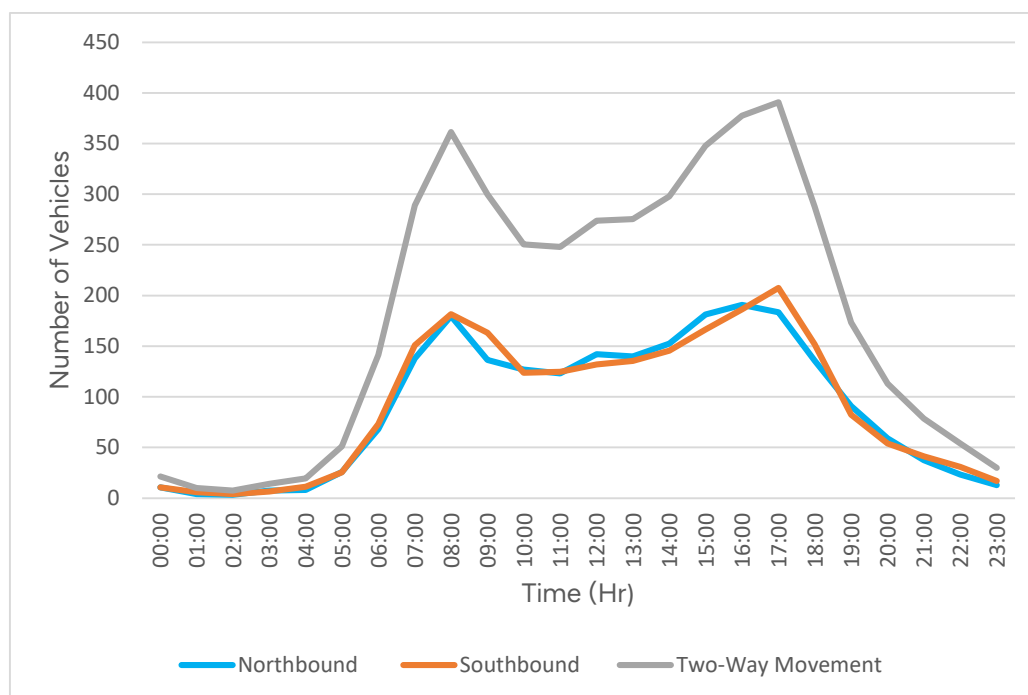
Table 14-2
Average Weekday Traffic Flows (N52)

Location							
	Northbound		Southbound		Two-Way		
Period	Total	HGVs	Total	HGVs	Total	HGVs	% HGVs
24 Hr	2181	244	2233	294	4414	538	12%
12 Hr	1830	202	1870	229	3700	430	12%

- 14.22 **Table 14-2** shows that during a typical weekday (24hrs), an average two-way flow of 4,414 vehicles is recorded along the N52 with 12% of the flow comprising HGV traffic; the proportion of HGVs for the average 12-hour period is also 12%. The flows for an average weekday are at similar levels in both directions, with 2,181 vehicles northbound (49%) and 2,233 (51%) vehicles southbound.
- 14.23 **Figure 14-3** presents the profile of traffic on the N52 during the average weekday through a full 24hrs. Similar peak periods can be observed for both northbound and southbound streams of traffic in the morning period (08:00 to 09:00) and in the evening. The northbound

stream peaks presents a longer peak period in the evening from around 15:00 to 17:00 while the southbound evening peak is more defined at 17:00. The traffic profile does not show there to be distinct directional flows in either peak period which would suggest that traffic travels in both directions for commuting purposes.

Figure 14-3 N52 Average Weekday Traffic Flows (24hrs)



Network Capacity Performance

- 14.24 The capacity performance of the N52 has been calculated from Design Manual for Roads and Bridges, Volume 5, Section 1 TA 46/97, and compared against the existing 24-hour baseline traffic flows. The spare capacity has then been calculated and presented in **Table 14-3**.

Table 14-3 Existing Capacity of N52

Road	Baseline Flow (24-hr)	Capacity	Spare Capacity	Spare Capacity %
N52	4,414	23,048	18,634	81%

Accident Records

- 14.25 PIA collision data would normally be obtained for the study area to cover the most recent five-year period. This data is then used to determine the existing road safety situation and to establish a base against which the effects of the Proposed Development are assessed. However, the Road Safety Authority (RSA) is currently in the process of reviewing its road traffic collision (RTC) data sharing policies and procedures and as such it is not making the RTC data available. As a result, it has not been possible to obtain PIA data specifically for the roads within the study area.

- 14.26 A review of the available information has identified that road collision annual reports provide information on Road Casualties and Collisions in Ireland annually up to 2019; in addition, it is possible to look at the five-year trend analysis of fatalities and serious injuries from 2018 to 2023.
- 14.27 The 'Road Casualties and Collisions in Ireland 2019 – Tables [Online]' dated June 2022¹, has been reviewed. Data is provided for each County confirming the number of persons killed or injured between 2015 and 2019. This information provides statistics which have been obtained from all road traffic collisions as reported to An Garda Síochána, with data presented to confirm the number of persons killed or injured. The relevant information has been summarised in **Table 14-4** and **Table 14-5**.

Table 14-4 Persons Killed and Injured

	Ireland		Co. Westmeath		Co. Meath	
Year	Total Killed	Total Injured	Total Killed	Total Injured	Total Killed	Total Injured
2015	162	7840	5	160	8	303
2019	140	7598	3	130	7	235

Table 14-5 Persons Killed by Road User Type

Year	Pedestrians	Pedal Cyclists	Car User	Motor Cyclist	Other*
2015	31	10	89	22	10
2019	27	8	81	17	7

(*Other includes Passenger Service Vehicles, goods vehicles and unknown road users)

- 14.28 It can be seen from the information in **Table 14-4** that the number of people injured and killed in road collisions has reduced in both Ireland and in Co. Westmeath and Co. Meath between 2015 and 2019. The information in **Table 14-5** confirms that more car users were killed but that the number of deaths reduced from 2015 to 2019. The deaths of vulnerable road users (pedestrians and cyclists) reduced in 2019 also across Ireland.
- 14.29 The latest publication by RSA, a 'Provisional Review of Fatalities 1 January to 31 December 2023'², provides a review of the Garda data available for 2023. This confirms that nationally there has been an increase in the number of fatal collisions compared to the 2022 data, with an increase of fatalities in all user groups. The number of roads deaths in 2023 in Meath were recorded as seven, the same as the 2022 figure; the number of roads deaths in Westmeath in 2023 were also recorded as seven, an increase of four from 2022.

¹ https://www.rsa.ie/docs/default-source/road-safety/r2---statistics/road-collision-annual-reports/road-casualties-and-collisions-in-ireland-2019.pdf?Status=Master&sfvrsn=a6dcadd8_3

² https://www.rsa.ie/docs/default-source/road-safety/r2---statistics/provisional-reviews/provisional-review-of-fatalities-1-january-to-31-december-2023.pdf?Status=Master&sfvrsn=d8fccb13_3

- 14.30 While the data is not specific to the roads within the study area it is possible to confirm that the number of people killed in Co. Westmeath and Co. Meath in 2019 was not abnormal. While the more detailed information confirms that there were fewer vulnerable road users killed through Ireland in 2019 than in 2015, which would indicate that fatalities for vulnerable road users are reducing, the overall number of fatalities has increased in Ireland in 2023.

Sensitive Receptors

- 14.31 The assessment is required to evaluate the effects of the Proposed Development and to determine the magnitude and significance of the impacts on the identified sensitive receptors. The main receptors which are sensitive to increased traffic levels and environmental impacts are anticipated to be located along the L5542/Carnybrogan local road from the N52 to the site and along the N52 at the areas of Delvin, Clonmellon and other urban centres.
- 14.32 Residential properties and sensitive non-residential properties, such as schools, are also considered. The assessment also considers the construction phase impacts associated with the transport of the turbine components, the installation of the cable for the grid connection and the substation.

IMPACT ASSESSMENT

Evaluation Methodology

- 14.33 The likely significance of the potential effects has been determined by considering the magnitude of change in traffic movements and the sensitivity of the receptors which would be affected by these changes. This has been undertaken in accordance with the IEMA guidance (IEMA, 2023) and standard good practice, based on the experience of the assessor.
- 14.34 The IEMA guidance suggests that a day-to-day traffic flow variation of +/- 10% is to be expected in the baseline situation, and that projected traffic flow increases of less than 10% would be imperceptible to the general public and would create no discernible environmental impact. Therefore, increases in traffic levels of below 10% are considered insignificant.
- 14.35 Based on the IEMA guidance, the following factors have been identified as being the most discernible potential environmental effects likely to arise from changes in traffic movements. These are therefore considered in the assessment as potential effects which may arise from changes in traffic flows resulting from the Proposed Development:
- **Severance of Communities** – severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure separation of people from places and other people.
 - **Road vehicle driver and passenger delay** – traffic delays to non-development traffic which may occur at various locations depending on the type and scale of development.
 - **Pedestrian and non motorised user delay** – possible delays and increased severance to non-motorised users of the roads affected, predominantly related to the crossing of roads.
 - **Non-motorised user amenity** – the impact to the ‘pleasantness’ of a journey, taking into account pedestrian fear and intimidation. **Road user and pedestrian safety** – the potential effect on road users, but in particular vulnerable users of the road (e.g. pedestrians/cyclists);
 - **Hazardous/large loads** – the potential effect on road users and local residents caused by an increase to the number of hazardous and large loads, to include the movement of AILs.

Significance of Effect

- 14.36 Criteria for the determination of sensitivity (e.g. ‘high’, ‘medium’, or ‘low’) or of importance (e.g. ‘international’, ‘national’, ‘regional’, or ‘authority area’) have been established based on prescribed guidance, legislation, statutory designation and/ or professional judgement.
- 14.37 The significance of the likely effect has been determined by consideration of the sensitivity of receptors to change, are they able to adapt and recover from the effects, taking account of the specific issues relating to the study area, and then the magnitude of that change.
- 14.38 The potential sensitivity of receptors to changes in traffic levels has been determined by considering the study area and the presence of receptors in relation to each potential impact.
- 14.39 The IEMA guidelines suggest two thresholds when considering predicted increase in traffic, whereby a full assessment of the impact is required:

- Include road links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
 - Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
- 14.40 The IEMA (2023) guidelines are intended for the assessment of environmental effects of major new developments, as opposed to short-term construction. In the absence of alternative guidance these guidelines have been applied to assess the short-term construction phase of the Proposed Development.
- 14.41 Where existing traffic levels are generally low (e.g. rural roads and some unclassified roads), any increase in traffic flow may result in a predicted increase that would be higher than the IEMA (2023) guideline thresholds. In these situations, it is important to consider any increase in terms of overall traffic flow in relation to the capacity of the road, before making a conclusion on whether the effect is significant as defined under the EIA Regulations.
- 14.42 Any change in traffic flow which is greater than the thresholds set out in the IEMA (2023) guidelines would be subject to additional mitigations. The magnitude of potential impacts will be identified through consideration of receptor sensitivity against the degree of predicted change to baseline conditions, the duration and reversibility of this change, considered with professional judgement.

Sensitivity of Receptors

- 14.43 Each receptor has been assessed individually to determine its sensitivity and the criteria used to define sensitivity are shown in **Table 14-6**. The ability of a receptor to adapt to change, tolerate the impacts or recover from the impacts is key in assessing its vulnerability to the impact.

Table 14-6 Receptor Sensitivity

Receptor Sensitivity	Definition
Very High	Receptor with no capacity to accommodate a particular effect and no ability to recover or adapt.
High	Receptor with very low capacity to accommodate a particular effect with low ability to recover or adapt.
Moderate	Receptor with low capacity to accommodate a particular effect with low ability to recover or adapt.
Low	Receptor has some tolerance to accommodate a particular effect or will be able to recover or adapt.
Negligible	Receptor is generally tolerant and can accommodate a particular effect without the need to recover or adapt.

Magnitude of Impact

- 14.44 The magnitude of an impact is based on a range of factors. The definitions provided in **Table 14-7** are for guidance only and may not be appropriate for all impacts. For example,

an impact may occur in a very small area but at very high intensity for a long period of time. In such cases expert judgement is used to determine the most appropriate magnitude ranking and this is explained as part of the assessment.

Table 14-7 Magnitude Criteria

Magnitude	Criteria
High	The impact is very likely to occur or will occur frequently. The impact occurs over a large area, resulting in widespread changes to the baseline. These changes are long term or permanent and affect a large percentage of the receptor population.
Moderate	The impact is likely to occur or will occur at a moderate frequency. The impact will occur over a local to medium extent resulting in short to medium term changes to the baseline. A moderate percentage of the receptor population will be affected.
Low	The impact is unlikely to occur and will be localised, temporary or short term in nature. Change to baseline will be detectable and will affect a small percentage of the receptor population.
Negligible	The impact is very unlikely to occur, would be localised and short term with slight or imperceptible changes to the baseline. The small receptor population will recover fully.

Significance of Effect (Potential Effects)

- 14.45 Sensitivity and magnitude of change as assessed under the criteria detailed above have then been considered collectively to determine the significance of effect, as described in Table 14-8. The collective assessment is a considered assessment by the assessor, based on the likely sensitivity of the receptor to the change (e.g. is a receptor present which would be affected by the change), and then the magnitude of that change. Effects of 'major' and 'moderate' significance are considered to be 'significant' in terms of the EIA Regulations and additional mitigations may be required.
- 14.46 For the assessment of potential community severance and driver delay associated with the use of open trenching technology, the sensitivity of each link has been based on professional judgement and identified based on the following:
- The strategic importance of the road/highway hierarchy;
 - The existing types of users of the road; and
 - Availability of suitable alternative routes.

Table 14-8 Significance of Effects

Significance of Effects					
Sensitivity of Receptor	Magnitude of Impact				
	No Change	Negligible	Low	Moderate	High
Negligible	Negligible	Negligible	Negligible	Negligible	Minor
Low	Negligible	Negligible	Minor	Minor	Moderate
Moderate	Negligible	Minor	Minor	Moderate	Major
High	Negligible	Minor	Moderate	Major	Major
Very High	Negligible	Minor	Major	Major	Major

Potential Cumulative Effects

14.47 An assessment has been undertaken to establish potential cumulative effects from all relevant developments upon the local road network within the study area, including local wind farms, within a 40km radius of the site (either in the planning system or under construction) which may utilise the same local road network and access routes as the Proposed Development.

Operational Cumulative Effects

14.48 As the operational impact of the Proposed Development on the study area is indiscernible, the operational cumulative effects have not been assessed.

14.49 It has been identified that funding has been secured by Westmeath County Council to complete a feasibility study into improvements in the alignment of the N52 between Cavestown and Kilrush. The study area includes a large section of the N52 Proposed Development site frontage, and while the improvement scheme is unlikely to require consideration as part of the construction stage impacts, it may be relevant to the consideration of operational impacts.

Mitigation

14.50 The Proposed Development has been designed to include a range of measures to mitigate potential effects and the assessment assumed that general good practice would be deployed, with a detailed Construction Traffic Management Plan (CTMP) being secured prior to the commencement of development. A CTMP has been prepared and is found in **Appendix 14.3 of Volume 3** of this EIAR.

Residual Effects

- 14.51 Following consideration of mitigation measures, an assessment of the residual effects has been made. Potential residual impacts include general wear and tear to roads and verges as a result of increased traffic, and temporary road closures caused by AIL deliveries.

Statement of Significance

- 14.52 A statement of significance is provided at the end of the chapter which provides a summary of the complete assessment for each receptor, taking into consideration any proposed mitigation measures, and it reports the significance of the residual effects in compliance with the EIA Regulations.

Proposed Development (Future Baseline)

- 14.53 All elements of the Proposed Development are described in **Chapter 2** of this EIAR.
- 14.54 The Proposed Development would consist of eight turbines across two clusters, with the northern cluster consisting of three turbines and the southern cluster consisting of five turbines. The 110kV substation is to be located north of the two clusters, to the west of Clonmellon, with the 33kV underground electricity cabling connecting to the substation along the N52.
- 14.55 Access to the Main Wind Farm Site will be provided via three separate access locations, with one direct off the N52 to serve T8 during construction and operation and two from the local road (L5542) which extends west from the N52 towards the site. A proportion of the aggregate material required on site will be imported from local quarries, with some aggregate won from the on-site borrow pits; all concrete will need to be imported as there will be no concrete batching plant on site.

Site Entrances

- 14.56 Access to the northern cluster is proposed via local road L5542 which passes through the townland of Carnybrogan. This access (Site Entrance 1) is located approximately 1.5km north west from the junction of the L5542 with the N52.
- 14.57 Access to the southern cluster (Site Access 2) is also proposed via the local road L5542, approximately 750m north west from the junction with the N52. Access to turbine No8 (T08) would be via the access from N52 within the townlands of Cavestown and Rosmead (Site Entrance 3).
- 14.58 Access to the proposed 110kV substation would be from the L6821 Killallon Road (Site Entrance 4). All access locations can be seen on **Figure 14-4**.

Development Site Construction Haul Routes

- 14.59 All construction vehicles will enter the northern cluster and southern cluster along the L5542 from the N52; construction vehicles accessing T08 would travel directly into the site via the access on the N52. It is anticipated that that HGVs importing aggregate material will travel from local quarries, and that other deliveries will travel from the M3, the N4 and the N52, accessing the site from the L5542 north and south of the site. Light vehicles are likely to travel from both directions along the N52.

Turbine Delivery Route

- 14.60 The proposed delivery route is presented in **Figure 14-5**. A turbine delivery route selection and assessment was carried out to identify the optimum delivery route to the sites as set out in **Appendix 14.1**. The assessment has considered maximum turbine component parameters and so covers all turbine permutations identified in **Table 2.1**.
- 14.61 Turbine delivery will be from Dublin port with delivery of the wind turbine components (WTCs) along one distinctive route. The turbine delivery route will leave Dublin port and join with the M50 motorway via the Dublin Port Tunnel. The transport will continue on the M50 to the junction with the M4, where the transport will travel through the junction to head west along the M4 to the N4. At junction 16 of the N4 close to Mullingar the transport will exit the N4 to head north east along the N52 towards the site.
- 14.62 The route from the N4 junction has been assessed for a candidate turbine with a tip height of up to 180m, a rotor diameter up to 162m and a hub height up to 100m which has encompassed all the turbine permutations within the dimensions set out in Table 2.1 of **Chapter 2** of this EIAR. The exact make and model of the turbine will be dictated by competitive tender process but will remain within the parameters assessed.

Cable Route

- 14.63 The cable route forms part of this planning application and is also assessed as part EIAR consent process. The associated cable route will consist entirely of underground cable which will link the Main Wind Farm Site with the Proposed Substation, as set out in Chapter 2 of this EIAR.
- 14.64 .. The electricity from the northern and southern clusters will be exported to the Proposed Substation firstly along the L5542 and then via the N52. The cable route will involve a trench being constructed in the road and cable trenching will be carried out with the aid of a lane closure which will ensure that the trenching works are completed as expeditiously as possible.
- 14.65 Due to the length of the cable route (ca. 5km) the works could be conducted over a five month period (21 weeks).

Substation

- 14.66 It is proposed to construct the electricity substation within the proposed development site west of Clonmellon, Co Meath as described in **Chapter 2** of this EIAR. This substation will provide a connection point between the proposed wind farm and the national grid. Access to the substation will be from the L6821 to the west of Clonmellon.

Construction Programme

- 14.67 The construction phase of the Proposed Development, which includes civil, electrical, grid works, and turbine assembly will take approximately 18-24 months once the proposed turbines are acquired via a competitive tender process. The main activities will include:
- off-site highway works;
 - site establishment (construction compounds);
 - construction of access tracks and crane pads;
 - turbine foundation construction;
 - substation civil and electrical works;

- cable delivery and installation;
- turbine delivery and erection;
- wind farm commissioning; and
- reinstatement/restoration.

14.68 The main construction works which are expected to generate the most vehicle trips to the site will be undertaken during months 5 to 11, with the final 5 months of the construction programme accommodating the wind turbine deliveries and erection. An indicative construction programme has been prepared and is set out in the construction timeline shown in **Chapter 2: Description of Development**, as summarised in **Table 14-9**.

Table 14-9 Indicative Construction Programme

Construction Activity	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site establishment & felling																		
Access tracks																		
Turbine foundations																		
Concrete pour																		
Substation & compound																		
Cable laying																		
Wind Turbine Erection & Grid Connection																		
Site Reinstatement																		

Site Construction Traffic Generation

- 14.69 The construction phase working hours for the Proposed Development would be 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 at weekends. It should be noted that out of necessity some activity, may need to occur outside the specified hours stated, although any major operations would not be undertaken without prior approval from Westmeath County Council and Meath County Council as the Roads Authorities. The impact of the Proposed Development has been assessed over a 12-hour weekday period, which considers the natural peak usage of the road network.
- 14.70 The Proposed Development would require the transportation of a range of construction materials to the site. The aggregate material required on site will be sourced locally, with a number of existing quarries being available. The key elements of construction work which would result in vehicle trip generation have been summarised in **Table 14-10**.

Table 14-10 Construction Activities Requiring Vehicle Trips

Key Work Element	Details and Assumptions	Conventional HGVs	Abnormal Loads
Site establishment	Provision of hardstanding, cabins and plant for construction activities at commencement of construction and later removal from site.	Yes	No
Site access	Provision of plant and materials associated with improvements to the site access.	Yes	No
Access track upgrade and construction	15.5km of internal access track, 5km of which will be old internal access tracks.	Yes	No
Crane hardstandings, turbine laydown areas and turbine foundations	Construction of crane hardstandings at each turbine location with additional laydown areas for blades in addition to aggregate, concrete and reinforcement materials for turbine foundations. Concrete is brought to the site ready mixed. Concrete pour for each foundation in a single day.	Yes	No
Control buildings and substation	Construction of building foundations, structure and finishings. Installation of electrical equipment.	Yes	Yes
Electrical installation	Delivery of sand and cables to connect turbines to substation.	Yes	No
Waste Collection	Collection of waste water from the holding tank and collection of general waste and waste for recycling. Expected to be minimal HGV trips.	Yes	No
Wind turbine delivery	Transport of WTC to site. Bringing in of crane equipment to erect turbines. Includes escort vehicles associated with movement of WTC loads.	Yes	Yes

- 14.71 An estimation of the aggregate material quantities for all elements of the Proposed Development has been made; the on-site borrow pit and the excess from the cut and fill requirements are likely to result in all aggregate material being won within the site. However to ensure a robust assessment, it has been assumed that the type of aggregate required for construction will be imported. **Table 14-11** provides a summary of the material quantities (aggregates only) required on site.

Table 14-11 Estimated Aggregate Quantities ³

Proposed Infrastructure	Volume of Aggregate	Approximate Tonnages of Aggregate
Access tracks (new & upgraded)	22,160m ³	39,888t
Turbine bases (area & base formation)	7,260m ³	13,068t
Hardstanding and laydown areas	18,920m ³	34,056t
cv Substation	16,280m ³	29,304t
Construction compound	3,615m ³	6,507t
Misc	8,500	15,300
TOTAL	76,735m³	138,123t

- 14.72 A total of 138,123 tonnes (t) of aggregate material will be required for the construction of the Proposed Development. The aggregate required will be brought to Site from external sources, mainly from local quarries. **Table 14-12** provides material quantities for all other non-aggregate materials. The aggregate quantities have been distributed according to the construction activities set out in the programme (**Table 14-9**).

³ Assumes 1.8 factor for M³ to tonnes

Table 14-12 Estimated Material Quantities (Non-Aggregate)

Construction Activity	Infrastructure	Material Quantities
Turbine Foundations	Installation 6N structural fill	3,157t
	Blinding	454t
	Installation of can/ bolts	8no
	Reinforcement	500t
	Plinth shutter	30t
	Base slab perimeter shutter	70t
	Ducts (200mm diameter)	48no
	Ducts (75mm diameter)	48no
	Transformer plinths	8no
	Step plinths	8no
Electrical Connection	Sand layer – (6,000m length by 0.5m x 0.3m)	900m ³ (1,620t)
	Cable – drums hold 500m	12no
Concrete	520m ³ per turbine (1,248t)	9,984t
Control Building	Reinforcement	34t
Substation Compound	Imported type 1 running surface	920t
	Imported 6F2 capping	1,830t
	Class 1C1 Roadbox bulk fill	4,575t
	Class 1 general fill	12,240t

Trip Generation

- 14.73 The total number of HGV trips predicted to arise during the construction phase of the Proposed Development has been calculated based on estimated material quantities provided in **Table 14-12**. These have been doubled to provide the two-way movements that would occur from delivery and then returning vehicles, as shown in **Table 14-13**.

Table 14-13 Total Number of HGVs Trips

Construction Activity	Infrastructure	Load Size	No. of Loads	Two-Way Movements
On-site	Imported Aggregate	20t	6,906	13,812
Felling	Assumed 2 per day	-	2	4
Turbine foundations	Installation 6N structural fill	20t	158	316
	Blinding	20t	23	46
	Installation of can/ bolts	-	1	2
	Reinforcement	20t	25	50
	Plinth shutter	-	1	2

Construction Activity	Infrastructure	Load Size	No. of Loads	Two-Way Movements
	Base slab perimeter shutter	-	1	2
	Ducts (200mm diameter)	-	1	2
	Ducts (75mm diameter)	-	1	2
	Transformer plinths	-	8	16
	Step plinths	-	8	16
Electrical connection	Sand layer – 5,484m of trench (0.50m x 0.25m)	20t	81	162
	Cable – drums hold 500m	-	12	24
Temporary Welfare Facilities		-	4	8
Concrete	520m ³ per turbine (1,248t)	20t	499	998
Control Building	Reinforcement	20t	2	4
Substation compound	Imported type 1 running surface	20t	46	92
	Imported 6F2 capping	20t	92	184
	Class 1C1 Roadbox bulk fill	20t	229	458
	Class 1 general fill	20t	612	1,224
Total Loads/ Two-Way Movements			8,712	17,424

14.74 The two-way movements for HGVs have been spread over the construction programme according to the relevant activity. The total two-way trip generation has been divided by the number of construction working days in each month (assumed 30 days per month) to provide daily two-way trip generation.

14.75 For ease of phasing the construction period, the following categories have been used (the final three months, not included, are reserved for commission of the wind turbines and for takeover):

- **site establishment** – it has been assumed that the majority of plant required on site would be delivered here, with a number of HGV deliveries. It has been assumed that 20% of the imported aggregate would be required;
- **access track construction** – it is assumed that the majority (80%) of aggregate would be required for the access tracks, with all aggregate sourced from external locations for delivery during these months;
- **substation and compound construction** – this will include all materials associated with the substation compound;
- **concrete** – concrete will be imported to the site in ready mixed loads and the nature of the operation is that concrete would be required to be imported on eight isolated and non-sequential ‘pour days’ to account for the pouring of each foundation;
- **cabling** – electrical connection materials; and
- **turbine foundations** – turbine bases, fill above turbine bases (aggregates), concrete pour and all associated materials for turbine foundations. The delivery of the turbines is not included here.

- 14.76 The vehicle trips to be generated in association with the management of waste during construction will be limited. It is also difficult to accurately predict waste vehicle numbers at this early stage however the robust traffic generation figures set out in **Table 14-13** include an element of 'rounding' to take account of unknown elements.
- 14.77 The total two-way daily vehicle generation figures within each month (30 days) of the 18 month programme, can be seen in **Table 14-4**.
- 14.78 The concrete pour days are not likely to occur every day during the construction of the turbine foundations. It is assumed that the concrete would be imported to site only during the seven months that it will take to erect the turbines. It is assumed that during this period one turbine foundation is poured over two days, with 520m³ imported over the two days. This approach ensures that the 'worst case' daily figures are confirmed.
- 14.79 The 'worst case' is described as such because the likely significant effects would occur with the highest level of traffic generation from the site, which would occur when various different construction activities occur at the same time. IEMA Guidelines state that the assessment should identify the 'worst' impacts⁴.

⁴ Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement' (IEMA, 2023).

TRAFFIC 14

Table 14-14 Daily Two-Way Traffic Generation by Construction Month

Construction Activity	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site establishment & felling	12	12	12	12	12													
Access tracks		19	19	19	19	19	19											
Turbine foundations & hard standings					26	26	26	26	26	26	26							
Concrete pour					62	62	62	62	62	62	62							
Substation		13	13	13	13	13	13	13	13	13	13	13	13	13				
Cable laying (internal)					2	2	2	2	2	2	2							
TOTAL	12	45	45	45	135	124	124	104	104	104	104	13	13	13	0	0	0	0

Wind Turbine Construction Traffic Generation

HGV Trip Generation

- 14.80 The above table (**Table 14-14**) shows that the maximum level of trip generation would occur during month five to seven of the construction period, when various construction activities would coincide, the worst case month being month five with 135 two-way HGVs generated per day. In addition, months 8 to 11 would be high also with 104 two-way HGVs per day predicted. The calculations are based on the dimensional specifications noted in Chapter 2.

Trip Generation for Wind Turbine Components

- 14.81 Each wind turbine consists of up to eight WTC deliveries: three blades, three or four tower sections and the nacelle (generator). Other loads would be associated with the delivery of the hub and cranes which would not be considered to be AILs, these however would be delivered at a similar time. Towers would be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame trailer. All components would be transported under suitable traffic management procedures.
- 14.82 On the premise that the 64 components are to be delivered in convoys of three, the AILs could be completed over 22 days, subject to the supply of turbines for the site. Over the seven-month period allocated for the erection of the turbines, this would equate to an average of approximately 3 delivery days per month.
- 14.83 To ensure a robust assessment, it has been assumed that three WTC load transport vehicles would deliver components on a day during the 'worst case' month, with an additional two HGV deliveries included for the crane. The maximum turbine components have been assessed in line with the candidate turbines listed in **Table 2.1 of Chapter 2** of this EIAR which covers all the permutations therein.

Light Vehicles and Staff Trip Generation

- 14.84 Light vehicles of which consist of smaller vehicles such as cars and vans, which would typically be associated with the workforce, have also been calculated to provide total two-way vehicle movements predicted to arise from the Proposed Development. It is envisaged that a maximum of 274 personnel would be required on the site at any one time. It is expected that the majority of staff will travel to the proposed development construction site in 14-seater minibuses, to be provided by the contractor, with 20 minibus trips during the peak of the construction period. To ensure that the prediction of light vehicles is robust, it has been assumed that a further 20 light vehicle trips would be seen during the peak of the construction period; this would equate to 40 vehicle trips per day (80 two-way movements per day).

Accumulative Trip Generation

- 14.85 **Table 14-15** provides the calculated daily and hourly two-way movements during the 'worst-case' month of construction phase (month 5).

Table 14-15 Wind Farm & Substation Trip Generation (Two-Way)

	HGV/ AIL	Lights	Total
Worst Case (month 5)			
Daily	140	100	240
Hourly	12	50	62

- 14.86 All construction vehicles would enter the site from the N52, with the majority of vehicles travelling north along the N52 from the junction with the N4. A percentage of the construction traffic may travel along the N52 through Clonmellon, and so it has been assumed that 85% of HGVs will travel north from the N4 and that 15% will travel south to the site along the N52 from Clonmellon. While some construction vehicles will access T08 directly from the N52, it has been assumed that all construction vehicles will travel via the local road L5542 to ensure a robust assessment. Traffic associated with the construction of the substation has been portioned to the N52 into Clonmellon, with 50% travelling from the N52 north into Clonmellon and 50% travelling south into Clonmellon; 100% of the traffic generated during the construction of the substation will travel on the L6821 Killallon Road.
- 14.87 WTC deliveries will travel from the N4 having collected the WTCs from the port at Dublin. From the N4 the turbine delivery route follows the N52 north all the way to the site. WTCs for T08 will exit the N52 at the access point which will serve T08 only. The WTCs for all other turbines will be transported along the L5542 to each of the other two access points.
- 14.88 Light vehicle trip generation would see 100 two-way trips per day during the peak months, with staff arriving in 50 light vehicles at the site at the start of the day and 50 leaving at the end of the day. It has been assumed that the light vehicles that travel to the site will come from both directions along the N52, and so a 50% has been applied in each direction.

Grid Connection Traffic Generation

- 14.89 Construction of the substation and internal cable network, in conjunction with off-site connection works to the National Grid, will be carried out in tandem to the wind farm sequenced activities during months 13 to 17 of the construction programme. Where the works require trenching in the public road, a partial or full road closure will be required.
- 14.90 Detail of the construction methods are provided within the Construction Environmental Management Plan (CEMP); a general overview of the construction sequence for the installation of cabling is summarised below:
- For cable works in the public road, the traffic management plan will be implemented. Clear and visible temporary safety signage will be erected all around the perimeter of the live work area to visibly warn members of the public of the hazards of ongoing construction works.
 - The trench is excavated, sand is laid before concrete is poured and compacted, PVC ducts are then installed on top of the compacted material.
 - When ducts have been installed in the correct position on the trench base layer, sand (in road trench) or Lean-mix CBM4 (CL1093) (off road trench) will be carefully installed in the trench around the ducts so as not to displace the duct and compacted.
 - A layer of Lean-mix CBM4 (CL1093) (in road) or excavated material (off road) will be installed on top of the duct surround material to a level 300mm below the finished surface

level and the finished surface of the road, road verge, or agricultural land will be reinstated as per its original condition or to the requirements of the Laois Area Engineer.

- When trenching and ducting is complete, the installation of the grid connection cable will commence between the wind farm onsite substations to the existing substation.
- Construction work areas and traffic management measures will be setup at 2 no. consecutive cable joint bays simultaneously. The underground cable will be pulled through the installed ducts from a cable drum set up at one joint bay and using a winch system which is set up at the next joint bay, the cable is pulled through.

14.91 The cabling works would generate traffic associated with delivery of materials and machinery and with the construction workers; temporary construction compounds (TCC) will be required during the cabling works to accommodate these deliveries and vehicles. All construction traffic will travel to a TCC; the cable route is approximately 4.75km in length and so it is anticipated the route will require 1 TCC.

14.92 Access to the TCC from the public road would be required to accommodate all construction vehicles, including large construction vehicles for the delivery of materials such as large cable reels. The TCC would be required to accommodate all construction vehicles and plant, with the plant of a scale relative to the cabling works.

14.93 **Table 14-16** provides an indication of the number of workers and deliveries expected for each stage of the cabling works. Each of these phases follow each other and are not concurrent activities so the realistic maximum adverse scenario would be the work stage with the highest number of deliveries, i.e. earthworks and ducting with 33 vehicle trips to the TCC. To ensure a robust assessment, the maximum number of workers (25) are combined with the maximum number of deliveries per day (16).

Table 14-16 Estimated Cabling Trip Generation

Work Stage	Workers (per day)	Deliveries (per day)	Total Vehicle Trips
Site enabling works	4	16	20
Earthworks/ducting	25	8	33
Joint bays	3	2	5
Cable circuits	6	2	8
Reinstatement	3	9	12
Demobilisation	4	16	20

14.94 During the cabling works it is predicted that a maximum of 33 vehicle trips would be generated, or 66 to-way vehicles movements per day. These vehicles would travel on roads described above, with the cable construction vehicles travelling from the wider road network to the N52 to the TCC. The most significant increase will be on the N52 in the vicinity of the Site, where the combination with the wind farm construction traffic will result in the largest increase above the existing traffic levels.

Construction Stage Impacts

Direct Impacts

- 14.95 The predicted increases in traffic levels against the baseline levels have been calculated in this section for the wind farm, the cabling and the substation; an assessment of the significance of the effect has been made against the criteria described in **Table 14-6**, **Table 14-7** and **Table 14-8**.
- 14.96 The IEMA guidelines provide two thresholds when considering predicted increases in traffic, whereby further consideration of impacts would be required:
- Include highway links where traffic flows will increase more than 30% (or the number of heavy goods vehicles will increase by more than 30%): and/or
 - Include highway links of high sensitivity where traffic flows have increased by 10% or more.
- 14.97 Along the N52, although sensitive receptors (e.g. residential properties) are present within the study area, the study area in its entirety is not considered to be sensitive; the N52 study area is not consistently populated with sensitive receptors and is predominantly located within a rural setting. Therefore the threshold of 30% has been applied for the N52.
- 14.98 The L5542 will see development generated traffic increase against the baseline levels and while there are a limited number of sensitive receptors along this road, the increase is likely to be more significant due to the proximity of the properties to the development site.
- 14.99 The predicted development generated traffic has been applied to the roads within the study area, as summarised in **Table 14-17**.

Table 14-17 Distribution of Daily Site Generated Traffic (total two-way)

Development Element	N52 North	N52 South	L5542	L6821
Wind Farm	58	144	202	0
Substation	14	14	0	28
Cabling	57	57	82	82
Turbine delivery	0	5	5	0
Total	129	220	289	110

- 14.100 The increase in traffic flows along the N52 have been calculated for the worst case day, to include all traffic generated by the different elements of the development, as summarised in **Table 14-17**.
- 14.101 Construction phase working hours for the Proposed Development will be 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 at weekends, other than in exceptional circumstances. It should be noted that out of necessity some activity, for example WTC deliveries and the lifting of the turbine rotors, may need to occur outside the specified hours stated, although they would not be undertaken without prior approval from Westmeath County Council and Meath County Council as the Roads Authorities. The impact of the Proposed Development has been assessed over a weekday, which considered the natural peak usage of the road network.
- 14.102 **Table 14-18** shows the predicted daily total and HGV traffic increases for the N52. The baseline flows are those observed on an average weekday over a 12-hr period. It has not been possible to obtain flows for the L5542 however due to its nature it is assumed that baseline flows will be low.

Table 14-18 Predicted Daily Increase in Traffic along the N52 – 24 Hour Flows

Road Link	Baseline		Development		Baseline + Development		Increase %	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
N52, south of Proposed Development	4,414	538	220	147	4,589	643	5%	27%
N52 north of Proposed Development	4,414	538	129	57	4,538	592	3%	13%

- 14.103 From **Table 14-18** above it can be seen that the development generated traffic will result in an increase of 5% to the total flow of traffic on the N52 and an increase of 27% to the number of HGVs on the N52.

Table 14-19 Capacity of N52 with Development

Road	Baseline Flow (24-hr)	Capacity	Development Traffic	Spare Capacity	Spare Capacity %
N52	4,414	23,048	220	18,414	80%

- 14.104 **Table 14-19** above confirms that the addition of the construction generated traffic would not have a material impact on the capacity of the N52 within the study area; the N52 will retain 80% capacity.
- 14.105 It has not been possible to predict the percentage increase on the L5542 as no baseline data has been obtained. However the existing traffic flows are assumed to be very low and so the increase of an additional 289 vehicles is expected to exceed the threshold as set out in IEMA.
- 14.106 As the predicted level of additional traffic to be generated by the Proposed Development and the increase below 30% on the N52, it can be confirmed that any environmental effects experienced on the N52 will not be significant; combined with the temporary and short term nature of the increase, no further assessment of the N52 has been completed.
- 14.107 While it has not been possible to confirm the baseline for the L5542 or the L6821, it is assumed that the additional traffic on these two roads will exceed the 30% threshold. As such, these roads from the study area are to be assessed to confirm the significance of any possible environmental effects.

Effects on Community Severance

- 14.108 The IEMA guidance identifies severance as “the perceived division that can occur within a community when it becomes separated by a major traffic artery”. As an example, a road that passes through a community such as a town or village, where perhaps amenities are located on one side of the road and residential properties are located on the other side, causes severance to the movements between those places. The degree of severance depends on the traffic levels on the road and the presence of adequate crossing opportunities.
- 14.109 There are a limited number of urban communities separated by the L5542 and there appear to be no locations where residential dwellings are separated from community facilities. The potential for community severance within the study area is considered to be **low** and the community receptor is considered to have **low sensitivity**.
- 14.110 It anticipated that the additional traffic and the total vehicle numbers will increase by more than 30%; as such the additional traffic within the study area will have a **moderate magnitude of impact**.
- 14.111 The potential for community severance effects for the L5542 within the study area is **minor and not significant**.
- 14.112 The L6821 extends from the N52 in the village of Clonmellon, where there are a number of residencies along this section of the L6821 in the village, and there is a public hose on the corner of the N52/L6821 junction. There is a footway which extends west along the northern side of the L6821, with no crossing facilities at the cross roads junction. There is a children’s play area located on the norther side of the road, which is close to a zebra crossing. In this location a footway is also present along the southern side of the road.
- 14.113 An increase of 110 vehicles to the flow of traffic on the L6821 is likely to present an increase in difficulties for residents crossing close to the crossroads and possibly in the vicinity of the

play area, although the zebra crossing will provide assistance. For that reason, the L6821 is considered to have a **moderate** level of sensitivity to the additional traffic.

- 14.114 The increase will result in less than 10 additional vehicles per hour, or less than two vehicles every 10 minutes in both directions. As such the magnitude of impact is considered to be **low**. This will result in **minor and not significant** community severance effects.

Road vehicle and Passenger Delay

Impacts from Turbine Construction

- 14.115 The IEMA guidance states that there are a number of factors which determine driver severance and delay; these include delay caused by additional turning vehicles and additional parked cars at the site, delays at junctions due to increased traffic, as well as delays at side roads due to reduced gaps in the oncoming traffic.
- 14.116 For the L5542 the impact of the additional traffic will have a **moderate magnitude** as the increase in traffic will be much higher when compared to the low baseline. Similarly the impact on the L6821 will also have a **moderate magnitude** for the same reasons.
- 14.117 Using the criteria as outlined in **Table 14-6**, **Table 14-7** and **Table 14-8**, driver severance and delay is considered to be of **low sensitivity** as there is expected to be some tolerance to the issue of severance and delay. The roads within the study area have not been identified as experiencing very high flows and so are likely to be able to tolerate an increase in flows and possibly some congestion during peak times; the roads do not extend through busier urban areas which are more likely to experience congestion regularly and on the N52 the magnitude of the potential effect is considered to be **low** with only a 5% increase in total vehicular flows. The N52 will also remain well within the maximum theoretical capacity of the road network.
- 14.118 As such, and in line with, the overall effects on the N52, the L5542 and the L6821 within the study area are assessed as **minor and not significant**.

Impacts from Cable Laying

- 14.119 The N52 has not been included in the assessment as the additional traffic associated with the construction of the Proposed Development has been identified to be below the IEMA threshold. However the impacts from the cable laying are likely to include additional delay due to traffic management measures. It has been demonstrated that the available capacity of the N52 is not likely to see any delays and so there is expected to be a good level of tolerance to the short delays likely to be experienced during the cable laying; the trenching will result in a lane closure but through traffic will still be possible. The sensitivity to these delays is considered to be a **negligible sensitivity**.
- 14.120 The traffic flows in **Figure 14-3** confirm that the peak hours support less than 400 vehicles (two-way) per hour, and so the slight delay resulting from traffic management measure is not anticipated to result in long queues or long delays. In addition the cable laying works and traffic management measures will be temporary; the magnitude of these impacts will be of **low magnitude**. As such, the overall effects on the N52 from the cable laying works will be **negligible and not significant**.
- 14.121 The installation of the cable will require one lane of traffic to be closed for short sections while the cable is installed in the road on the L6821; it is likely that the lane closure will need to be supported by traffic management measures, such as traffic signals, which will result in delays to drivers of vehicles on the road. The traffic flows along the L6821 have not been

confirmed however it is anticipated that they will not be high and that there are currently no delays or capacity issues along this section of the L6821. As such the sensitivity is considered to be a **negligible sensitivity**.

- 14.122 The disruption and delay to drivers on the L6821 will be temporary and while it could add noticeable delay to car journeys made if traffic management measures are required, the impacts would be short lived. The impacts are likely to be of a **negligible magnitude**. As such, the overall effects on the L6821 from cable laying will be **negligible and not significant**.
- 14.123 Due to the narrow width of the L5542 it is anticipated that the entire road will require closure during the installation of the cable. While there are a small number of properties along the L5542, the closure of the road will require a diversion to be followed. As such, the sensitivity is considered to be of **moderate sensitivity**.
- 14.124 Any road closure and diversion put in place will be required during the full duration of the cable laying along the L5542 from the site to the N52. As such, the magnitude is considered to be of **moderate magnitude**, with the resulting impacts from the cable laying on the L5542 classed as **moderate and significant**.

Pedestrian and Non -Motorised User Delay

- 14.125 Vulnerable road users are defined as road users most at risk from road traffic (pedestrians, particularly children and older adults or disabled people, cyclists, horse riders, and motorcyclists). The traffic data collected confirmed that vulnerable road users made up less than 1% of the total traffic; vulnerable road users have been recorded within the study area, but at low levels.
- 14.126 The impact of traffic on vulnerable road users would be most substantial within settlements along the proposed access routes where the presence of vulnerable road users, such as pedestrians and cyclists, is greatest. This includes the communities within Clonmellon.
- 14.127 The more minor roads within the study area (L5542 and L6821) are likely to see greater levels of vulnerable road users, particularly along the section of the L6821 within Clonmellon. As such, the sensitivity of these receptors is likely to be of **moderate sensitivity**.
- 14.128 The increase in traffic along the minor road will be significant due to the low baseline flows, however the additional number of vehicles per hours along the L6821 will be less than 2 every 10 minutes. In addition the effects will be temporary. As such, the magnitude of impact on the L6821 is considered to be of **low magnitude**.
- 14.129 The increase in vehicles numbers on the L5542 will be 289 per day, or 24 per hour. This is a noticeable increase however the increase will be temporary. This is considered to result in **moderate magnitude** effects.
- 14.130 The overall effect on vulnerable road users on the L6821 will be **minor and not significant**, and the L5542 will be **moderate and significant**.

Non-motorised User Amenity

- 14.131 Pedestrian amenity is defined in the IEMA (2023) guidelines as “the relative pleasantness of a journey”, which is generally affected by traffic flow and traffic composition, with pedestrian infrastructure also taken into account.
- 14.132 The increase in traffic on both the L5542 and the L6821 is expected to be high compared to the low baseline. The L6821 at Clonmellon has footways along both sections in places,

with a play area also positioned close to the road. While there are a few residential properties on the L5542 between the N52 and the site access locations, there are no pedestrian facilities along this section of road. While non-motorised users may travel along this section of the road, the numbers are not expected to be high. As such, the sensitivity of receptors on both roads to an increase in road traffic is considered to be a **moderate sensitivity**.

14.133 The proposed development flows are expected to increase by a higher level on both the L5542 and the L6821, although the effects will be temporary. As such, the magnitude of any effects are expected to be of **moderate magnitude**.

14.134 As such, and in line with **Table 14-3**, the overall effects on non-motorised amenity are assessed as **moderate and significant**.

Fear and Intimidation

14.135 There are no agreed thresholds for determining the level of fear and intimidation that may be experienced by road users, and while the traffic flows and pedestrian numbers have not been determined for the L5542 and the L6821, it is possible that pedestrians on these roads may experience an increase in fear and intimidation with the increase in HGVs.

14.136 The L5542 between the N52 and the site access does not include pedestrian facilities and so the degree of hazard may be greater. The increase in HGVs will be greatest on the L5542 however the numbers of pedestrians are expected to be low; as such the **sensitivity would be low**, and so the **magnitude of impact would be moderate** with the higher numbers of HGVs. The overall effects of fear and intimidation on the L5542 would be **minor and not significant**.

14.137 The L6821 would see a lower number of HGVs, which would serve to reduce the hazard. As such, the **magnitude of impact would be negligible**. As the impacts would be short lived and this road includes footways and pedestrian crossings the **sensitivity would be low**. As such the overall effects would be **negligible and not significant**.

Road user and Pedestrian Safety

14.138 There are no general thresholds used when determining the significance of increased traffic on highway safety, therefore professional judgement is required to identify the potential road safety effects associated with the construction phase. The IEMA guidance confirms that existing road accident rates and professional judgement are needed to assess the implications of the cumulative construction traffic. It should be noted that this assessment does not constitute a road safety audit.

14.139 It has not been possible to obtain injury accident data for the study area (the N52) as no location specific data is currently available from the RSA. The national data reviewed has identified that the number of accidents within the County of Westmeath reduced in 2019 from previous years and that there was one single fatality in the County in 2019. While this data does not allow any conclusions about road safety within the study area to be confirmed, it does imply that there are no significant road safety issues within the County. Due to the lack of information available regarding existed road safety within the study area, and in line with **Table 14-22** the study area is classified as having a **moderate sensitivity** to impacts to road safety.

14.140 The predicted number of HGV movements on the N52 would be less than the 30% threshold as set out in **Table 14-2**, and it is confirmed that this would be easily accommodated within the available capacity of the road network and road safety would not, therefore, be

compromised. Any impacts would be limited and temporary due to the relatively short construction period (approximately 18 months) and so the impact to road safety will have a **low magnitude**. This is applicable for all design permutations of the ranges set out in **Table 2.1** of **Chapter 2** of this EIAR.

- 14.141 In summary, any impacts would be short lived due to the temporary nature of the construction phase. In line with the embedded mitigation measures, deliveries of large components such as those required for the substation and turbines would be moved under suitable traffic management procedures, including the provision of banksmen at the site access junction and appropriate warning signage.
- 14.142 In accordance with the significance criteria set out in Table 14-8 the level of effect for the short duration of the construction phase is considered to **be minor and not significant** along the L6821 and the L5542.

Impact Caused by Hazardous/Large Loads

- 14.143 The turbine delivery route review for abnormal loads is provided in **Appendix 14.1** found in Volume 3 of this EIAR. The assessments undertaken for the transportation of the AILs has demonstrated a feasible route coming direct from the Dublin Port. The route is considered suitable for such movements, subject to localised temporary works at junctions and pinch points to facilitate movements. The route would pass all properties from the port to the Site, and so is considered to have **moderate sensitivity**.
- 14.144 Any modifications to existing road layouts would be confirmed through a trial run and further surveys, and any modifications or works required to accommodate abnormal loads would be discussed with Westmeath and Meath County Councils and TII as the Roads Authorities and the necessary consents and permits would be obtained in advance of any works or delivery periods.
- 14.145 Transportation of the turbine equipment would lead to the following effects:
- the rolling closures of roads and footways causing temporary driver and pedestrian delay; and
 - the perceived effect to pedestrians and vulnerable road users caused by the movement of large turbine components in close proximity to property and infrastructure.
- 14.146 The severity of these impacts is considered as follows:
- delays to drivers due to lane/road closures would be inevitable, though abnormal loads would travel in convoy as described above and movements would be timed so as to avoid the peak hours. Abnormal load movements occurring outside of the peak hours would have a temporary minor adverse effect; and
 - the perceived effect to residents is subjective and it is likely that the transport of abnormal loads close to properties could lead to local objection, stress and anxiety. Residential properties/sensitive receptors within the study area include Delvin and other villages on the N52.
- 14.147 It is also important to note that the abnormal load movements would occur over a short period of time.
- 14.148 Each wind turbine consists of seven component parts: three blades, three tower sections and the nacelle (motor). Other loads would be associated with the delivery (e.g. cranes) which would not be considered to be AILs, they however would be delivered at a similar time. These movements would be on extendable low loaders and would be moved under

suitable traffic management procedures, including the provision of banksmen and appropriate warning signage.

- 14.149 The grouping of the turbine component deliveries into a number of small convoys would allow the deliveries to occur over a reduced number of days, while only slightly increasing the impact on those days.
- 14.150 Turbine deliveries would be undertaken in consultation with the relevant roads authorities and Garda Síochána and could include movements during the night which would reduce effects on road users at busier daytime periods. Deliveries are also usually scheduled to avoid peak times of the day and school opening/closing times.
- 14.151 There would be an unavoidable **moderate magnitude** impact associated with the delivery of turbine components, however with ongoing community liaison and suitable public awareness and the proposed grouping of component deliveries, the magnitude of impact could be reduced to low, which would result in a significance of effect that is **low and not significant** with all impacts limited to the turbine delivery days.

Operational Stage Impacts

- 14.152 The numbers of vehicles likely to travel to the Proposed Development once the site is operational are limited and significantly lower than those predicted during the construction stage, with less than 10 visits likely per week. As such, there is no impact predicted and so no significant effects are anticipated, indirect or otherwise.
- 14.153 Although wind turbines erected in accordance with standard engineering practice are stable structures, best practice indicates that it is advisable to achieve a safety setback from National and Regional roads and railways of a distance equal to the height of the turbine to the tip of the blade plus 10%, with 198m from nearest turbine for the maximum setback within the range. The nearest National or Regional Road is the N52. and it can be confirmed that all turbines comply with this requirement and also allow provide for additional setback to facilitate the realignment of N52. The minimum setback from the closest turbine to the N52 is 225m.

Post – Operational Stage Impacts

Decommissioning

- 14.154 During the decommissioning phase of the Proposed Development, there will be fewer vehicle movements than during the construction phase as there will be less activities on site, less materials required and less plant.
- 14.155 Cranes will disassemble the above grounds turbine components which will be removed off site for recycling. As the turbines will be deconstructed the parts will be smaller and so transported off site on normal HGVs and not as AILs.
- 14.156 The foundations will be covered over and allowed to re-vegetate naturally, limiting the amount of material required to be transported off-site. Leaving turbine foundations in situ is considered a more environmentally sensible option as to remove the reinforced concrete associated with each turbine would result in environmental nuisances such as noise and vibration and dust. It is proposed that the internal site access tracks will be left in situ, subject to agreement with Laois County Council and the relevant landowners.
- 14.157 The proposed on-site substation will be taken in charge by ESBN /EirGrid upon completion and should be left in place forming part of the national electricity network. Underground cabling will be cut back and left in situ.

- 14.158 There will be a requirement for construction workers on site, however these numbers will be less than required for construction. There will be some movement of materials between the north and south of the site to optimise reuse of the excess material, however these numbers will be lower than those seen on the L5542 and N52 than during construction. There will be no requirement for the import of materials such as concrete or aggregate and so the overall number of HGVs will be less than generated during construction.

Cumulative / Synergistic Impacts (if any)

- 14.159 Any major developments in the area or along the access route that may arise at the same time as the construction of the Proposed Development could result in a cumulative increase in traffic flows on the routes. In this regard, **Table 14-15** identifies other development proposals that have been included within the cumulative assessment as taken from Table 2-5 of **Chapter 2** of this EIAR.
- 14.160 **Table 14-20** provides a summary of the developments likely to result in cumulative impacts when vehicle trip generation numbers combine on roads within the Knockanarragh study area. All available information is specified in the table. This cumulative assessment factors all design permutations of the dimensions set out in Chapter 2 of this EIAR.

TRAFFIC 14

Table 14-20 Cumulative Development Sites

Development Name	Status	Reg. Ref.	Distance to Development	N52 Daily Traffic
Bracklyn Wind Farm Ballagh (Mullingar Rural E.D.), Billistown, Ballynacor, and Bracklin, County Westmeath; and Coolronan, Co. Meath	SID - 9 no. Turbines	ABP REF. PA25M.311565	5.0 km south	Construction deliveries: 21 trips/day or 42 two-way movements Peak deliveries (Concrete pour days): 110 – 120 deliveries/day
Bord na Móna Powergen Ltd. Lisclogher Great, Cockstown, Clonmorrill, Clonleame, Bracklin, Craddanstown, Killagh, Grange More and Riverdale in County Westmeath and the townlands of Clondalee More, Derryconor, Clonycavan, Robinstown, Coolronan, Doolystown and Moyfeagher in County Meath	SID - 26 no. Turbines	ABP REF. PA25M.316212	4.8 km south	An alternative route (not primary) for construction materials delivery but not AL. 181.5 trips per day or 363 two-way movements
Coole Wind Farm Limited Camagh, Carlanstown, Coole, Clonrobert, Clonsura, Doon, Monktown, Mullagh, Newcastle, Boherquill, Corralanna, Culvin, Joanstown, Mayne, Fearmore (Fore by), Newtown (Fore by), Simonstown (fore by), Ballinealoe, Shrubbywood, Clonava, Lackan (Corkaree by), Soho, Ballynacloonagh, Abbeyland, Rathganny, Ballindurrow, Cullendarragh, Culleenabohoge, Ballynafid, Knightswood, Portnashangan, Culleen More, Farranistick, and Irishtown (Moyashel by), Co. Westmeath.	SID - 15 no. Turbines	ABP REF. PA25M.309770	< 20 km northwest	N52 not along haul route
Reforce Energy Ltd, Dryderstown, Delvin		12/2054	6km South	2.74 loads per day during construction. Use of N52 south of site.

TRAFFIC 14

Development Name	Status	Reg. Ref.	Distance to Development	N52 Daily Traffic
Raymond Oliver, Corbetstown, Kilucan		00/197		Application withdrawn.
Total				486

MITIGATION MEASURES

Construction Stage

14.161 A full and detailed CTMP has been prepared (**Technical Appendix 14.3**) to outline the mitigation measures that would be suitable to apply during the construction phase prior to the commencement of the construction and during the construction phase. A summary of measures is provided below:

- Turbine delivery management - prior to the movement of abnormal loads, extensive public awareness is required to allow residents to plan and time their journeys to avoid disruption. In line with the turbine manufacture's requirements, the haulage contractor shall remain responsible for obtaining all necessary permits from the relevant road and bridge authorities along the access route. The movement of abnormal loads would be timed to avoid periods of heavy traffic flow to minimise disruption to the public. The appropriate permits will be secured and escorts appointed.
- Contractors – all contractors will have experience in wind farm construction projects and will be required to supply details of method statements which incorporate mitigation measures. A Principal Contractor and Environmental Clerk of Works will be appointed;
- Signage – Warning signs will be provided throughout the site. Any on-street signs will be in accordance with requirements of the 'Traffic Signs Manual' and in consultation with the Co. Westmeath and Co. Meath as the Roads Authority;
- Site traffic - traffic visiting the Site would be required to report to the gatehouse to obtain clear instructions. Inductions would be completed, vehicle permits would be issued, and the site rules and emergency procedure would be explained. Heavy site traffic would be equipped with audible reversing warning with additional visual aids e.g., reversing cameras, mirrors utilised on all plant. Drivers would ensure that all loads are covered fully to limit the loss of material in transit.
- On site safety - personnel entering the working area would wear hi-visibility vest or jacket, head protection, safety footwear, eye protection and gloves at all times when out with the vehicle. All workers will be made aware that they have a responsibility for the safety of themselves and others. In the event of an emergency, right of way to all emergency services would be given at all times. Emergency services and control of access would be carried out in compliance with the site emergency procedures.
- Parking - parking areas located at the site construction compound would have safe and secure barriers to segregate all personnel from site plant and vehicle routes. No parking whatsoever would be allowed on public roads; all cars that are directed to the site parking area would be required to reverse park to comply with the Principal Contractors requirements.
- Vehicle cleaning – a wheel and body wash would be operated within the site to ensure materials from the Site are not transferred onto the highway, and road cleaning would take place when required to remove any deposits that are carried from the Site. It is anticipated that any road cleaning activities would remain local to the site access.

14.162 The CTMP is a key construction contract document, which will ensure that all necessary mitigation measures are implemented. The CTMP would be revised and updated and would be used by the contractor to ensure that the appropriate environmental management is

implemented throughout the construction phase, to include mitigation measures. The CTMP includes information on general construction good practice, including waste management, dust mitigation, vehicle washing, vehicle storage and maintenance, noise management, and on-site vehicle movement. The measures described above would serve to mitigate the predicted effects, as set out in **Table 14-21**.

Table 14-21 Summary of Predicted Effects (Pre Mitigation)

Location	Receptor	Sensitivity	Magnitude	Rationale	Significance
Community Severance					
L6821	Several residences and community facilities (play area)	Moderate	Low	A number of residences and there is a public house on the corner of the N52/L6821 junction. Footway which extends west along the northern side of the L6821, with no crossing facilities at the cross roads junction. There is a children's play area located on the northern side of the road, which is close to a zebra crossing. In this location a footway is also present along the southern side of the road. The traffic increase is short lived and so the effects will be temporary.	Minor and not significant
L5542	Small number of residences	Low	Moderate	There are a limited number of urban communities separated by the L5542 and there appear to be no locations where residential dwellings are separated from community facilities. The potential for community severance within the study area is considered to be low. The increase in flows will be quite significant during construction. The traffic increase is short lived and so the effects will be temporary.	Minor and not significant
Road Vehicle and Passenger Delay – Turbine Construction					
L6821 L5542	Increase in traffic appears to be high due to low baseline	Low	Moderate	There is expected to be some tolerance to severance and delay, as the existing flows are likely to be low and do not extend through busy urban areas where congestion can be expected.	Minor and not significant
Road Vehicle and Passenger Delay – Cable Laying					
N52	Road users and residents impacted by partial or full road closure.	Negligible	Low	N52 has been shown to have available capacity and so it is expected to be some tolerance to delays particularly as impacts will be short lived.	Negligible and not significant

Location	Receptor	Sensitivity	Magnitude	Rationale	Significance
L6821		Negligible	Negligible	Disruption and delay to road users will be short lived and reduced with partial road closure instead of full road closure.	Negligible and not significant
L5542		Moderate	Moderate	The works are anticipated to require a full road closure with a diversion route in place. The impacts will be longer due to the length of the road which will be subject to closure.	Moderate and significant
Pedestrian and Non-Motorised User Delay					
L6821 & L5542	Vulnerable road users on the roads.	Moderate	Low	The construction period is temporary and the numbers of vulnerable road users is expected to be low.	Minor and not significant
Non-Motorised User Amenity					
L6821 & L5542	Pedestrians and non-motorised road users	Moderate	Moderate	The increase in traffic on both roads will be significant due to the low baseline. Tolerance to impacts is expected to be lower on the L5542 as there is no pedestrian infrastructure.	Moderate and significant
Fear and Intimidation					
L6821	Fear and Intimidation	Low	Negligible	There are no agreed thresholds for determining the level of fear and intimidation that may be experienced by road users, and while the traffic flows and pedestrian numbers have not been determined for the L5542 and the L6821, it is possible that pedestrians on these roads may experience an increase in fear and intimidation with the increase in HGVs.	Minor and not significant
L5542		Low	Moderate		Negligible and not significant
Road User and Pedestrian Safety					
L6821	Road users	Moderate	Low	There is a lack of information available regarding the existing road safety, however the increase in traffic is likely to be significant and so any road safety issues may be compounded.	Minor and not significant
L5543					
Hazardous/Large Loads					
N52 & L5542	Road users and residents.	Moderate	Moderate	The transport of abnormal loads will impact road users and residents.	Moderate and significant

RESIDUAL IMPACT ASSESSMENT

Construction Stage

14.163 Residual effects are those that would still occur after mitigation measures have been incorporated into the scheme. Potential residual effects are most likely to be those associated with delivery of the abnormal loads, traffic management measures and resultant temporary road closures. As summarised in **Table 14-22** those impacts identified as significant will be mitigated through the proposed measures, with the impacts managed to ensure that they are not significant.

Table 14-22 Summary of Predicted Effects (Post Mitigation)

Location	Significance	Additional Mitigation	Residual Effects
Community Severance			
L6821	Not significant	The CTMP will set out practice to be followed by all HGV delivery drivers, with delivery routes followed and exclusions adhered to. Provision of information to local residents and users of amenities, to involve the community in the safe operation of the Construction Traffic Management Plan (CTMP) Appendix 14-3 and to alleviate stress and anxiety.	Not significant
L5542	Not significant		Not significant
Road Vehicle and Passenger Delay – Turbine Construction			
L6821 & L5542	Not significant	All mitigation measures will be applied to further reduce impacts.	Not significant
Road Vehicle and Passenger Delay – Cable Laying			
N52	Not significant	All measures applied to further reduce impacts.	Not significant
L6821	Not significant	All measures applied to further reduce impacts.	Not significant
L5542	Significant	The closure of the L5542 will be managed with the application of a diversion route. The most direct route will be selected. The closure of the road will be in place for the shortest possible duration. Residents to be affected by the road closure will be advised well in advance. Appropriate road signs will be installed and their presence checked regularly to ensure they remain in place as required. All measures as set out in the CTMP will be applied.	Not significant
Pedestrian and Non-Motorised User Delay			
L6821 & L5542	Not significant	All contractors will be required to supply detailed method statements which will incorporate planned mitigation measures. The use of route directional signage along main access routes will ensure vehicles use preferred routes.	Not significant

Location	Significance	Additional Mitigation	Residual Effects
		All vehicle operators will be issued with clear instructions and directions before first visit to the site. All measures as set out in the CTMP will be applied.	
Non-Motorised User Amenity			
L6821 & L5542	Significant	All contractors will be required to supply detailed method statements which will incorporate planned mitigation measures. The use of route directional signage along main access routes will ensure vehicles use preferred routes. All vehicle operators will be issued with clear instructions and directions before first visit to the site. All vehicles will be cleaned before leaving the site and covered as required. All measures as set out in the CTMP will be applied.	Not significant
Fear and Intimidation			
L6821 & L5542	Not significant	All contractors will be required to supply detailed method statements which will incorporate planned mitigation measures. The use of route directional signage along main access routes will ensure vehicles use preferred routes. All vehicle operators will be issued with clear instructions and directions before first visit to the site. All vehicles will be cleaned before leaving the site and covered as required. All measures as set out in the CTMP will be applied.	Not significant
Road User and Pedestrian Safety			
L6821 & L5542	Not significant	All measures applied to further reduce impacts.	Not significant
Hazardous/Large Loads			
L6821 & L5543	Significant	Accommodation works as identified in TDR Works Report (Technical Appendix 14.1) Traffic Management Plan for the movement of abnormal loads. Trial Run for abnormal loads prior to commencement of construction. Good construction practices including wheel wash and careful loading.	Not significant

Taking account of all the potential effects that are likely to arise and the assessment having tested the worst-case scenario expected, it is considered that the proposed development would not lead to a significant adverse effect due to traffic impacts.

The assessment concludes that the impacts during the construction phase will not be significant; the review of the worst-case scenario, the temporary nature of the construction phase and the application of mitigation measures will further reduce any impacts in traffic and transportation terms.

REFERENCES

- Westmeath County Development Plan 2021-2027, (Westmeath County Council 2021)
<http://www.westmeathcoco.ie/en/ourservices/planning/developmentplans/countydevelopmentplan2021-2027/>
- Meath County Development Plan 2021-2027, Meath County Council
<https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan>
- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports', Environmental Protection Agency EPA, (2022), Available
<https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php>;
- Traffic and Transportation Assessment Guidelines – PE-PDV-02045, May 2014. Transport Infrastructure Ireland (TII), <https://www.tiipublications.ie/library/PE-PDV-02045-01.pdf>;
- Rural Road Link Design – DN-GEO-03031, (Transport Infrastructure Ireland, TII) 2017. Available <https://www.tiipublications.ie/library/DN-GEO-03031-10.pdf>;
- Government of Ireland Draft Wind Energy Development Guidelines 2006 and 2019 Draft Revised Wind Energy Guidelines. Available <https://www.gov.ie/en/publication/9d0f66-draft-revised-wind-energy-development-guidelines-december-2019/>;
- 'Guidelines for the Environmental Assessment of Road Traffic' (IEMA, 1993). Available https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/dc/df/dcdfa287-b475-4fbb-bd4e-a1e96b06be5d/cd71-guideline-for-the-environmental-assessment-of-road-traffic-institute-of-environmental.pdf;
- Design Manual for Roads and Bridges, Highways Agency (1997), now Standards for Highways. Available <https://www.standardsforhighways.co.uk/dmr/>;
- Road Safety Authority Road Casualties and Collisions in Ireland 2019, Tables – Provisional, Research Dept, June 2022. Available https://www.rsa.ie/docs/default-source/road-safety/r2---statistics/road-collision-annual-reports/road-casualties-and-collisions-in-ireland-2019.pdf?Status=Master&sfvrsn=a6dcadd8_3;

FIGURES

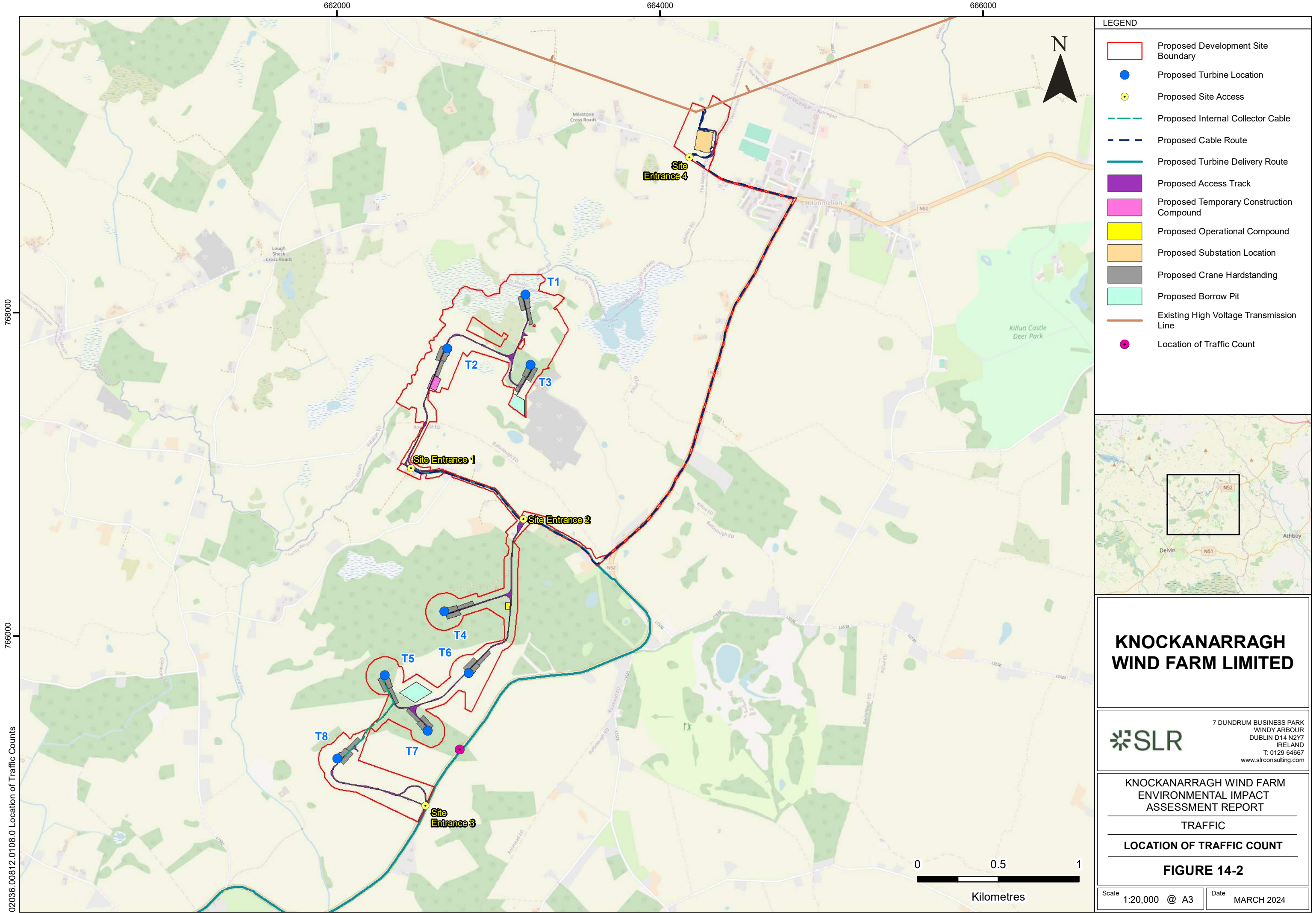
Figure 14-1 Site Location

Figure 14-2 Location of Traffic Counts

Figure 14-3 Average Weekday (24HR) Traffic Profile

Figure 14-4 Access Locations

Figure 14-5 Turbine Delivery Route



- LEGEND**
- Proposed Development Site Boundary
 - Proposed Turbine Location
 - Proposed Site Access
 - Proposed Internal Collector Cable
 - Proposed Cable Route
 - Proposed Turbine Delivery Route
 - Proposed Access Track
 - Proposed Temporary Construction Compound
 - Proposed Operational Compound
 - Proposed Substation Location
 - Proposed Crane Hardstanding
 - Proposed Borrow Pit
 - Existing High Voltage Transmission Line
 - Location of Traffic Count



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TRAFFIC

LOCATION OF TRAFFIC COUNT

FIGURE 14-2

Scale 1:20,000 @ A3 Date MARCH 2024



LEGEND

 Temporary Works Area

 Proposed Turbine Delivery Route



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TRAFFIC

**TURBINE DELIVERY ROUTE
NODE 1**

FIGURE 14-5-b

Scale 1:1,500 @ A3 Date MARCH 2024

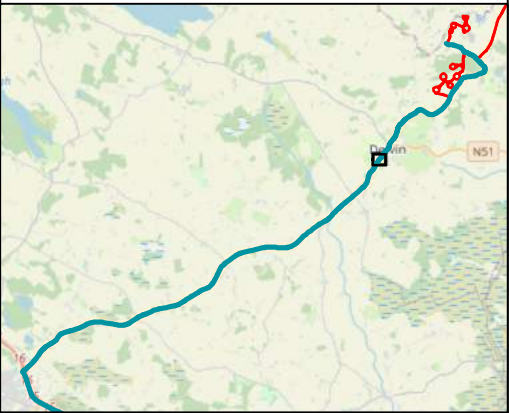
02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

Temporary Works Area

Proposed Turbine Delivery Route



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**TURBINE DELIVERY ROUTE
NODE 2**

FIGURE 14-5-c

Scale1:1,500 @ A3

DateMARCH 2024

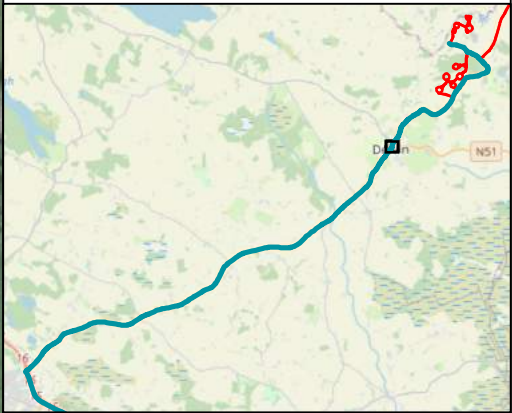
02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

Temporary Works Area

Proposed Turbine Delivery Route



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TRAFFIC

TURBINE DELIVERY ROUTE
NODE 3

FIGURE 14-5-d

Scale1:1,500 @ A3

DateMARCH 2024



02036.00812.0112.0 Turbine Delivery Route Detailed

763500

763400

763300

02036.00812.0112.0 Turbine Delivery Route Detailed

660300

660400

660500

660600

LEGEND

Proposed Turbine Delivery Route

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TRAFFIC

TURBINE DELIVERY ROUTE
NODE 4

FIGURE 14-5-e

Scale1:1,500 @ A3

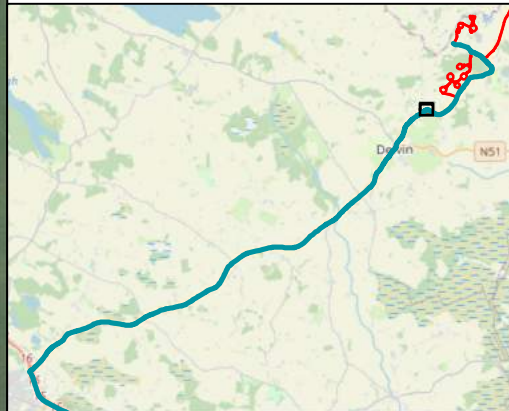
DateMARCH 2024



LEGEND

Temporary Works Area

Proposed Turbine Delivery Route



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ASSESSMENT REPORT**

TRAFFIC

**TURBINE DELIVERY ROUTE
NODE 5**

FIGURE 14-5-f

Scale1:1,500 @ A3

DateMARCH 2024



LEGEND

Proposed Turbine Delivery Route



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TURBINE DELIVERY ROUTE
NODE 6

FIGURE 14-5-g

Scale1:1,500 @ A3

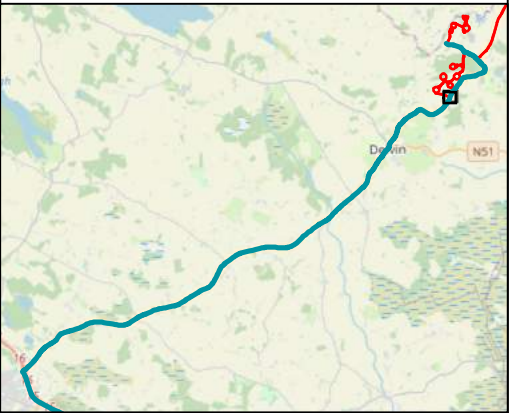
DateMARCH 2024

02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

Proposed Development Site Boundary

Temporary Works Area

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TURBINE DELIVERY ROUTE
NODE 7

FIGURE 14-5-h

Scale 1:1,500 @ A3

Date MARCH 2024





LEGEND

Proposed Development Site Boundary

Temporary Works Area

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**TURBINE DELIVERY ROUTE
NODE 8**

FIGURE 14-5-i

Scale1:1,500 @ A3

DateMARCH 2024



LEGEND

Temporary Works Area

Proposed Turbine Delivery Route



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TRAFFIC

TURBINE DELIVERY ROUTE
NODE 9

FIGURE 14-5-j

Scale1:1,500 @ A3

DateMARCH 2024

02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

-  Proposed Development Site Boundary
-  Temporary Works Area
-  Proposed Turbine Delivery Route



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TRAFFIC

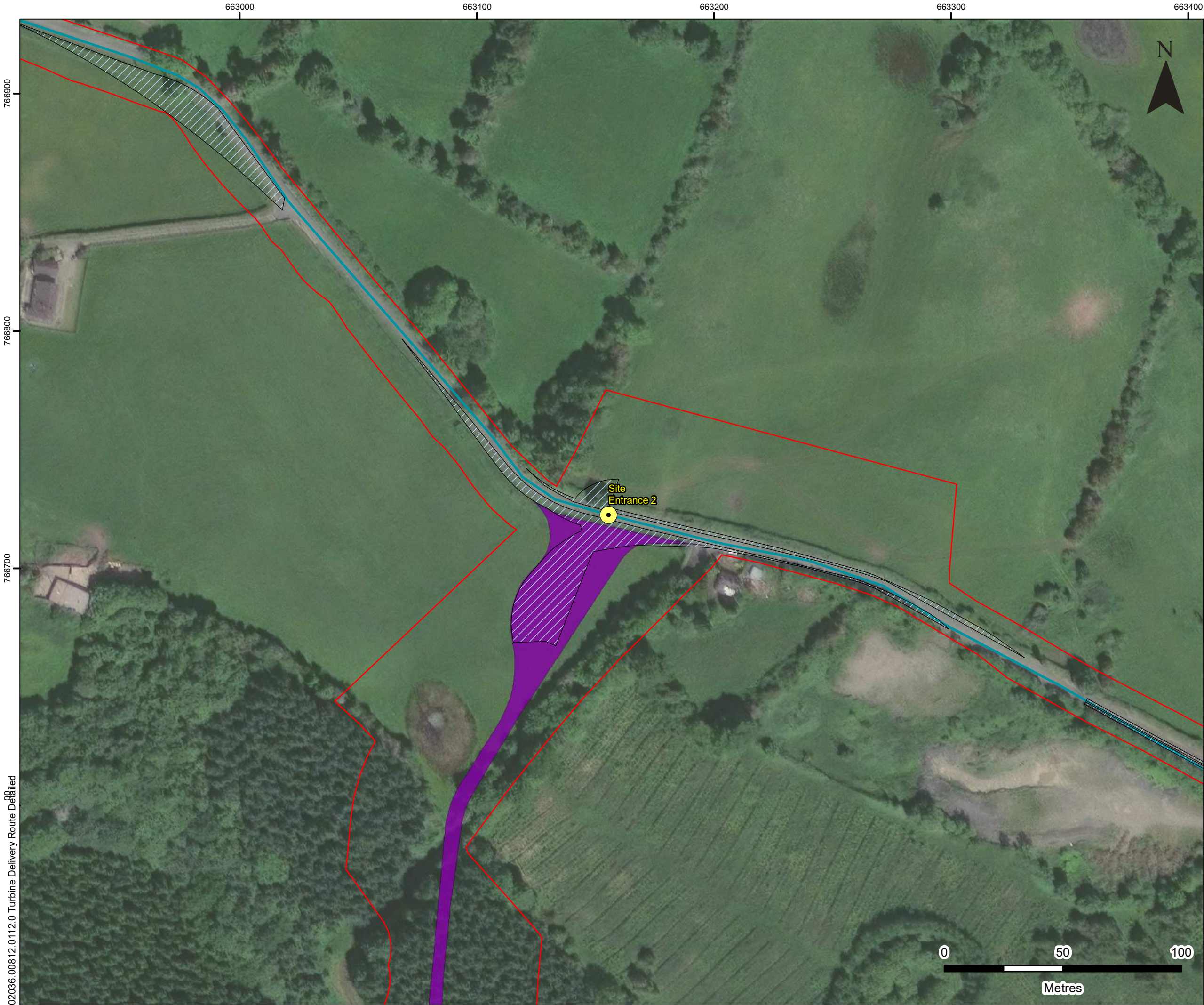
TURBINE DELIVERY ROUTE NODE 10

FIGURE 14-5-k

Scale 1:1,500 @ A3

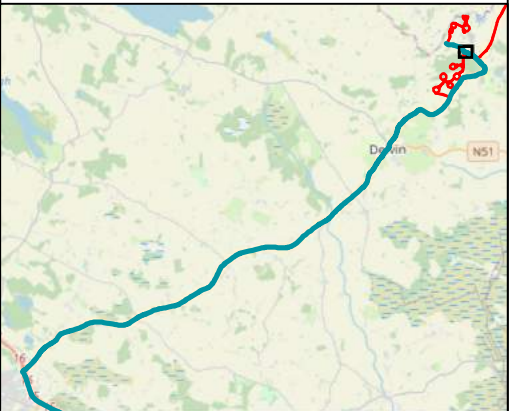
Date MARCH 2024

02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

-  Proposed Development Site Boundary
-  Temporary Works
-  Proposed Access
-  Proposed Access
-  Proposed Turbine Delivery Route



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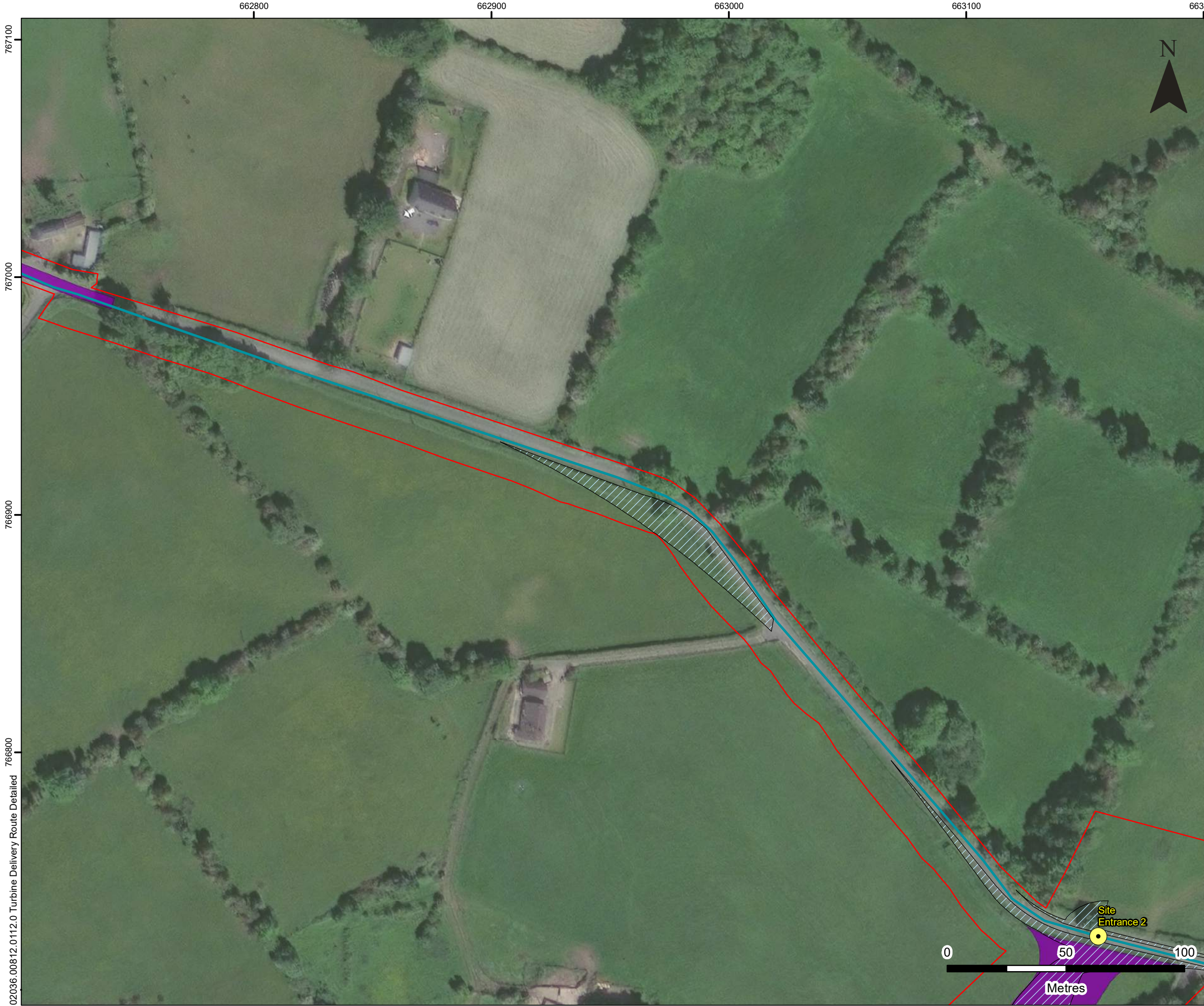
TRAFFIC

TURBINE DELIVERY ROUTE NODE 11

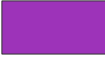
FIGURE 14-5-I

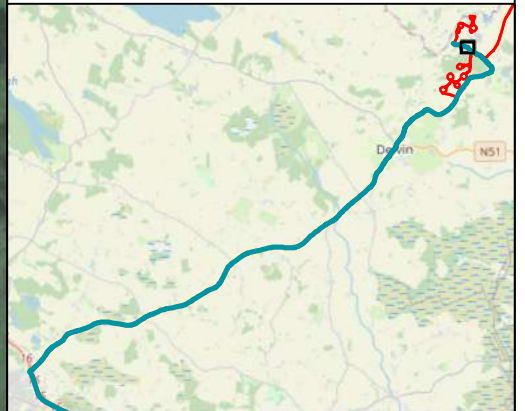
Scale 1:1,500 @ A3 Date MARCH 2024

02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

-  Proposed Development Site Boundary
-  Temporary Works Area
-  Proposed Access Point
-  Proposed Access Track
-  Proposed Turbine Delivery Route



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TRAFFIC

TURBINE DELIVERY ROUTE NODE 12

FIGURE 14-5-m

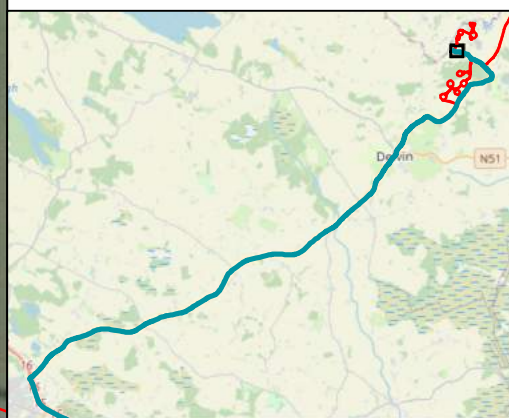
Scale 1:1,500 @ A3

Date MARCH 2024



LEGEND

- Proposed Development Site Boundary
- Temporary Works Area
- Proposed Access Point
- Proposed Access Track
- Proposed Turbine Delivery Route



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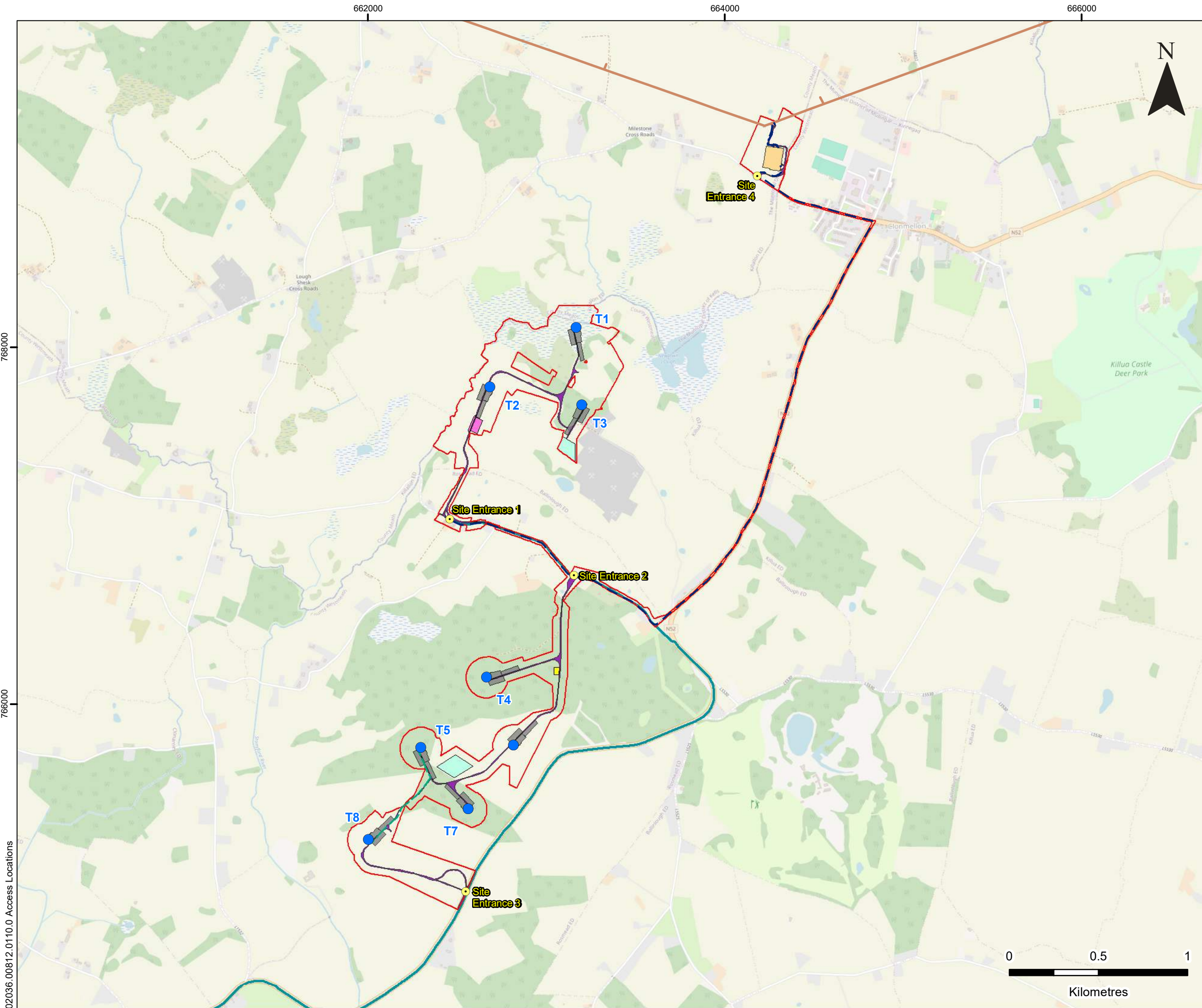
TRAFFIC

TURBINE DELIVERY ROUTE NODE 13

FIGURE 14-5-n

Scale	1:1,500 @ A3	Date	MARCH 2024
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02036.00812.0112.0 Turbine Delivery Route Detailed



LEGEND

Proposed Development Site Boundary

Proposed Turbine Location

Proposed Site Access

Proposed Internal Collector Cable

Proposed Cable Route

Proposed Turbine Delivery Route

Proposed Access Track

Proposed Temporary Construction Compound

Proposed Operational Compound

Proposed Substation Location

Proposed Crane Hardstanding

Proposed Borrow Pit

Existing High Voltage Transmission Line



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ACCESS LOCATIONS

FIGURE 14-4

Scale1:20,000 @ A3

DateMARCH 2024

APPENDICES

Appendix 14-1 Turbine Delivery Route Works Report

Appendix 14-2 Traffic Survey Results

Appendix 14-3 Construction Traffic Management Plan (CTMP)

(Refer to EIAR Volume III for Appendices)