15. MATERIAL ASSETS

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

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

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

15.1 Traffic and Transport

15.1.1 Introduction

15.1.1.1 Background and Objectives

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

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

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

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

15.1.1.2 Statement of Authority

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

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

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

15.1.1.3 Guidance on Assessment of Effects

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

15.1.1.4 Scoping and Consultation

Transport Infrastructure Ireland

Transport Infrastructure Ireland (TII) responded to Scoping on the 24th of May 2023 and again on the 6th of August 2025, in which it provided a list of recommendations to be followed when preparing the EIAR. All relevant TII guidelines and policies have been taken into account in the preparation of this assessment, including the following;

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

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

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

ID	TII Scoping Response	Response
1	Consultations should be had with relevant Local Authority / National Roads Design Offices with regards to locations of existing and future national roads schemes.	It is confirmed that consultation has been undertaken with Galway County Council , as set out in Chapter 2 of this EIAR. Following a pre-application with GCC which provided an overview of all aspects of the Proposed Project and EIAR, it was recommended to engage directly with the Roads Department in subsequent pre-application meeting. During this consultation, The Roads Department of GCC sought clarity on the delivery of stoned material and concrete to the Proposed Wind Farm site and noted road condition surveys pre-construction and the likelihood of a requirement of all necessary restoration and repair, did raise concerns in relation to the siting of the Proposed Grid Connection cabling within the national secondary road corridor and requested that it be demonstrated in the EIAR that alternative grid connection routes were considered. The consideration of alternative grid connection routes is outlined in detail in Chapter 3 of this EIAR..
2	TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, including the potential haul route.	The impacts of the Proposed Project on the delivery routes in terms of link flows are set out is Section 15.1.6.1 and 15.1.6.2 of the EIAR, while an assessment of the capacity of the N63 / R332 junction is set out in Section 15.1.6.3. An assessment of the impacts during the construction of the Proposed Grid Connection underground cabling route is set out in Section 15.1.7 while a swept path analysis undertaken for the abnormally large loads on the Turbine Delivery Route is set out in Section 15.1.8 of the EIAR. The assessment sets out the temporary local measures that will be required on the public road network during the construction of the Proposed Project.
3	The developer should assess visual impacts from existing national roads.	The visual impacts of the Proposed Project are set out in Chapter 13 of this EIAR.
4	The developer should have regard to any EIAR / EIS and all conditions and or modifications	It is confirmed that all conditions attached to any grant of planning

ID	TII Scoping Response	Response
	imposed by An Bord Pleanála [now An Coimisiún Pleanála] regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.	permission for the Proposed Project will be adhered to. The cumulative, traffic related impacts are assessed in Section 15.1.11.7.
5	The developer, in preparing an EIAR, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works).	It is confirmed that the design of the access junction off the R332 is in accordance with TII guidelines.
6	The developer, in preparing an EIAR, should have regard to TII's Environmental Assessment and Construction Guidelines, including the "Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (National Roads Authority (NRA), 2006).	It is confirmed that the potential effects of the Proposed Project with regards air quality is set out in Chapter 10 of this EIAR.
7	The EIAR/EIS should consider the "Environmental Noise Regulations 2006' (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see "Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1st Rev, NRA, 2004).	It is confirmed that the potential effects of the Proposed Project with regards noise are set out in Chapter 12 of this EIAR.
8	It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. In relation to national roads, the Authority's Traffic and Transport Assessment Guidelines (2014) should be referred to in relation to Proposed Project with potential impacts on the national road network. The scheme promoters are advised to have regard to Section 2.2 of the NRA/TII TTA Guidelines which addresses requirements for sub-threshold TTA. Any improvements required to facilitate development should be identified. It will be the responsibility of the developer to pay for the	It is confirmed that the assessment presented in Chapter 15 of the EIAR is undertaken in accordance with Traffic and Transport Assessment Guidelines, TII (2014).

ID	TII Scoping Response	Response
	costs of any improvements to national roads to facilitate the private development proposed as TII will not be responsible for such costs.	
9	The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.	It is noted that there is no new access junctions proposed on the national road network. There will be minor temporary works required at the N63 roundabouts off the M17 and these will be limited to the provision of temporary over-runs of the roundabout islands and temporary relocation of some signs and street furniture. There will also be a requirement to provide a temporary connection on the southwest corner of the N63 / R332 junction which will be used for the purpose of transporting the abnormally sized loads, which will be accompanied by a Garda escort. It is noted that the accommodation works at this location will be carried out from the R332 resulting in no impact on the N63. It is noted that neither a Road Safety Audit or a Design Phase Procedure for Road Safety Improvement Scheme, Urban Renewal Schemes and Local Improvements Schemes (DN-GEO-03030) Report are not required and therefore have not been undertaken. However, these will be undertaken and provided if required by TII.
10	In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network.	All construction will be undertaken in accordance with current guidelines including the "*Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "*Guidance for the Control and Management of Traffic at Roadworks*" (DoTT&S).
11	TII recommends that the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Where abnormal 'weight' loads are proposed, separate structure approvals/permits and other licences may be required in connection with the proposed haul route. All national road structures on the haul route through all the relevant County Council administrative areas should be checked by the applicant/developer to confirm their	The proposed haul routes are identified in this Chapter 15 of the EIAR. While it is proposed that the delivery stage of the Proposed Project will involve abnormally large loads, the axle loadings will not exceed accepted limits. A program of pre-delivery condition and structural assessment of the route is however proposed, as set out in the

ID	TII Scoping Response	Response
	capacity to accommodate any abnormal 'weight' load proposed. In addition, the haul route should be assessed to confirm capacity to accommodate abnormal 'length' loads and any temporary works required.	Traffic Management Measures, included set out in Section 15.1.12.5.
12	The national road network is managed by a combination of PPP Concessions, Motorway Maintenance and Renewal Contractors (MMaRC) and local road authorities, in association with TII. The applicant/developer should also consult with all PPP Companies, Motorway Maintenance and Renewals Contractors (MMaRC) and road authorities over which the haul route traverses to ascertain any operational requirements, including delivery timetabling, etc. to ensure that the strategic function of the national road network is safeguarded.	The Applicant agrees with this condition.
13	Where temporary works within any MMaRC Contract Boundary are required to facilitate the transport of turbine components to the Site, the applicant/developer shall contact thirdpartyworks@tii.ie in advance, as a works specific Deed of Indemnity will be needed by TII before the works can take place.	The Applicant agrees with this condition.
14	Additionally, any damage caused to the pavement on the existing national road arising from any temporary works due to the turning movement of abnormal loads (e.g. tearing of the surface course, etc.) shall be rectified in accordance with TII Pavement Standards and details in this regard shall be agreed with the Road Authority prior to the commencement of any development onsite.	The Applicant agrees with this condition, as set out in Section 15.1.12.5 of this EIAR.
15	It is noted that the grid connection proposals outlined in the EIAR Scoping Report do not impact the strategic national road network. However, in the event of any alteration, please note, any grid connection and cable routing proposals should be developed to safeguard proposed road schemes as TII will not be responsible for costs associated with future relocation of cable routing where proposals are catered for in an area of a proposed national road scheme. In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc.	The Applicant agrees with this condition. Alternative grid connection routes have been considered in Chapter 3 Section 3.5.4 of this EIAR.

ID	TII Scoping Response	Response
	In the context of the existing national road network, in accordance with the National Planning Framework National Strategic Outcome No. 2 'Enhanced Regional Accessibility', there is a requirement to maintain the strategic capacity and safety of the network. This requirement is further reflected in the National Development Plan, the National Investment Framework for Transport in Ireland and also the existing Statutory Section 28 'Spatial Planning and National Roads Guidelines for Planning Authorities'. The provision of cabling along the national road network represents a number of significant implications for TII and road authorities, in the management and maintenance of the strategic national road network and TII is of the opinion that grid connection cable routing should reflect the foregoing provisions of official policy, and therefore, avoid grid connection routing along national roads. Other consents or licences may be required from the Road Authority for any trenching or cabling proposals crossing the national road. TII requests referral of all proposals agreed and licensed between the road authority and the applicant, which affect the national road network. Cable routing should avoid all impacts to existing TII infrastructure such as traffic counters, weather stations, etc. and works required to such infrastructure shall only be undertaken in consultation with and subject to the agreement of TII. Any costs attributable shall be borne by the applicant/developer. The developer should also be aware that separate approvals may be required for works traversing the national road network.	

Department of Transport

A response to scoping was received from The Department of Transport on the 11th May, 2023. The response refers to issues relating to the Proposed Grid Connection underground cabling route works within the public road network and are set out together with the Applicant's responses in Table 15-1b.

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

ID	Comment/Recommendation	Response
1	Their presence within the public road could significantly restrict the Road Authority in	The Applicant and their Contractor will work with the Road Authority to

ID	Comment/Recommendation	Response
	carrying out its function to construct and maintain the public road and will likely add to the costs of those works.	minimise impacts on construction and maintenance of the road network through the scheduling of construction of sections of the route. This will require a Road Opening Licence which will be applied for in advance.
2	Their installation within the lands associated with the public road may affect the stability of the road. In particular where the road is a "legacy road" (where there is no designed road structure, and the subgrade may be poor or poorly drained) the design needs to take account of all the variable conditions and not be based on a sample of the general conditions.	As set out in Section 15.1.12.5 all road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. All works will be done in accordance with the Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads, DTToS, September 2015.
3	The possible effect on the remaining available road space (noting that there may be need to accommodate other utilities within the road cross-section in the future).	The Proposed Grid Connection underground cabling trench will measure approximately 600mm in width and will be located predominantly in the verge of the road corridor. Therefore, there will be sufficient space for other utilities within the public road corridor.
4	The necessity to have the power in the cables switched off where the Road Authority considers this necessary in order to carry out its function to construct and maintain the public road.	The Applicant agrees with this comment.
5	Examination of options other than the routing of cables along the public road.	Refer to Chapter 3: Consideration of Reasonable Alternatives.
6	Examination of options for connection to the national grid network at a point closer to the wind farm in order to reduce the adverse impact on public roads.	Refer to Chapter 3: Consideration of Reasonable Alternatives.
7	Details of where within the road cross section cables are to be placed so as to minimise the effect on the Roads Authority in its role of construction and maintenance.	The location of the Proposed Grid Connection underground cabling within the public road corridor is shown on the Grid Connection drawings in Appendix 4-4 of this EIAR.
8	Examination of details of any chambers proposed within the public road cross section so as to	The proposed locations of joint bays, communication chambers and earth

ID	Comment/Recommendation	Response
	minimise the effect on the Roads Authority in its role of construction and maintenance.	sheath link chambers are shown in the detailed site layout drawings in Appendix 4-4 of this EIAR.
9	Examine the elimination of joint bays and use of temporary removable jointing bays to protect the integrity of the road structure for the safety of those driving on the public road by eliminating hard spots and also preserve the road width for other utilities.	Joint Bays are subject to standard ESBN specification and cannot be eliminated from the Proposed Grid Connection underground cabling design.
10	Rationalisation of the number of cables involved (including existing electric or possible future cables) and their diversion into one trench, in order to minimise the impacts on the road network and the environment along the road boundary (hedgerows).	Only one cabling trench is proposed as part of the Proposed Project.

It is confirmed that the above points raised by the Department of Transport have been considered in the route selection and design of the Proposed Grid Connection underground cable route as set out in Chapter 3 of this EIAR.

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

- A condition requiring the specific approval of the local authority to the detail of the final route of cables through the public road space. If during construction, there is a need to deviate from the detailed design then the approval of the local authority would again be sought. This would assist in minimising the impact on the public road.
- A condition requiring the developer to comply with all appropriate standards and, inter alia the Guidelines for Managing Openings in Public Roads, 2017 in order to ensure orderly development.
- A condition requiring that the location of the cables would be recorded as exactly as possible (maybe using BIM type technology) so as to facilitate the further use of road space for utilities and the maintenance/construction of the public road by the Roads authority. This record should be lodged with the local authority and with the ESB Networks for retention on their records.
- A condition to require the elimination of jointing bays and the use of temporary removable jointing bays instead, to protect the integrity of the road structure, thereby improving safety for those driving on the public road by eliminating hard spots and preserving the road width for other utilities. This point is addressed under Row 9 of Table 15-1b above.
- A condition requiring the developer to route cables away from bridge structures and specifically preventing the developer from attaching cables to road bridges. This would allow for the future maintenance of bridges without interruption of the electricity supply along the cables.

- A condition requiring the developer to notify the Roads Authority of the owner of the cables (Owner) and the controller (Power Controller) of the power transmitted along the cables. In addition, the condition should require Owner and Power Controller to notify the Roads Authority of any change in ownership of the cables or change of Power Controller transmitting power along the cables. In all instances the Owner and Power Controller should be required to maintain an agreed contacts list with the Roads Authority.

15.1.1.5 Methodology and Section Structure

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

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

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

- A review of the existing and future transport infrastructure in the vicinity of the Proposed Project, including the proposed haul route, an assessment of base year 2025 traffic flows and traffic forecasts during an assumed construction year of 2028 (Section 15.1.2 Receiving Environment and 15.1.3 – Existing Traffic Volumes),
- A description of the nature of the Proposed Project and the traffic volumes that it will generate during the different construction stages and when it is operational (Section 15.1.4 – Proposed Project Traffic Generation),
- A description of the abnormally sized loads and vehicles that will require access to the site (Section 15.1.5 Construction Traffic Vehicles),
- A review of the effects of Proposed Project generated traffic on links and junctions during construction and when the facility is operational (Section 15.1.6 –Traffic Effects During Construction and Operation),
- A review of the effects of the Proposed Project on the public road network along the underground electrical cabling route (Section 15.1.7 Effect of grid connection on road network),
- A description of traffic management measures of large deliveries (Section 15.1.8 traffic Management of Large Deliveries),
- A geometric assessment of the route and its capacity to accommodate the abnormal loads associated with the Proposed Project (Section 15.1.9 – Abnormal Load Route Assessment),
- An assessment of the provision for sustainable modes of travel (in this case primarily with respect to the transport of construction staff) (Section 15.1.10 – Provision for Sustainable Modes of Travel),
- A description of potential significant effects of the Proposed Project on Roads and Traffic (Section 15.1.11 – Likely and Significant Effect and Associated Mitigation Measures).

15.1.2 Receiving Environment

15.1.2.1 Site Location and Proposed Access Arrangements

The Proposed Wind Farm is located in east County Galway approximately 12 km southeast of Tuam, with the closest turbine situated approximately 1.3km north of Brierfield and 5.3km west of the village of Moylough.

The N63 National Secondary Road runs in a southwest / northeast direction approximately 1.3 km south of the southern boundary of the Proposed Wind Farm site. The Regional R332 travels in a southeast to northwest direction approximately 1.0km to the south of the nearest turbine. It is proposed

that access to the Proposed Wind Farm site will be provided during the construction stage via a new access junction of the R332 Regional Road at a location approximately 2.2km west of the existing R332 / N63 junction. It is proposed that this access will provide for all vehicle types during the construction and decommissioning phases of the Proposed Wind Farm.

During construction of the Proposed Wind Farm, access through the Proposed Wind Farm site will be gained by means of upgraded sections of existing tracks and new section of access road which will cross existing L6506 and L6301 local roads.

Once operational the Proposed Wind Farm will be accessed via access points from an existing track off the R332 within the Proposed Wind Farm site and 2 no. access points along the L6301 local road.

The Proposed Grid Connection includes for underground 110V cabling from the onsite 110kV substation, in the townland of Dangan Eighter, Co. Galway, to the existing Cloon 110kV substation in the townland of Cloonascragh, Co. Galway. The total length of the Proposed Grid Connection underground cable route, measures approximately 20.9km in length with approximately 2.6km located within the Proposed Wind Farm site.

The Proposed Project is shown in the context of the national, regional and local highway networks in Figure 15-1a.

15.1.2.2 Proposed Abnormal Load Delivery Route

There are a number of ports within the island of Ireland that have proven capability to accept and store large wind turbine components, including Cork, Foynes, Galway and Dublin ports. For the purpose of the traffic assessment presented in the EIAR the port of Galway is selected as the port of entry. The proposed turbine delivery route (TDR) from the Port of Galway to the Proposed Wind Farm site is shown in Figure 15-1a.

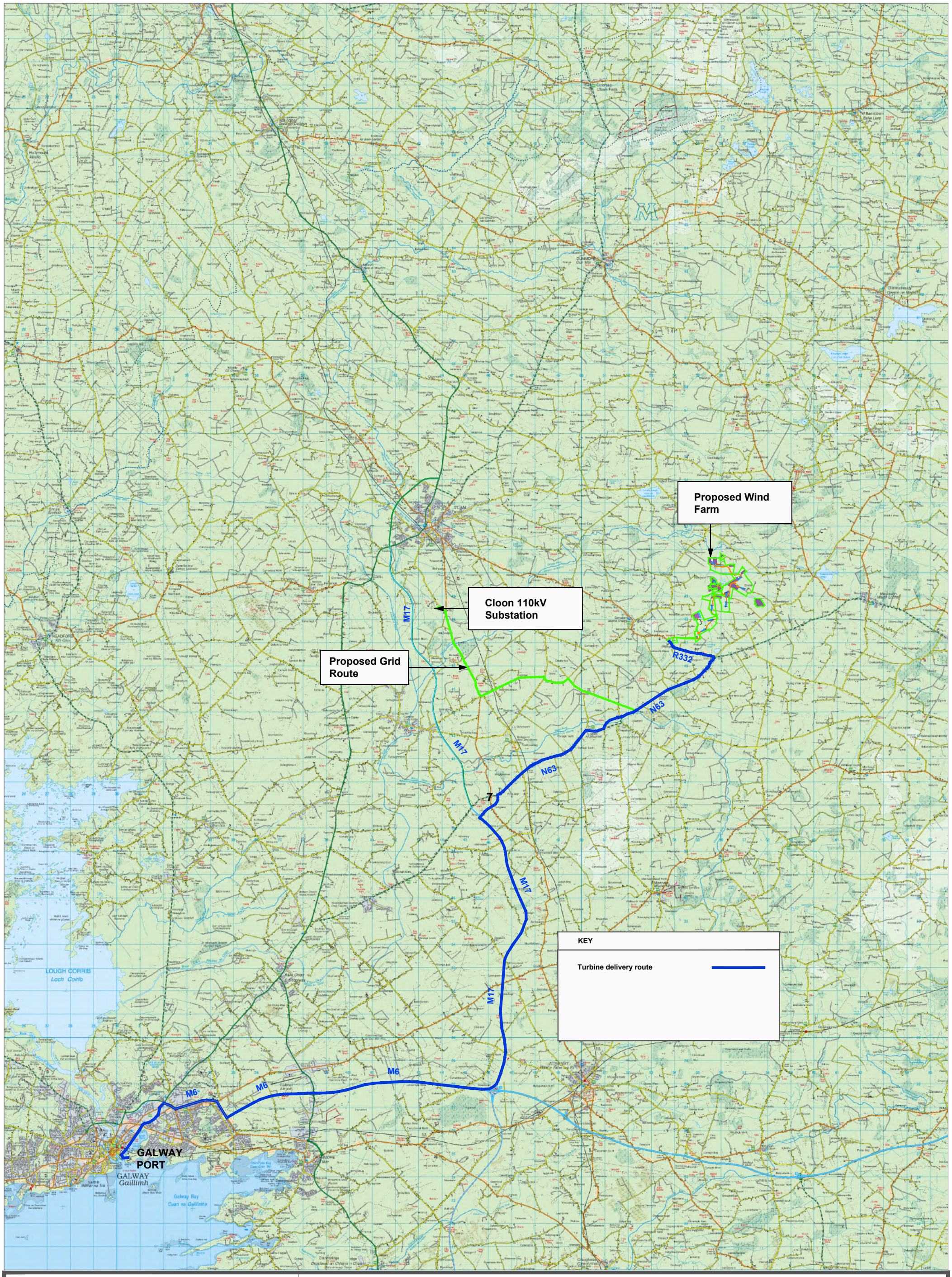
From the Port of Galway the turbine delivery route is as follows;

- Galway Harbour through Galway city on the L5048 Lough Atalia Road, the L5034 and the R336 Tuam Road to the N6 (3.3km).
- From the junction with the R336 Tuam Road in Galway City the turbine delivery route heads eastbound on the N6 passing through junctions with the R865 at Ballybrit and the R339 Monivea Road at Briarhill, before heading southeast to the Coonagh Roundabout (3.2km).
- From the Coonagh Roundabout the route heads east on the N6 and M6 (11.6 km), to Junction 18 of the M6 with the M18.
- The route then travels north on the M17 (12.6km) before turning off at Junction 19 onto the N63.
- The turbine delivery route then travels east on the N63 for 12.7kms passing the through Abbeyknockmoy and Dereen to the junction with the R332.
- The turbine then turns left off the N63 to travel northwest on the R332 for approximately 2.1km before turning right into the Proposed Wind Farm site entrance.

The total length of the proposed TDR route is approximately 45.5km.

It is noted that the proposed turbine delivery route will utilise the 2.1km of new national secondary road as part the consented N63 Liss to Abbey Realignment Scheme (Pl Ref: ABP 312877-22) which bay passes the existing sharp S-bend on the N63 located just to the east of Abbeyknockmoy.

An assessment of the turning requirements of the abnormally large loads transporting the turbine components was undertaken at the various pinch points identified along the route from the Port of Galway to the site entrance off the R332, as discussed in Section 15.1.9 of this EIAR.



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-1a Site location and turbine delivery route

PROJECT:	Cooloo Wind Farm		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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TRAFFIC & TRANSPORT CONSULTANTS

The swept path assessment undertaken for the locations identified in Figures 15-1b are discussed in Section 15.1.9.

15.1.2.3 Proposed Construction Traffic Haul Route

A total of 4 quarries within a 20 km radius of the Proposed Wind Farm site are identified as potential suppliers of concrete, crushed stone and internal road surfacing materials, with the locations of these quarries and potential delivery routes to the Proposed Project, shown in Figure 15-2a. It is noted that these additional routes converge on the M17 junction 19 with the N63, so from this location to the Proposed Wind Farm site access on the R332 is the section of the delivery route that will be under most pressure and is the focus of the traffic impact assessment as discussed in Section 15.1.9 of this EIAR.

15.1.3 Existing Traffic Volumes

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

15.1.3.1 Background Traffic Flows

The 4 no. locations included in the link flow assessment and for which base year 2025 traffic count data was collated are shown in Figure 15-2b. The locations included in the assessment are as follows:

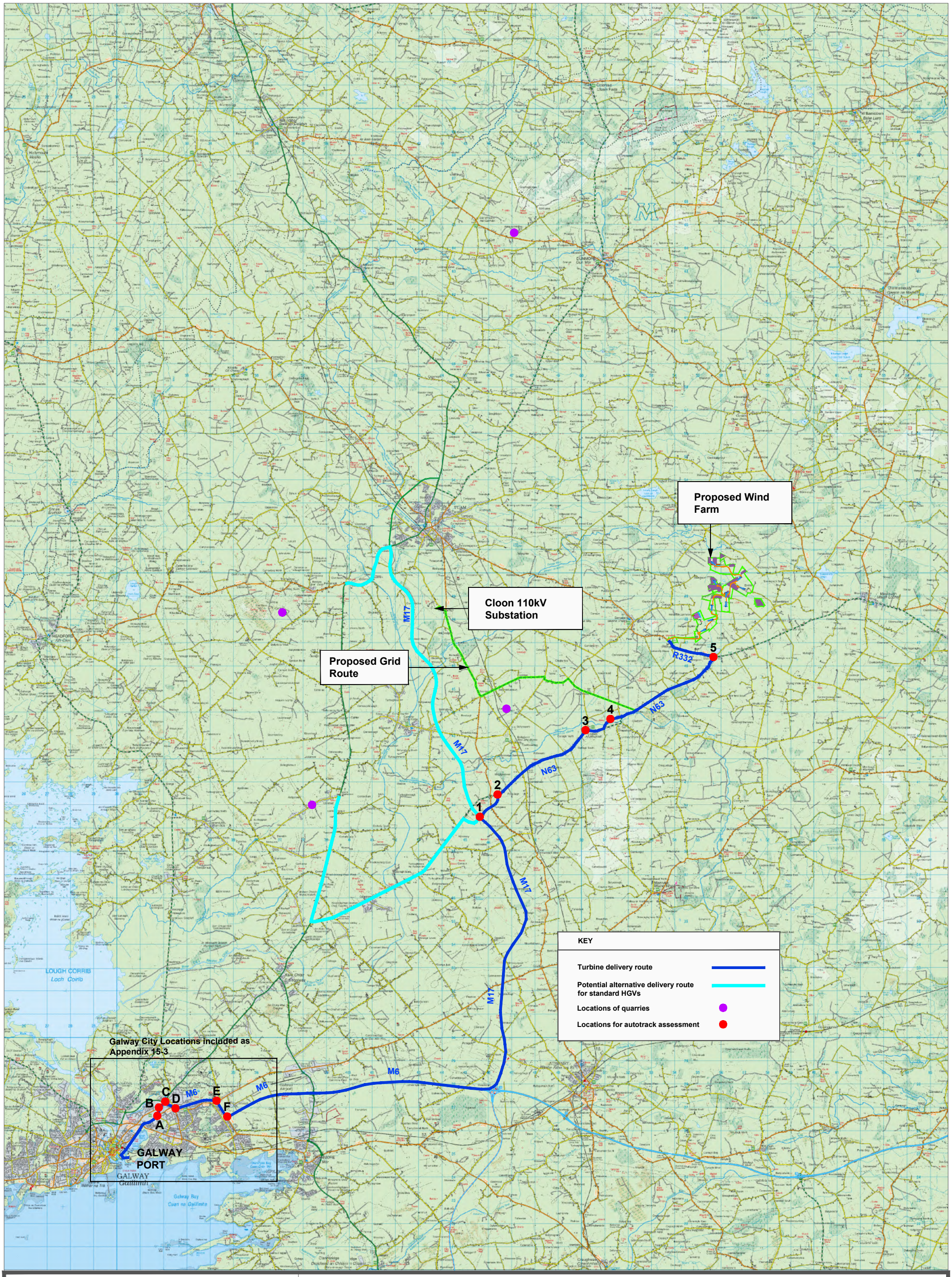
- Link 1 – N63 south of Annagh Cross,
- Link 2 – R347 towards Tuam,
- Link 3 – N63 south of Brierfield, and
- Link 4 – R322 leading to the Proposed Wind Farm site.

Link counts at these location were determined from traffic counts undertaken by Traffinomics Ltd on Tuesday 8th July 2025. All base year Traffic count data is included as Appendix 15-1.

The all-day traffic flows observed for the base year 2025 are shown in terms of vehicle numbers in Table 15-3. The existing traffic volumes on the proposed turbine delivery route and construction traffic route, range from a maximum of 7,978 vehicles per day on the N63 just to the east of the M17 south of Annagh Cross (Link 1), reducing to 6,862 vehicles on the N63 just to the east of the roundabout (Link 2). Travelling east towards the Proposed Wind Farm site traffic flows on the N63 reduce on the approach to the junction with the R322 (Link 3) to 4,245 vehicles. Traffic flows on the R322 leading to the site (Link 4) were observed to reduce significantly compared to the N63 with a 2-way all-day traffic flow of 1,685 observed.

Table 15-2 Count locations and data source

Link	Data source
1 – N63 (south of Annagh Cross)	Classified count - year 2025
2 – N63 (east of Annagh Cross)	Classified count - year 2025
3 – N63 (south of Brierfield)	Classified count – year 2025



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PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-1b Autotrack assessment location plan

PROJECT:	Cooloo Wind Farm		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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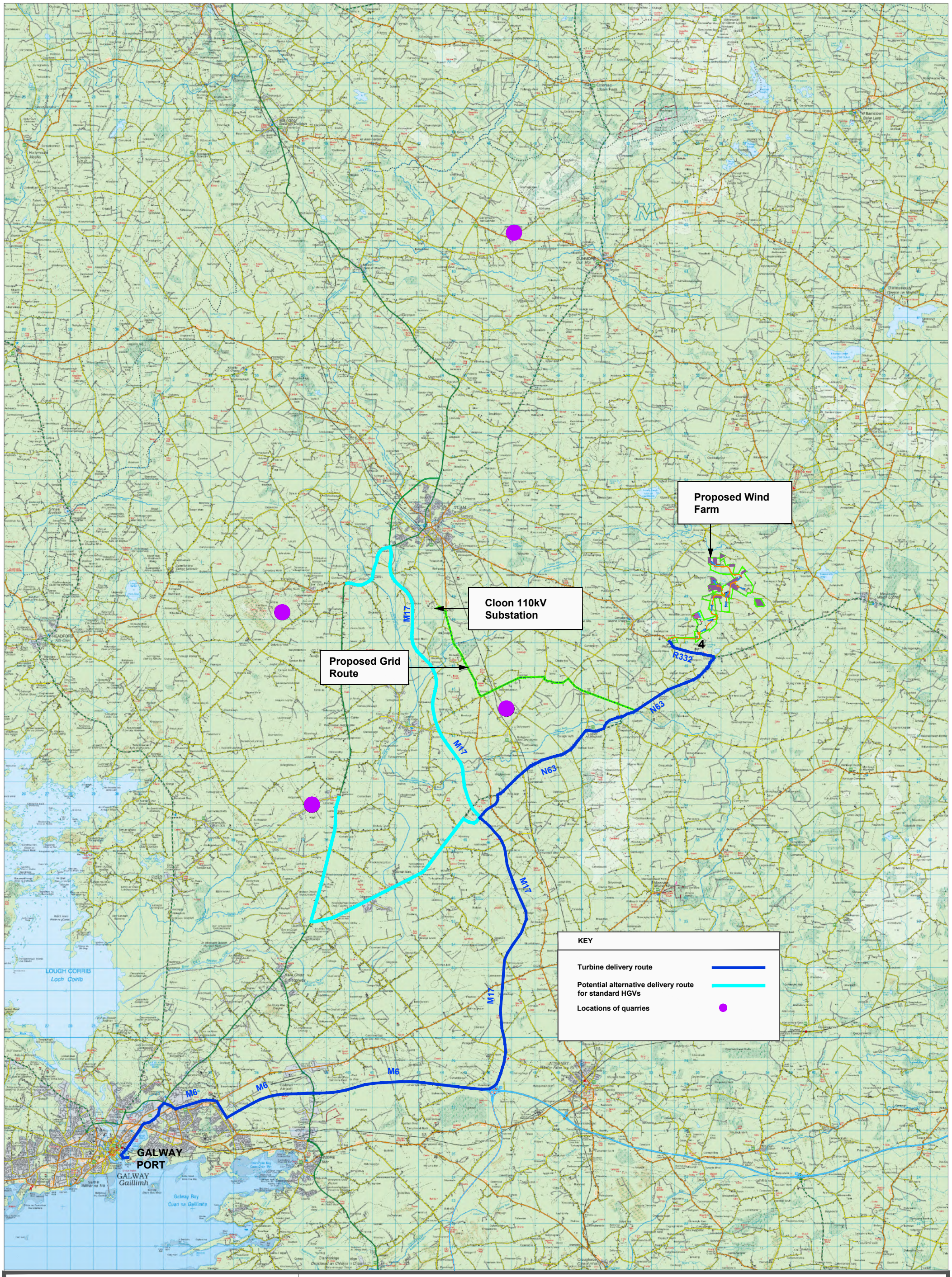

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PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-2a Potential quarries and additional delivery routes for standard HGVs

PROJECT:	Cooloo Wind Farm		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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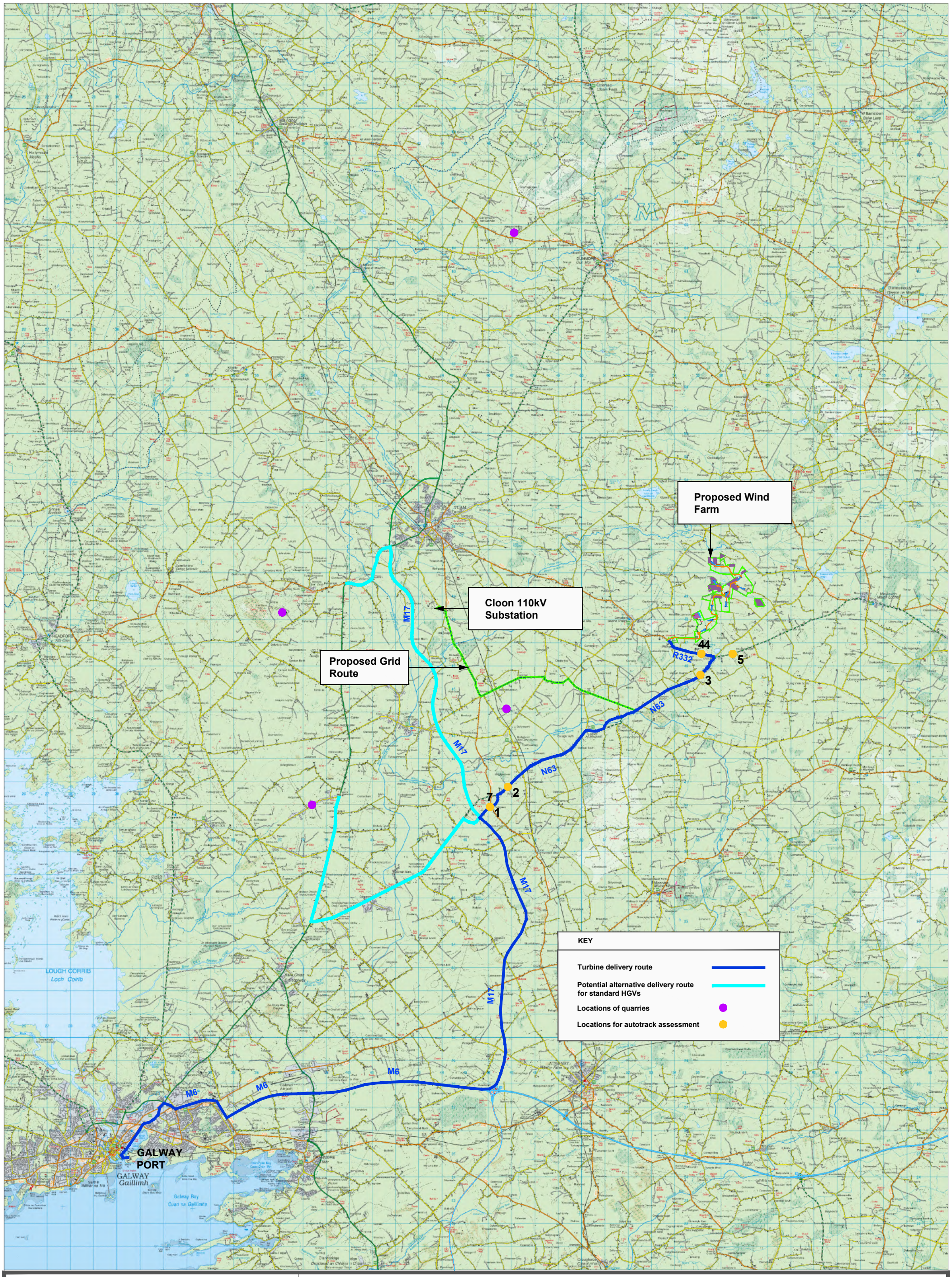

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-2b Link count locations included in assessment

PROJECT:	Cooloo Wind Farm		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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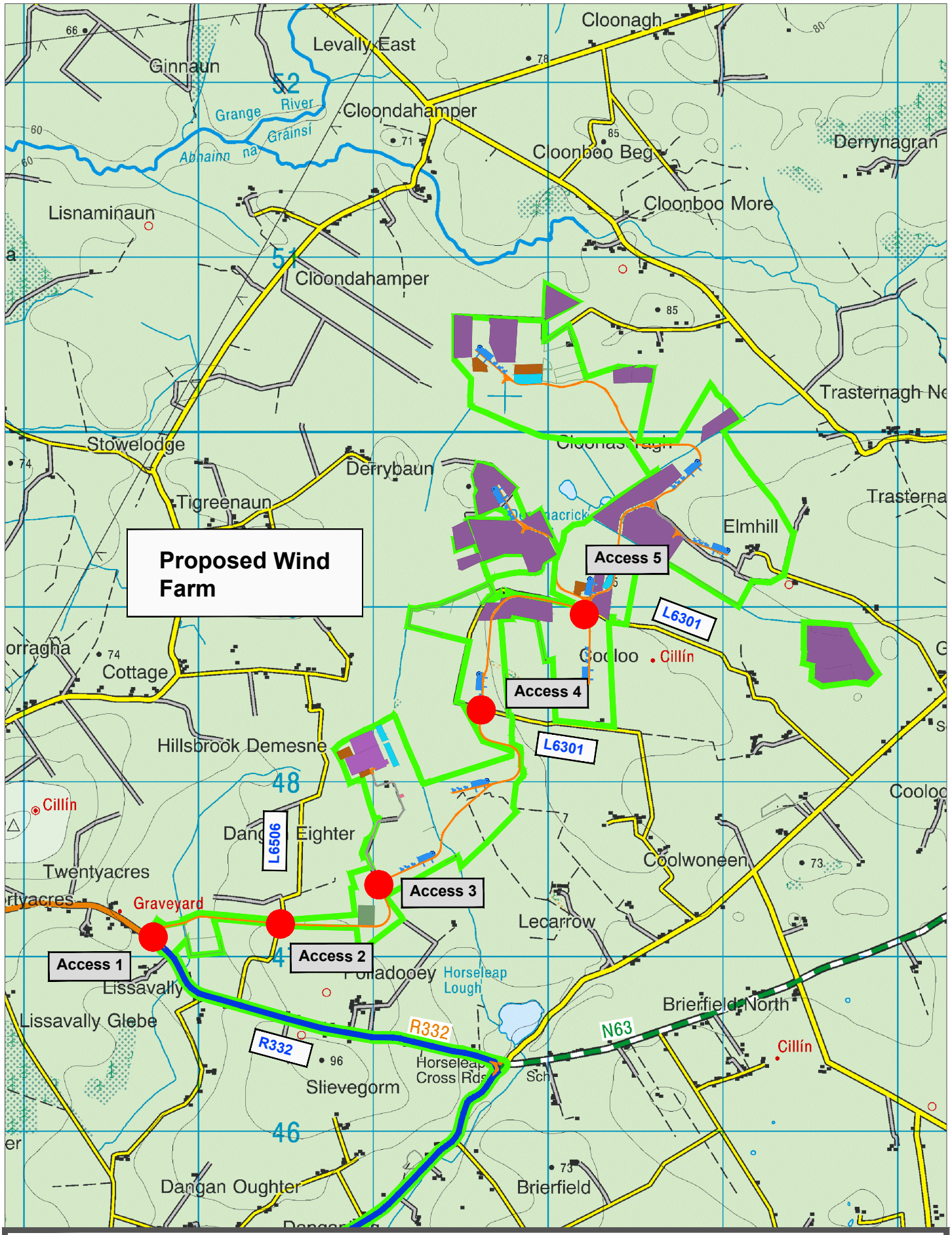


Figure 15-3 Location of proposed access junctions

PROJECT: Cooloo Wind Farm			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Neoen		SCALE: NTS	
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY: AL	

Link	Data source
4 – R322 (leading to Proposed Wind Farm site)	Classified count – year 2025

Table 15-3 All day traffic flows by location, year 2025 (2-way vehicles)

Link	2025
1 – N63 (south of Annagh Cross)	7,798
2 – N63 (east of Annagh Cross)	6,862
3 – N63 (south of Brierfield)	4,245
4 – R322 (leading to Proposed Wind Farm site)	1,635

15.1.3.2 Background Traffic Volumes for the Assumed Construction Year 2028

This section describes the process adopted to produce background traffic forecasts for an assumed latest construction year of 2028.

Guidelines for forecasting annual growth in traffic volumes were produced by TII in October 2021, as set out by county in the Project Appraisal Guidelines (Unit 5.3 – Travel Demand Projections). The annual growth rates for light vehicles for County Galway and factors for the years relevant to this study are shown in Tables 15-4 and 15-5. Based on TII growth rates it is estimated that traffic volumes will increase by 8.0% (shown as 1.080 in Table 15-5) during the period from 2025 to 2028, that is between the years when the base traffic data was collected, and the year 2028, the latest year when the construction of the Proposed Project is forecast to take place. Observed year 2025 and forecast 2028 all day traffic flows on the study area network are compared in Table 15-6.

It should be noted that while the latest assumed construction year of 2028 may vary slightly, this will not alter the forecast outcomes and effects presented in this section of the EIAR. This is due to the annual growth rate for background traffic being just 2.59% (as shown in Table 15-4 as 1.0259) and the traffic volumes generated by the Proposed Project will remain unchanged regardless of construction year, as presented subsequently in Section 15.1.4.

TII traffic count data recorded during the classified traffic counts undertaken for the purpose of this assessment were also used to determine the existing percentage of HGVs on the proposed delivery route. The observed percentage of HGVs are shown in Table 15-7 and range from 5.1% observed on the N63 either side of the roundabout at Annagh Cross (Links 1 and 2), to 5.5% on the N63 approaching the junction with the R322 (Link 3), to a maximum of 6.4% observed on the R322 leading to the site (Link 4).

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

Year	Lights – Annual Factor			Lights – Cumulative Factor		
	Low	Medium	High	Low	Medium	High
2025	1.0243	1.0259	1.0294	1.000	1.000	1.000
2026	1.0243	1.0259	1.0294	1.024	1.026	1.029
2027	1.0243	1.0259	1.0294	1.049	1.052	1.060
2028	1.0243	1.0259	1.0294	1.075	1.080	1.091
2029	1.0243	1.0259	1.0294	1.101	1.108	1.123
2030	1.0243	1.0259	1.0294	1.128	1.136	1.156

Table 15-5 TII traffic growth rates by growth scenario

Period	New Factors		
	Low	Medium	High
2025 – 2028	1.075	1.080	1.091

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

Link	Observed 2025	Forecast 2028
1 – N63 (south of Annagh Cross)	7,798	8,422
2 – N63 (east of Annagh Cross)	6,862	7,411
3 – N63 (south of Brierfield)	4,245	4,585
4 – R322 (leading to Proposed Wind Farm site)	1,635	1,766

Table 15-7 All day flows, percentage HGVs and flows by vehicle type, year 2028

Link	All day flow (vehs)	% HGV's	Vehicles		PCUs		
			HGVs	Cars / lgvs	HGVs	Cars / lgvs	Total
1 – N63 (south of Annagh Cross)	8,422	5.1%	430	7,992	1,031	7,992	9,023
2 – N63 (east of Annagh Cross)	7,411	5.1%	378	7,033	907	7,033	7,940
3 – N63 (south of Brierfield)	4,585	5.5%	252	4,332	605	4,332	4,938
4 – R322 (leading to Proposed Wind Farm site)	1,766	6.4%	113	1,653	271	1,653	1,924

15.1.4 Proposed Project Traffic Generation

15.1.4.1 Development Trip Generation – During Construction

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

- Stage 1 – Site preparation, groundworks, tree felling, construction of temporary construction compounds, turbine foundations, met mast foundation, onsite substation,

BESS, internal electrical cabling, and grid connection underground electrical cabling route laying,
- Stage 2 – Wind turbine component delivery and construction.

For the purpose of the traffic impact assessment, projections based on trip generation data collected from other wind farm construction projects regarding the numbers of trips per quantum of material, the number of turbine component parts based on 9 no. turbines, the length of the construction phase and work periods etc. were made to inform the assessment. These projections allow for assessment using the precautionary principle but should not be inferred as prescriptive limitations to the construction phase.

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

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

For assessment purposes, this stage of the Proposed Project construction which includes the Site preparation and ground works, turbine foundation construction, substation construction, BESS construction, internal cable laying elements and the grid connection underground cabling route, is assumed to last between 16 to 17 month (350 days). The total numbers of deliveries made to the Site during that period are shown in Table 15-8. It is estimated that a total of 19,356 deliveries by truck, cement mixer or standard articulated HGVs will be made to the Site during this period.

During this construction phase there will be two distinct types of days with respect to trip generation. A total of 9 days will be used to pour the 9 concrete wind turbine foundations. Foundations will likely be poured one per day, with circa 107 concrete loads required for each turbine delivered to the Proposed Wind Farm site over a 10-hour period, resulting in 11 HGV trips to and from the site per hour.

On the remaining 341 working days for this stage other general materials will be delivered to the Proposed Wind Farm site.

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

The figures show that on the 9 days that concrete will be delivered to the Proposed Wind Farm site, an additional 514 two-way PCUs will be added to the network (comprising 107 two-way HGV trips with 2.4 PCUs per movement), as shown in Table 15-9. Similarly, on the 341 days when other materials will be delivered to the Proposed Wind Farm site, traffic volumes on the local network will increase by an average of 259 PCUs, as set out in Table 15-10.

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

Material	Total no. Truck Loads	Truck type
Concrete	963	Concrete mixers
Delivery of plant	35	Large artic
Fencing & gates	3	Large artic
Compound setup	36	Large artic

Material	Total no. Truck Loads	Truck type
Steel	24	Large artic
Rock and stone	14,450	Truck
Ducting and cabling (internal)	264	Large artic
Grid connection cable laying	2,940	Large artic
Tree felling	17	Large artic
Crane (to lift steel)	1	Large artic
Substation	100	Large artic
BESS	100	Large artic
Cranes for turbines	12	Large artic
Refuelling for plant	186	Large artic
Site maintenance	135	Large artic
Miscellaneous	90	Large artic
Total	19,356	

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

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Concrete	963	Concrete mixers	2.4	2,311	256.8	513.6
* Estimation based on 9 concrete pouring days						

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

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Delivery of plant	35	Large artic	2.4	84.0	0.25	0.49
Fencing & gates	3	Large artic	2.4	7.2	0.02	0.04

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day*	2-way PCUs/day
Compound setup	36	Large artic	2.4	86.4	0.25	0.51
Steel	24	Large artic	2.4	57.6	0.17	0.34
Rock and stone	14,450	Truck	2.4	34,680.0	101.7	203.40
Ducting and cabling (internal)	264	Large artic	2.4	633.6	1.86	3.72
Grid connection cable laying	2,940	Large artic	2.4	7,056.0	20.69	41.38
Tree felling	17	Large artic	2.4	40.8	0.12	0.24
Crane (to lift steel)	1	Large artic	2.4	2.4	0.01	0.02
Substation	100	Large artic	2.4	240.0	0.70	1.41
BESS	100	Large artic	2.4	240.0	0.70	1.41
Cranes for turbines	12	Large artic	2.4	28.8	0.08	0.17
Refuelling for plant	186	Large artic	2.4	446.4	1.31	2.62
Site maintenance	135	Large artic	2.4	324.0	0.95	1.90
Miscellaneous	90	Large artic	2.4	216.0	0.63	1.27
Total	15,453			37,087	108.76	217.5
* Estimation based on groundwork period of 341 working days						

15.1.4.1.2 Stage 2 – Turbine Construction

During the turbine construction stage, including delivery and assembly, there will be deliveries to the Proposed Wind Farm site made by abnormally sized vehicles, referred to in this section as *extended artics*, transporting the component parts of the turbines (nacelles, blades and towers). There will be deliveries made by standard large HGVs, transporting cables, tools and smaller component parts. The types of load and associated numbers of trips made to the Proposed Wind Farm site during the turbine construction period are shown in Table 15-11, which summarises that a total of 72 trips will be made to and from the Proposed Wind Farm Site by extended artics, with a further 36 trips made by standard large articulated HGVs.

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

Material	Units	Quantity per Unit	Total Quantity	Quantity per Truck	Total Truck Loads	Truck type
Nacelle	9	1	9	1	9	Extended Artic
Blades	9	3	27	1	27	Extended Artic
Towers	9	4	36	1	36	Extended Artic
Sub total					***72***	
Transformer	9	1	9	1	9	Large Artic
Drive train and blade hub	9	1	9	1	9	Large Artic
Base and other deliveries	9	2	18	1	18	Large Artic
Sub total					***36***	
Total					**108**	

For the purposes of this assessment, it is assumed that the turbine delivery element will progress at the rate of 3 extended artic trips made by convoy to the Proposed Wind Farm site on 5 days per week, which is a common delivery frequency for large turbine components from the port of entry to the Proposed Wind Farm site. This will result in this stage taking 24 days spread over a 5 week period with all deliveries made during the night.

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

The additional traffic movements for these two types of days are summarised in Tables 15-12 and 15-13. In Table 15-12 a PCU equivalent value of 10 was allocated to each extended artic movement, resulting in an additional 60 PCUs on the study network on these 24 days, while an additional 19.2 PCUs are forecast to be on the network on 9 days, as shown in Table 15-13, during the turbine construction phase.

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

Material	Units	Truck Type	PCU Value	Total PCUs	2-way PCUs/ day
Nacelle	1	Extended Artic	10	10.0	20.0
Blades	3	Extended Artic	10	30.0	60.0
Towers	4	Extended Artic	10	40.0	80.0
Total per turbine	8			80.0	160.0
Total per delivery day	3			30.0	60.0
*Estimation based on 3 abnormal sized loads being delivered per day on 5 days per week (total 72 loads will take 24 nights spread over 5 weeks)					

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

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

Construction Employee Traffic

It is estimated that up to 70 staff members will be employed on the Proposed Wind Farm site during the site preparation and groundworks stage of construction, with a maximum of 45 staff being on the site at any one time. Construction employee traffic for the Proposed Grid Connection is dealt with in Section 15.1.7 below. If a precautionary scenario is assumed that all staff will travel to / from the Proposed Wind Farm site by car, at an average of 2 persons per car, then a total of 70 PCU movements (each trip is two way) will be added to the network during the groundworks stage (Stage 1) of the Proposed Wind Farm, reducing to 45 PCU trips during the turbine construction stage (Stage 2).

Development Trip Generation – During Operation

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

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

Development Trip Generation – During Decommissioning

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

15.1.5 Construction Traffic Vehicles

The delivery of turbine components including blades, tower sections and nacelles is a specialist operation owing to the oversized loads involved. The proposed turbine dimensions are detailed in Section 4.3.1 in Chapter 4 of this EIAR. With respect to the geometric requirements of the road network the traffic assessment is concerned with the longest blade being proposed, which is 81.0m.

The turbine blades are the longest turbine component and a blade length of up to 81.0 metres has therefore been assessed for the turbine delivery assessment for the Proposed Project. As identified in Section 1.7.3 of Chapter 1 of this EIAR, this precautionary approach is taken as the assessment of the maximum blade length within the application range will give rise to the greatest potential for significant effects.

The critical vehicles in terms of size and turning geometry requirements and used in the detailed route assessment discussed in Section 15.1.9, are the blade transporter and the tower transporter vehicles, with the geometry of each shown in Figures 15-4a and 15-4b respectively.

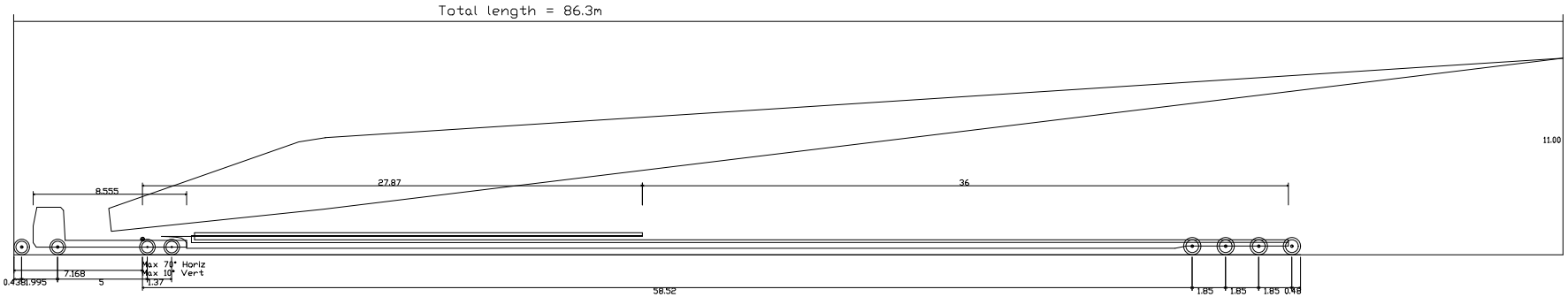
The key dimensions are as follows:

Transport of Blades – As is discussed further in Section 15.1.9, it will be required to lift the blade tip to a clearance height of 11m and to shorten the wheelbase of the blade delivery vehicle by increasing the blade overhang to 15m, in order to negotiate certain locations on the proposed TDR. The key dimensions for the blade delivery vehicle are as follows:

- Transport of Blade – Using scissors lift (See Figure 15-4a)
- Total vehicle length: 86.3 m
- Length of blade: 81m (or 80.3m in plan with tip of the blade raised to 11m above road level)
- Inner radius: 28.0 m
- Transport of Tower – Using low-bed or drop deck trailers (See Figure 15-4b)
- Total length (with load): 42.8 m
- Length of load: 33.9 m
- Inner radius: 25.0 m

The vehicles used to transport the nacelles will be similar to the tower transporter although will be shorter in length.

All other vehicles requiring access to the site will be standard HGVs, trucks, cement mixers or LGVs and will be significantly smaller than the design test vehicles. Standard HGVs and LGVs will navigate the National and Regional Road networks and access the Proposed Wind Farm site off the R332.



81.0m blade with lifter and 15m overhang

Overall Length	86.300m
Overall Width	2.550m
Overall Body Height	2.661m
Min Body Ground Clearance	0.375m
Track Width	2.500m
Lock to Lock Time	6.00s
Wall to Wall Turning Radius	9.800m

NOTES:

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Figure 15.4a Design blade extended artic profile

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 12.09.25	DRAWN BY:	AL

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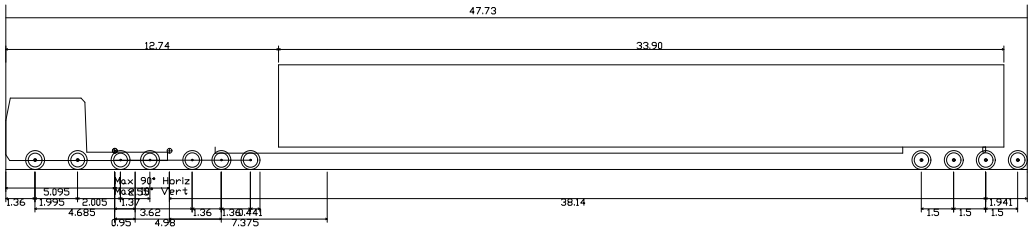

Final Tower section 33.9 full rear steer 45 degrees

Overall Length	47.726m
Overall Width	2.550m
Overall Body Height	4.900m
Min Body Ground Clearance	0.427m
Max Track Width	2.520m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

NOTES:

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Figure 15.4b Design tower extended artic profile

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 12.09.25	DRAWN BY:	AL

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15.1.6 Traffic Effects During Construction, Operation and Decommissioning

As detailed below in Section 15.1.11.5, transportation of large turbine components will be carried out at night when traffic is at its lightest and in consultation with the relevant Roads Authorities and An Garda Síochána with deliveries accompanied by Garda escort.

It should be noted that for the purpose of the assessment all vehicles travelling to and from the Proposed Wind Farm site have been assumed to do so from the same direction. The assessment is therefore based on a precautionary scenario, where all traffic generated by the Proposed Wind Farm site travels to/from the Proposed Wind Farm site via the same route, with the maximum increase in traffic volumes assessed on each link shown in Figure 15-2b.

The potential effects of the Proposed Grid Connection underground cabling route will have on the public road network is considered in Section 15.1.7.

15.1.6.1 Effect on Link Flows – During Construction

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

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

During Stage 1 – Wind Turbine Foundation Concrete Pouring

For 9 days when the concrete foundations are poured an additional 584 PCUs will travel to/from the Proposed Wind Farm site. On the delivery route, it is forecast that the increase in traffic volumes on these days will range from between +6.5% and +11.8% on the N63 (Links 1 to 3). On the R322 leading to the Proposed Wind Farm site (Link 4) where background traffic flows are lower, it is forecast that traffic flows will increase by 30.4% on these 9 days.

During Stage 1 – Site Preparation and Groundworks

On the remaining 314 days when the Proposed Wind Farm site preparation and groundworks and construction of the BESS and onsite substation and grid connection continues, an additional 411 PCUS will travel to and from the Proposed Wind Farm site. It is forecast that the increase in traffic volumes on these days will be between +4.6% and 8.3% on the N63 (Links 1 to 3). On the L58333 leading to the Proposed Wind Farm site (Link 4) it is forecast that traffic flows will increase by 21% on these 341 days.

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

On the 24 days / nights that the abnormal loads carrying the large turbine components travel to the Proposed Wind Farm site, an additional 105 PCUs will travel to/from the. It is forecast that the increase in traffic volumes on these days will be between +1.2% and 2.1% on the N63 (Links 1 to 3), while on the R322 leading to the Proposed Wind Farm site (Link 4) it is forecast that traffic flows will increase by 5.5% on these 24 days / nights.

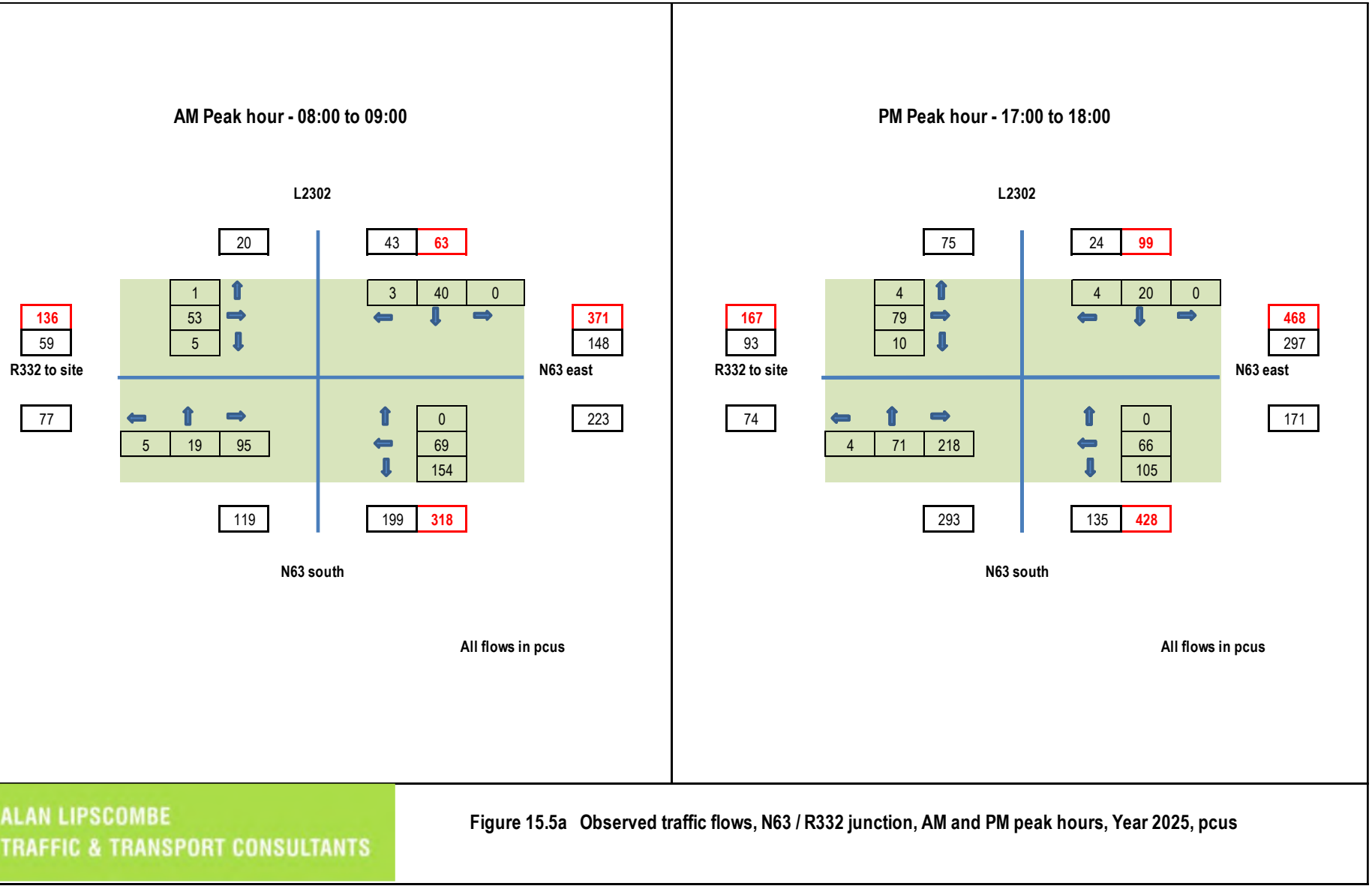

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Figure 15.5a Observed traffic flows, N63 / R332 junction, AM and PM peak hours, Year 2025, pcus

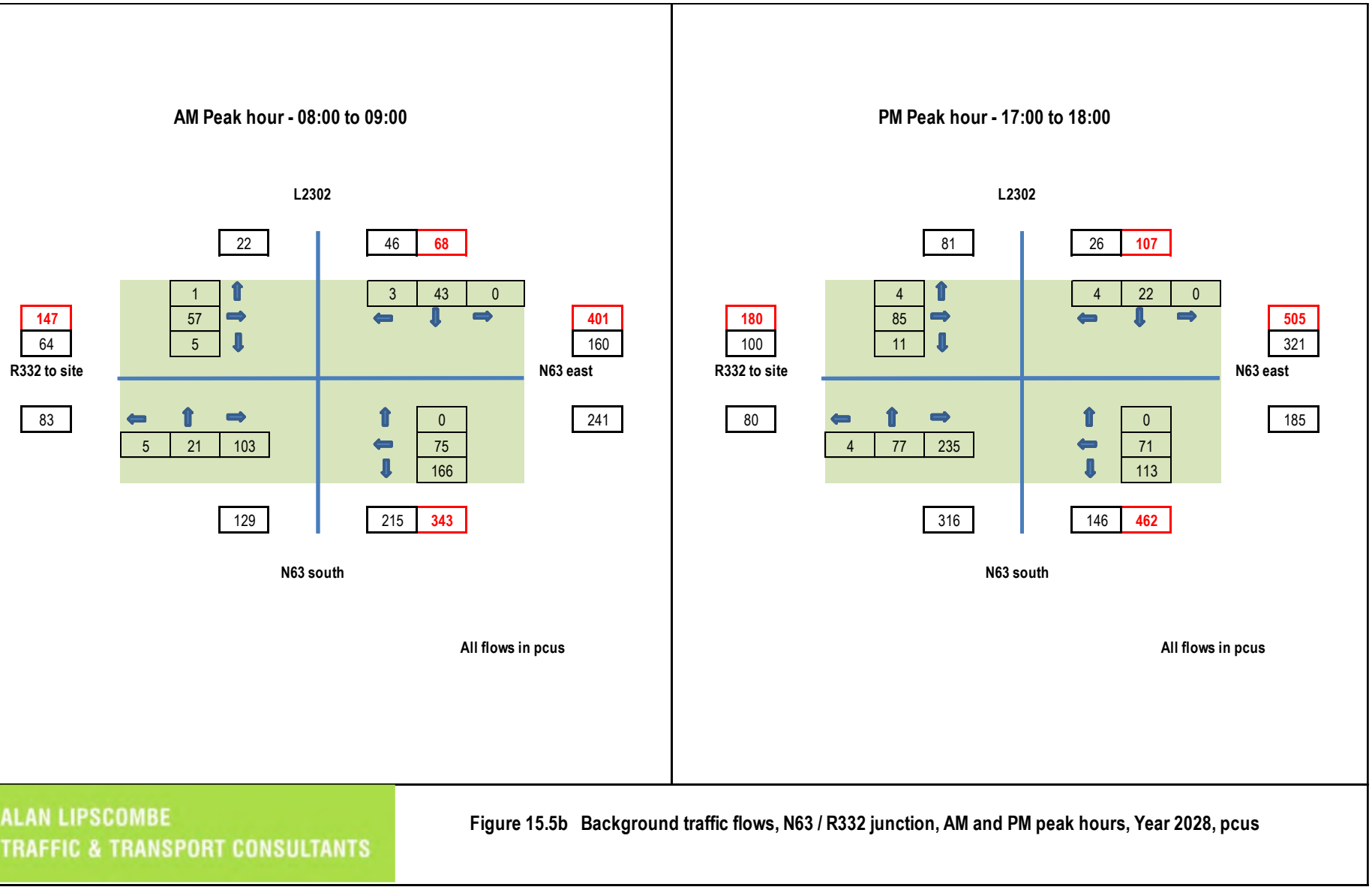

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Figure 15.5b Background traffic flows, N63 / R332 junction, AM and PM peak hours, Year 2028, pcus

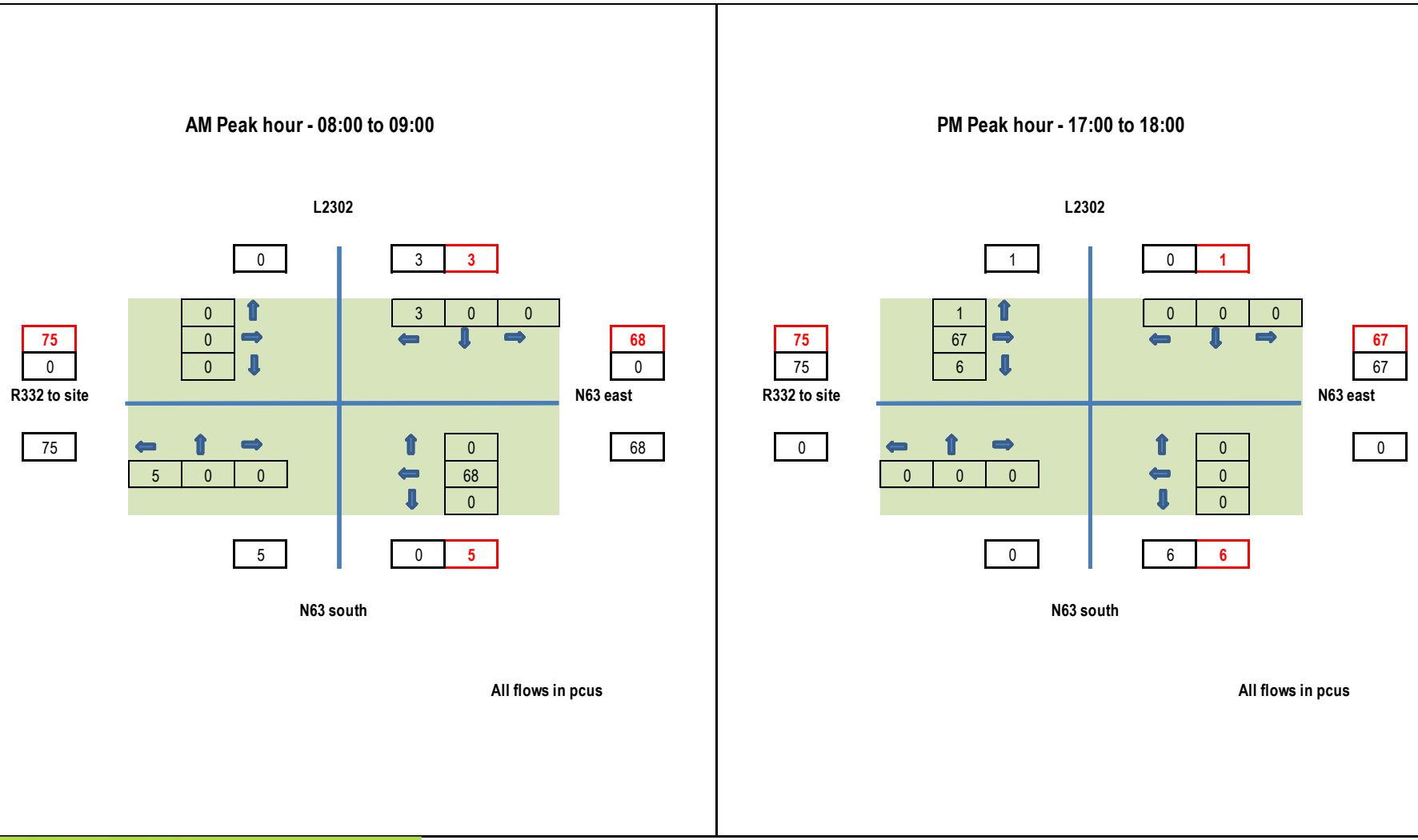

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Figure 15.5c Development generated traffic flows, N63 / R332 junction, AM and PM peak hours

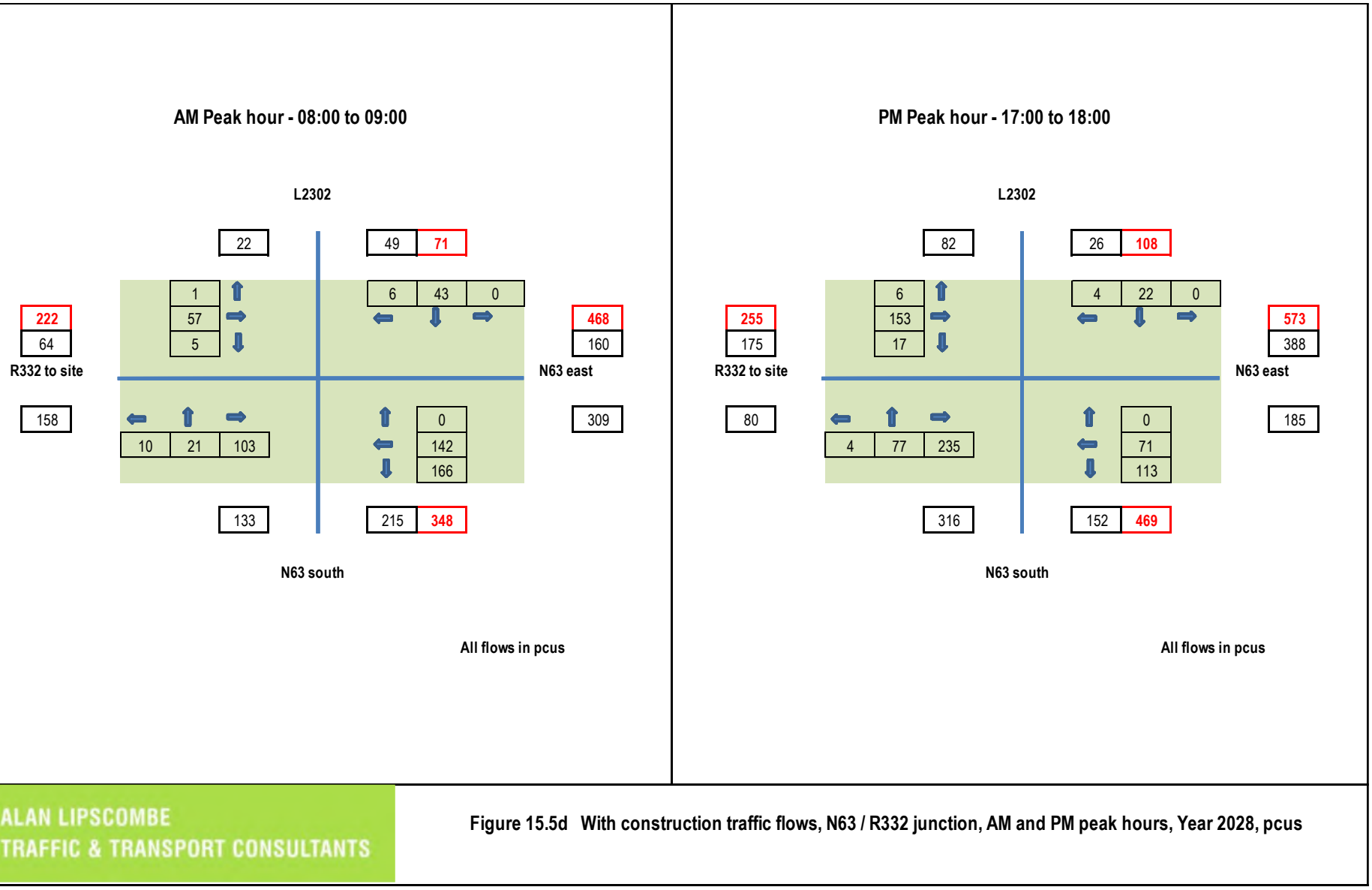

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Figure 15.5d With construction traffic flows, N63 / R332 junction, AM and PM peak hours, Year 2028, pcus

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

For 9 days an additional 64 PCUs will travel to/from the Proposed Wind Farm site. It is forecast that the increase in traffic volumes on these days will be between 0.7% and +1.3% on the N63 (Links 1 to 3). On the R322 leading to the site (Link 4) it is forecast that traffic flows will increase by 3.3% on these 9 days.

Table 15-14 Daily traffic volumes on during concrete pouring - background, Proposed Wind Farm generated and total (PCUs), year 2028

Link	Background PCUs			Proposed Wind Farm PCUs			Total PCUs (Background + Proposed Wind Farm)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N63 (south of Annagh Cross)	7,992	1,031	9,023	70	514	584	8,062	1,545	9,607
2 – N63 (east of Annagh Cross)	7,033	907	7,940	70	514	584	7,103	1,421	8,524
3 – N63 (south of Brierfield)	4,332	605	4,938	70	514	584	4,402	1,119	5,522
4 – R322 (leading to Proposed Wind Farm site)	1,653	271	1,924	70	514	584	1,723	785	2,508

Table 15-15 Daily Traffic volumes during site preparation and groundworks – background, Proposed Wind Farm generated and total (PCUs), year 2028

Link	Background PCUs			Proposed Wind Farm PCUs			Total PCUs (Background + Proposed Wind Farm)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N63 (south of Annagh Cross)	7,992	1,031	9,023	70	259	329	8,062	1,290	9,352
2 – N63 (east of Annagh Cross)	7,033	907	7,940	70	259	329	7,103	1,166	8,269
3 – N63 (south of Brierfield)	4,332	605	4,938	70	259	329	4,402	864	5,267
4 – R322 (leading to Proposed Wind Farm site)	1,653	271	1,924	70	259	329	1,723	530	2,253

Table 15-16 Daily traffic volumes during turbine construction, extended artics – background, Proposed Wind Farm generated and total (PCUs), year 2028

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N63 (south of Annagh Cross)	7,992	1,031	9,023	45	60	105	8,037	1,091	9,128
2 – N63 (east of Annagh Cross)	7,033	907	7,940	45	60	105	7,078	967	8,045
3 – N63 (south of Brierfield)	4,332	605	4,938	45	60	105	4,377	665	5,043
4 – R322 (leading to Proposed Wind Farm site)	1,653	271	1,924	45	60	105	1,698	331	2,029

Table 15-17 Daily traffic volumes during turbine construction – standard artic HGVs, background, Proposed Wind Farm generated and total (PCUs), year 2028

Link	Background PCUs			Proposed Wind Farm PCUs			Total PCUs (Background + Proposed Wind Farm)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N63 (south of Annagh Cross)	7,992	1,031	9,023	45	19	64	8,037	1,050	9,087
2 – N63 (east of Annagh Cross)	7,033	907	7,940	45	19	64	7,078	926	8,004
3 – N63 (south of Brierfield)	4,332	605	4,938	45	19	64	4,377	624	5,002
4 – R322 (leading to Proposed Wind Farm site)	1,653	271	1,924	45	19	64	1,698	290	1,988

Table 15-18 Summary daily effects of Proposed Wind Farm traffic - concrete pouring - % increase and number of days, year 2028

Link	Background	Proposed Wind Farm	Total	% increase	Estimated No. of days
1 – N63 (south of Annagh Cross)	9,023	584	9,607	6.5%	9
2 – N63 (east of Annagh Cross)	7,940	584	8,524	7.4%	9

Link	Background	Proposed Wind Farm	Total	% increase	Estimated No. of days
3 – N63 (south of Brierfield)	4,938	584	5,522	11.8%	9
4 – R322 (leading to Proposed Wind Farm site)	1,924	584	2,508	30.4%	9

Table 15-19 Summary daily effect of Proposed Wind Farm traffic - site preparation and ground works - % increase and number of days, year 2028

Link	Background	Proposed Wind Farm	Total	% increase	Estimated No. of days
1 – N63 (south of Annagh Cross)	9,023	329	9,352	3.6%	341
2 – N63 (east of Annagh Cross)	7,940	329	8,269	4.1%	341
3 – N63 (south of Brierfield)	4,938	329	5,267	6.7%	341
4 – R322 (leading to Proposed Wind Farm site)	1,924	329	2,253	17.1%	341

Table 15-20 Summary daily effect of Proposed Wind Farm traffic - turbine construction, extended artics - % increase and number of days, year 2028

Link	Background	Proposed Wind Farm	Total	% increase	Estimated No. of days
1 – N63 (south of Annagh Cross)	9,023	105	9,128	1.2%	24
2 – N63 (east of Annagh Cross)	7,940	105	8,045	1.3%	24
3 – N63 (south of Brierfield)	4,938	105	5,043	2.1%	24
4 – R322 (leading to Proposed Wind Farm site)	1,924	105	2,029	5.5%	24

Table 15-21 Summary daily effects of Proposed Wind Farm traffic- turbine construction, standard artic HGVs – % increase and number of days, year 2028

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N63 (south of Annagh Cross)	9,023	64	9,087	0.7%	9
2 – N63 (east of Annagh Cross)	7,940	64	8,004	0.8%	9
3 – N63 (south of Brierfield)	4,938	64	5,002	1.3%	9
4 – R322 (leading to Proposed Wind Farm site)	1,924	64	1,988	3.3%	9

15.1.6.2 Link Capacity Assessment

An assessment of the impact on link capacity on the delivery route was undertaken for the various construction stages as set out in Tables 15-22 to 15-24 with the capacity of the links on the delivery route, as shown in Table 15-22, varying from 8,600 vehicles per day on the N63 down to 5,000 vehicles per day for the R322.

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

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

Background traffic flows are compared to flows forecast for the various construction delivery stages in the construction year of 2028, in Table 15-23, with the percentage capacity reached for each stage shown in Table 15-24.

Based on this assessment, the following are the key points to note;

- Link 1 - N63 (south of Annagh Cross) - It is forecast that this section of the N63 directly east of the M17 will operate at 105% link capacity based on background traffic levels by the year 2028. For the 9 days that the concrete foundations are poured it is forecast that this will increase to a maximum of 112%, reducing to a maximum of 109%, or +4% points, for the remainder of the general construction phase.
- Link 2 - N63 (east of Annagh Cross) – Just to the east of the roundabout it is forecast that this section of the N63 directly east of the M17 will operate at 92% link capacity based on background traffic levels by the year 2028, increasing to a maximum of 99% for the 9 days that the concrete foundations are poured. This will then reduce to a maximum of 96, or +4% points, for the remainder of the general construction phase.
- It is forecast that the N63 approaching the junction with the R322, and the R322 leading to the Proposed Wind Farm site will both operate well within link capacity for all scenarios.

In summary, while sections of the N63 are forecast to operate at or just above link capacity by the year 2028, it is considered that the impacts of construction traffic generated by the Proposed Wind Farm will be slight with respect to link capacity.

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

Link	Link type	Link capacity (Level of Service D)
1 – N63 (south of Annagh Cross)	Type 2 Single	8,600
2 – N63 (east of Annagh Cross)	Type 2 Single	8,600
3 – N63 (south of Brierfield)	Type 2 Single	8,600
4 – R322 (leading to Proposed Wind Farm site)	Type 3 Single	5,000

Table 15-23 Delivery route link capacity and summary of link flows by construction delivery stage, year 2028

Link	Link capacity (Level of Service D)	Construction delivery stage				
		Background traffic	Concrete pour	Other site works	Turbine plant	Turbine equipment
1 – N63 (south of Annagh Cross)	8,600	9,023	9,607	9,352	9,128	9,087
2 – N63 (east of Annagh Cross)	8,600	7,940	8,524	8,269	8,045	8,004
3 – N63 (south of Brierfield)	8,600	4,938	5,522	5,267	5,043	5,002
4 – R322 (leading to Proposed Wind Farm site)	5,000	1,924	2,508	2,253	2,029	1,988

Table 15-24 Delivery route link capacity and % of link capacity by construction delivery stage, year 2028

Link	Link capacity (Level of Service D)	Construction delivery stage				
		Background traffic	Concrete pour	Other site works	Turbine plant	Turbine equipment
1 – N63 (south of Annagh Cross)	8,600	105%	112%	109%	106%	106%
2 – N63 (east of Annagh Cross)	8,600	92%	99%	96%	94%	93%
3 – N63 (south of Brierfield)	8,600	57%	64%	61%	59%	58%
4 – R322 (leading to Proposed Wind Farm site)	5,000	38%	50%	45%	41%	40%

15.1.6.3 Effect on Junctions – During Construction

The capacity of the junction most affected on the delivery route will be the priority junction between the N63 and the R322 leading to the Proposed Wind Farm site. This is the only junction on the delivery route where it is forecast that a temporary increase in traffic flows will exceed 10% on any link during the construction period. A 10% increase in traffic flows is the threshold set out in TII guidelines for Traffic and Transport Assessments, above which a detailed junction capacity assessment is required.

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

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

Scenarios Modelled

The greatest effect will be experienced during peak hours when approximately 35 cars/lgvs will travel through the junction during the AM (08:00 to 09:00) and PM (17:00 to 18:00) peak hours travelling to and from the Proposed Wind Farm site.

N63 / R332 Junction Capacity Test Results

The results of the junction capacity tests are set out in Table 15-25. For all scenarios tested the right turn from the N63 south onto the N63 east arm has the highest ratio of flow to capacity (RFC). Although there will be no additional traffic movements generated for this movement during the construction of the Proposed Wind Farm, the RFC is forecast to increase slightly during the construction phase due to increased traffic on the priority route through the junction, which is the R332 west / N63 east route. For this movement the theoretical precautionary scenario will occur during the PM peak hour, when the RFC is forecast to be 45.3%, increasing to 46.2% with the introduction of the Proposed Wind Farm construction traffic.

The movement with the next highest RFC is the left turn from the N63 onto the R332 towards the Proposed Wind Farm site. During the PM peak hour it is forecast that the RFC will be 11.7% for the no development scenario, increasing to 12.0% with the inclusion of the Proposed Wind Farm construction traffic.

The results of the junction capacity tests set out in Table 15-25 show that the additional traffic movements passing through the junction will be accommodated and have a minor effect on the operation of the junction. The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% in accordance with TII guidelines.

Table 15-25 Junction capacity test results, N63 / R332 junction, AM and PM peak hours, without and with construction traffic, by time period, year 2028

Period	Location	Without construction traffic			With construction traffic		
AM		RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
	Right turn from L2302	6.0%	0.06	0.14	6.8%	0.07	0.15
	Left turn from L2302	4.8%	0.05	0.13	5.0%	0.05	0.13
	Left turn from N63 south	5.1%	0.05	0.16	6.5%	0.07	0.16
	Right turn from N63 south	29.8%	0.42	0.21	31.2%	0.45	0.22
	Right turn from R332 west	1.2%	0.01	0.11	1.2%	0.01	0.11
PM		RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
	Right turn from L2302	2.4%	0.03	0.13	2.5%	0.03	0.14
	Left turn from L2302	1.6%	0.02	0.12	1.7%	0.02	0.12
	Left turn from N63 south	11.7%	0.13	0.18	12.0%	0.14	0.18
	Right turn from N63 south	45.3%	0.85	0.26	46.2%	0.89	0.27
	Right turn from R332 west	1.7%	0.02	0.11	2.7%	0.03	0.11

15.1.6.4 Effect on Link Flows – During Operation

Once the Proposed Project is operational it is estimated that there will be 3 staff members employed on site with a similar number of vehicle trips, that is 3 car/lgv trips to and from the site per day. As stated

previously it is likely that the Proposed Wind Farm will attract some recreational trips, although it is expected that visitor numbers will be low. It is considered that the traffic impact during this phase will be negligible.

15.1.6.5 Effect on Junctions – During Operation

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

15.1.7 Proposed Grid Connection Construction on Road Network

A detailed description of the Proposed Grid Connection is provided in Chapter 4 of this EIAR. It is proposed that the 110kV onsite substation is connected by 110kV underground cabling to the existing 110kV Cloon Substation located in the townland of Cloonascragh. The underground cabling route measures approximately 21km of which approximately 18.2km is located within the public road corridor.

The traffic generated during the construction of the 110kV onsite substation and temporary construction compound have been considered in Section 15.1.6 above. The volumes of stone and other materials that will be delivered to the Site for the purpose of the Proposed Grid Connection underground cabling route is also considered in Section 15.1.6. All traffic for the Proposed Grid Connection and the onsite 110kV substation will be delivered via the delivery route as shown in Figure 15.1a.

The extent of the underground cabling route that will impact on the public road networks is considered in the 10 sections (8 on-road 2-off road) shown in Figure 15-6a and summarised in Table 15-26. Based on a construction rate of 100m per day, it is estimated that the grid route will take approximately 210 working days to complete based on one construction crew operating at one location. In practice the construction duration may be significantly reduced using 2 construction crews operating at different locations on the route.

The on-road sections of the Proposed Grid Connection underground cabling route travels along 4.2km of the N63 National Secondary Road, a 2.3 km section of the R332 Regional Road, a 3.9km section of the R347 Regional Road, with the remaining 12km of the on–road route travelling along the local road network. An inspection of the route would indicate that the significant majority of the route will require a road closure at the point of construction during the construction of the underground cable route. A precautionary scenario where a road closure will be required for the entire route is assumed for the purpose of the assessment.

The potential diversion routes that may be used during the construction of the various sections of the grid route that are on the public road network are set out in Table 15-27 and shown in Figure 16-6b. For sections 3, 4, 5, 6 and 8, which comprises of 7.8 km of the total route, the diversions will result in low volumes of existing traffic on local roads being diverted onto other local roads, or onto roads of a higher standard, including the N63, R332 and the R347.

For Sections 1 on the R332, 2 on the N63 and 7 on the R347, this will either result in traffic volumes on these roads being diverted onto some sections of lower standard local roads (shown in orange in Figure 15-6b), or via longer diversions onto roads of a similar standard (shown in red in Figure 15-6b. Prior to the construction of the Proposed Grid Connection, the final diversion routes that will be used during the construction of the various sections of the cabling route will be discussed and agreed with Galway County Council.

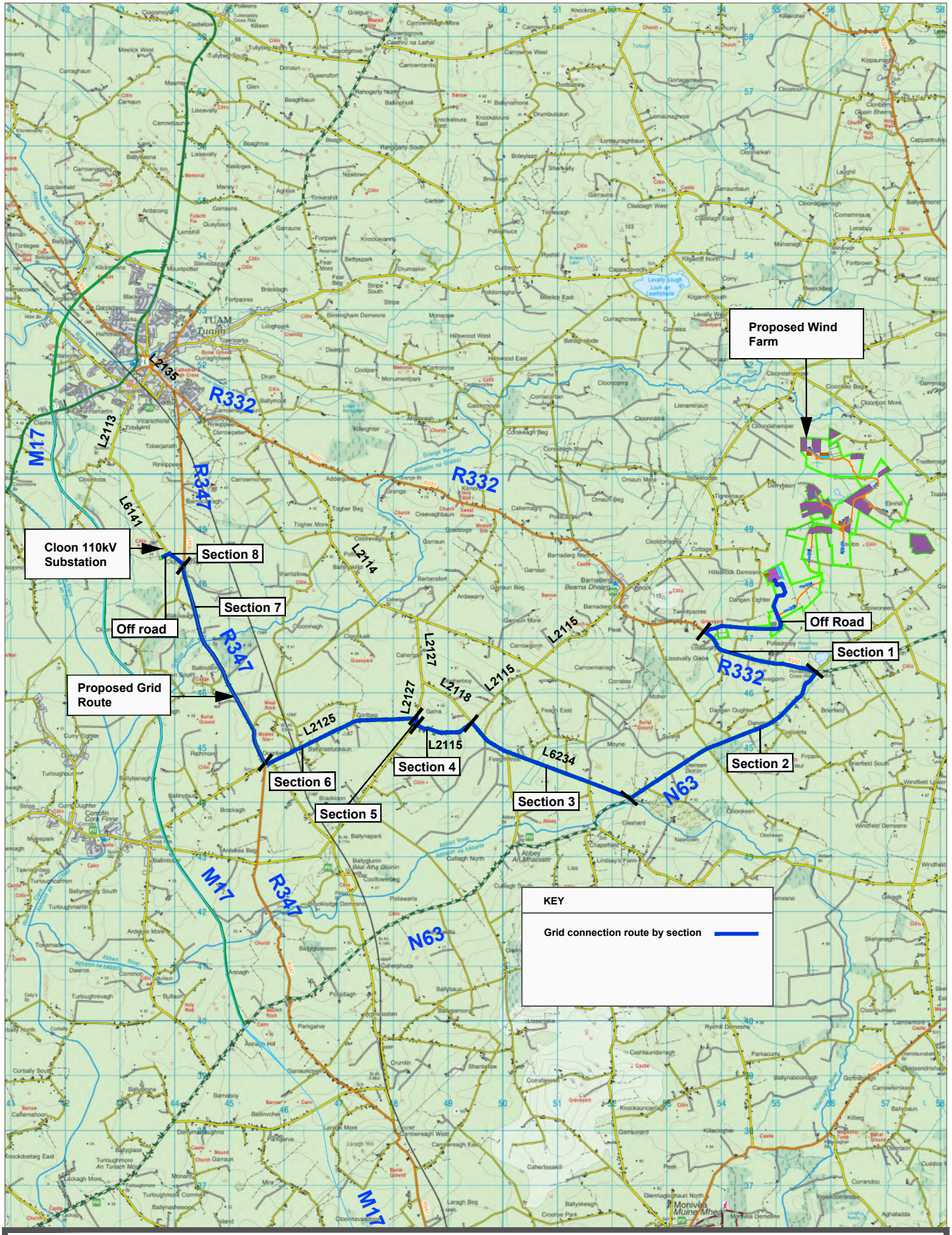

Figure 15-6a Proposed cable route

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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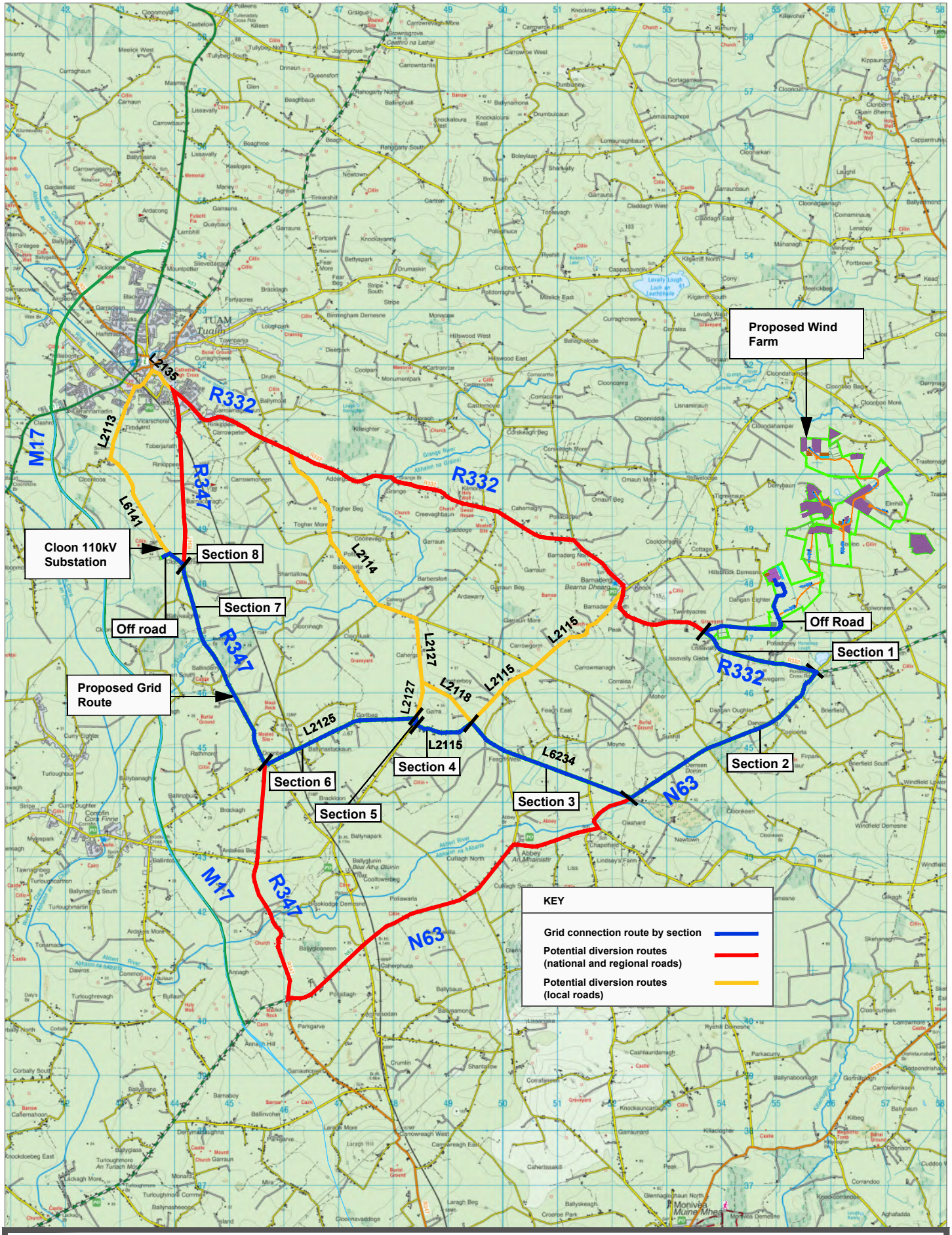

Figure 15-6b Proposed cable route and potential diversion routes

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	NTS
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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For the diversion routes shown in Figure 15-6b, the temporary additional trip length incurred by drivers during the construction of the Proposed Grid Connection will range from a minimum of 0.9km to a maximum of 13.7km. It should also be noted that the length of the diversion routes shown for the various sections of the Proposed Grid Connection are the longest that may be incurred, measured from either end of the section being constructed, and that in practice, many drivers undertaking longer trips will divert onto other parallel routes further afield to avoid the closure, incurring shorter actual diversions.

The additional traffic that will be generated on the network during the construction of the underground cable route is included in Section 15.1.4.2 of this EIAR with the traffic impacts included in the assessment presented in Section 15.1.6. It is proposed that a further trip will be made by a minibus to transport construction staff, to and from the point of construction along the underground cable route, or alternatively, staff will travel to the site by carpooling encouraged as part of a staff travel plan. By its nature the impacts of these additional trips on the network will be transient and will therefore be temporary and slight.

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

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

Table 15-26 Proposed Grid Connection underground cabling route link, traffic management measure, link length (km), construction duration (days)

Underground Cabling Route Section	Traffic management	Length (kms)	Construction duration (days)
Off road at Proposed Wind Farm site	Off-road	2.6	26
Section 1 – R332	Closure	2.3	23
Section 2 – N63	Closure	4.2	42
Section 3 – L6234	Closure	3.3	33
Section 4 – L2115	Closure	1.1	11
Section 5 – L2127	Closure	0.1	1
Section 6 – L2125	Closure	3.0	30
Section 7 – R347	Closure	3.9	39
Section 8 – L6141	Closure	0.3	3
Off road section at Cloon Substation site	Off road	0.2	2

Underground Cabling Route Section	Traffic management	Length (kms)	Construction duration (days)
Total		**21.0**	**210**

Table 15-27 Proposed Grid Connection underground cabling route link, link length (km), potential diversion route, length of diversion route (km), additional trip length (km)

Underground Cabling Route Section	Length (kms)	Potential diversion route	Length of diversion route (kms)	Additional trip length (kms)
Off road at Proposed Wind Farm site	2.6	N/A	N/A	N/A
Section 1 – R332	2.3	N63, L6234, L2115, R332	13.2	10.9
Section 2 – N63	4.2	L6234, L2115, R332	11.3	7.1
Section 3 – L6234	3.3	L2115, R332, N63	12.2	8.9
Section 4 – L2115	1.1	L2127, L2118	2	0.9
Section 5 – L2127	0.1	L2127, L2118, L2115	3	2.9
Section 6 – L2125	3.0	L2127, L2115, L6234, N63, R347	16.7	13.7
Section 7 – R347	3.9	R347, R332, L2114, L2127, L2125	14.5	10.6
Section 8 – L6141	0.3	L6141, L2113, L2135, R332, R347	7	6.7
Off road section at Cloon Substation site	0.2	NA	NA	NA
Total	**21.0**			

15.1.8 Traffic Management of Large Deliveries

Traffic management measures are set out in Section 15.1.12.5 and includes the following:

- Identification of a delivery schedule,

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

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

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

Refer also to the Traffic Management Plan, Appendix 15-2 of this EIAR.

15.1.9 Abnormal Load Route Assessment

While the proposed turbine delivery route from the port of entry is discussed in Section 15.1.2.2 the route assessment discussed in this section includes all locations on the proposed turbine delivery route from the right turn off Junction 19 of the M17 onto the double roundabout junctions with the N63, to the Proposed Wind Farm site access junction located on the R332, with the route and assessment locations shown in Figure 15-1b.

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

A detailed assessment based on a topographical survey will be required at each location in order to identify all street furniture, poles and signs that will require to be temporarily moved. It is also noted that a dry run involving a vehicle adapted to replicate the geometry of the extended transport vehicles will be undertaken over the entire turbine delivery route prior to the construction stage of the Proposed Project.

The TDR route from Galway Port harbour, through the city and onto the national road network is an established route for the delivery of large turbine components but for completeness an autotrack assessment was undertaken for locations A to F shown in Figure 15-1b, with the assessment include as Appendix 15-3.

Location 1 – M17 Junction 19 slip / N63 roundabouts

The swept path analysis for this location is shown for the blade transport vehicle in Figure 15-7, and for the tower vehicle in Figure 15-8.

At this location, in order to facilitate that large abnormally sized loads at these roundabouts, it is proposed that the vehicle will drive up the off slip of the M17, and drive through part of the centre island of the western roundabout, onto the northbound access ramp leading to the M17. From this point the vehicles will then reverse back through the roundabout onto the R354 arm of the roundabout. From here the vehicles will then proceed in a northeast direction through the centre islands of both the western and eastern M17 junction 19 roundabouts onto the N63.

In order to make these manoeuvres the figures show that significant temporary over-run area will be required through the centre islands of both roundabouts and significant oversail of the blade tip or

overhang of the body of the blade will be required to the south and west of the western roundabout, and to the west and north of the northern roundabout.

Location 2 – N63 / R347 roundabouts

The swept path analysis for this location is shown for the blade and tower transport vehicles in Figures 15-9 and 15-10.

It is proposed that the abnormally sized loads will negotiate this roundabout by driving contraflow between the N63 southern and N63 eastern arms in order to utilise the existing available tarred surface. The figures show that the abnormally sized loads will be accommodated at the existing roundabout with significant oversail of the blade tip require on the western side of the N63 southern arm.

Location 3 – N63 through Abbeyknockmoy

The swept path analysis for this location is shown for the blade and tower transport vehicles in Figures 15-11 and 15-12.

The swept path analysis undertaken for the right hand bend through Abbeyknockmoy shows that both vehicles will be accommodated at the junction. As shown in Figure 15-11, for the case of the transportation of the blades, the assessment shows that the blade tip will result in oversail on the western side of the N63.

Location 4 – N63 Liss to Abbey Realignment Scheme

The swept path analysis for this location is shown for the blade and tower transport vehicles in Figures 15-13 and 15-14.

The assessment shows that the construction of the N63 Liss to Abbey Realignment scheme will facilitate the abnormally sized loads. The provision of a temporary over-run area through the centre island of the roundabout proposed at the western part of the scheme will be required. At the eastern end of the scheme the re-aligned road forms the major route, with no autotrack assessment therefore required.

Location 5 – N63 / R332 junction

As shown in the swept path analysis undertaken for this location in Figures 15-15 and 15-16, a temporary over-run area is required in the third party land on the southwest corner of the junction in order to accommodate the abnormally sized loads. It is also noted that oversail of the blade tip will also occur on the southeastern side of the N63.

15.1.10 Proposed Project Access Junctions

The location of the site access junctions 1 to 5 are shown in Figure 15-3 and are described below.

Access junction 1 – Construction access junction on R332 – Proposed temporary access for abnormally sized loads and general construction traffic

The proposed temporary access junction on the R332 for the abnormally sized loads, which will be accompanied by a Garda escort, standard HGVs and construction staff, is shown in Figure 15-17. The access is in the townland of Lissavally, Co Galway is situated on the northern side of the R332 at a location where an 80 kph speed limit applies. The proposed junction radii are 13m with 1:10 tapers provided for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual.

NOTES:

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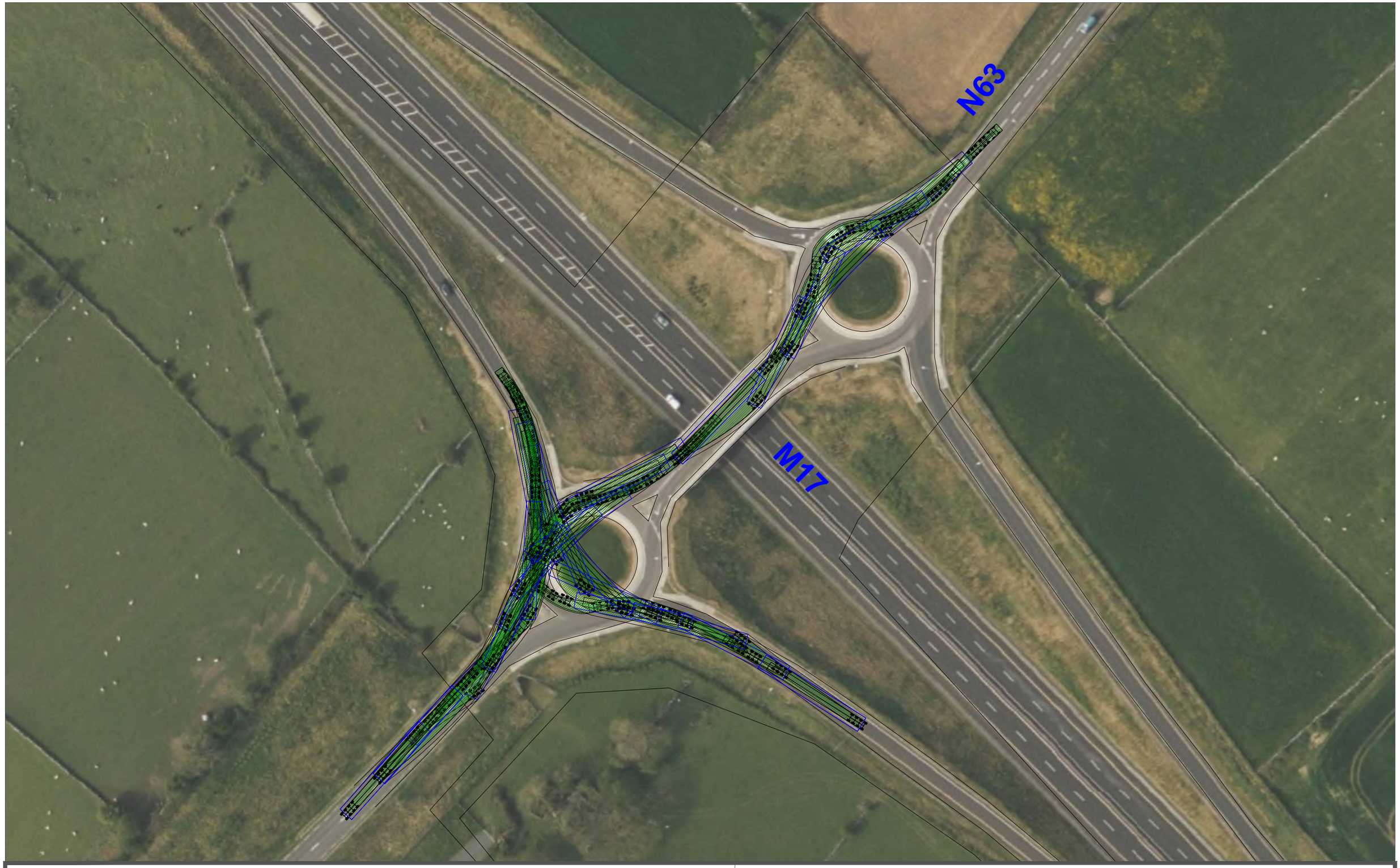
Figure 15-7 Location 1 - M17 Jct19 slip / N63 roundabouts, blade extended artic (81m blade with scissors lifter)

PROJECT: Cooloo Wind Farm, County Galway			ALAN LIPSCOMBE
CLIENT: Neoen		SCALE: 1:1000	TRAFFIC & TRANSPORT CONSULTANTS
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY: AL	



NOTES:

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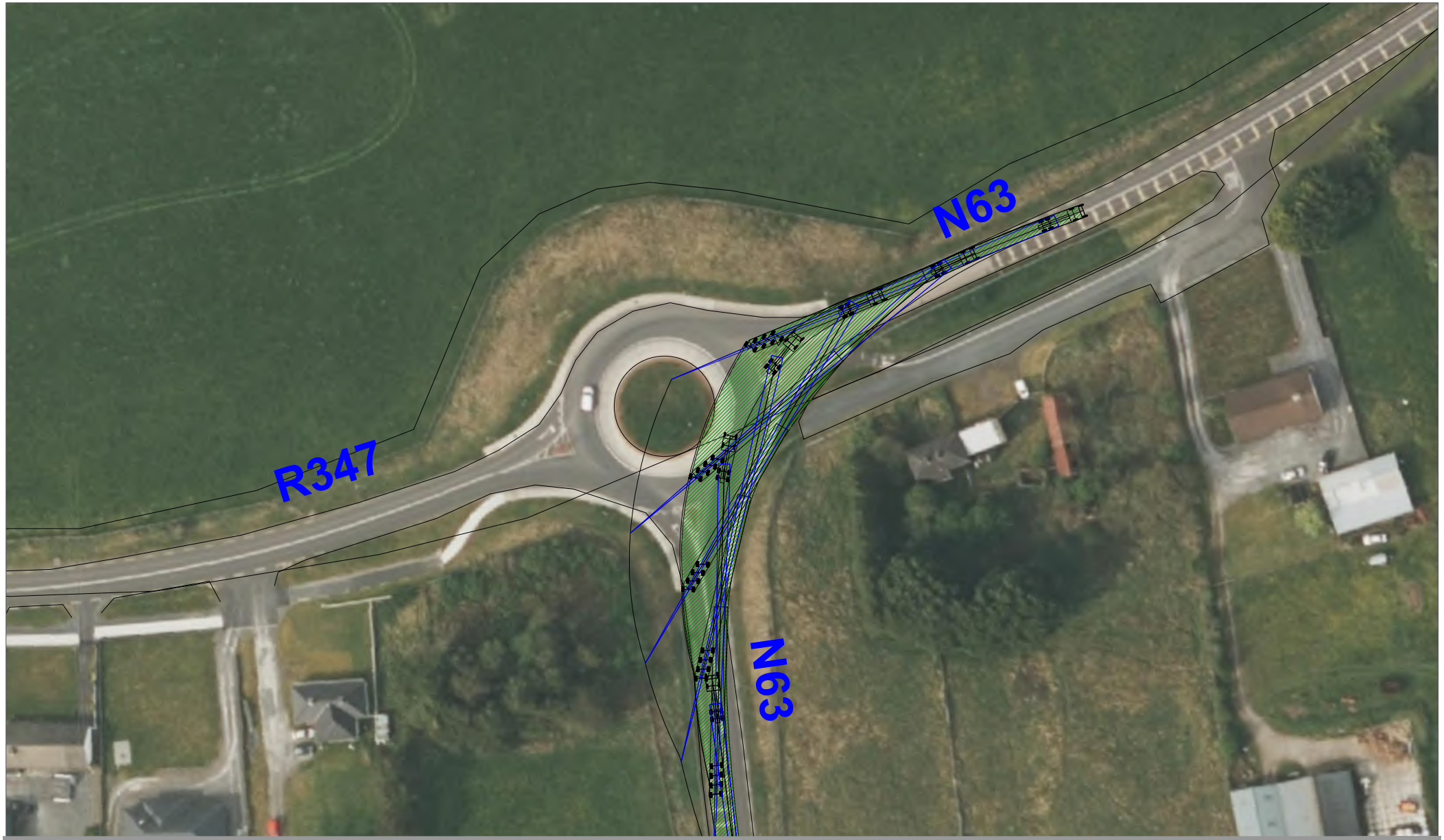
Figure 15-8 Location 1 - M17 Jct19 slip / N63 roundabouts, tower extended artic

PROJECT: Cooloo Wind Farm, County Galway			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Neoen		SCALE: 1:1000	
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY: AL	



NOTES:

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Figure 15-9 Location 2 - N63 / R347 roundabout, blade extended artic (81m blade with scissors lifter)

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY:	AL

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Figure 15-10 Location 2 - N63 / R347 roundabout, tower extended artic

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CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY:	AL

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Figure 15-11 Location 3 - N63 through Abbeyknockmoy, blade extended artic (81m blade with scissors lifter)

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CLIENT: Neoen		SCALE: 1:1000	
PROJECT NO: 9510	DATE: 18.10.23	DRAWN BY: AL	

NOTES:

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Figure 15-12 Location 3 - N63 through Abbeyknockmoy, tower extended artic

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CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.10.23	DRAWN BY:	AL

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NOTES:

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Figure 15-13 Location 4 - N63 Abbeyknockmoy Bypass (west), blade extended artic (81m blade with scissors lifter)

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY:	AL

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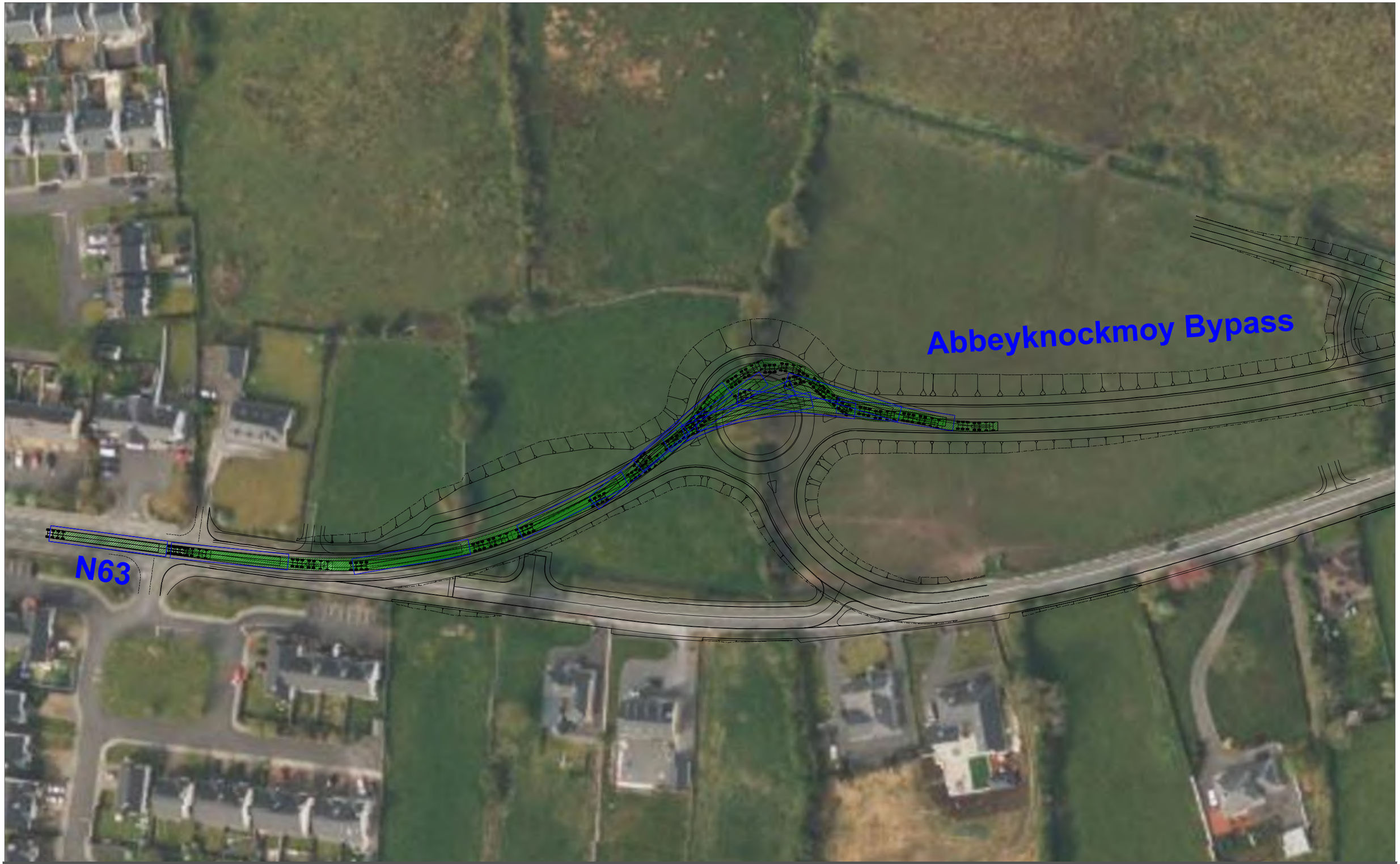

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-14 Location 4 - N63 Abbeyknockmoy Bypass (west), tower extended artic

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY:	AL

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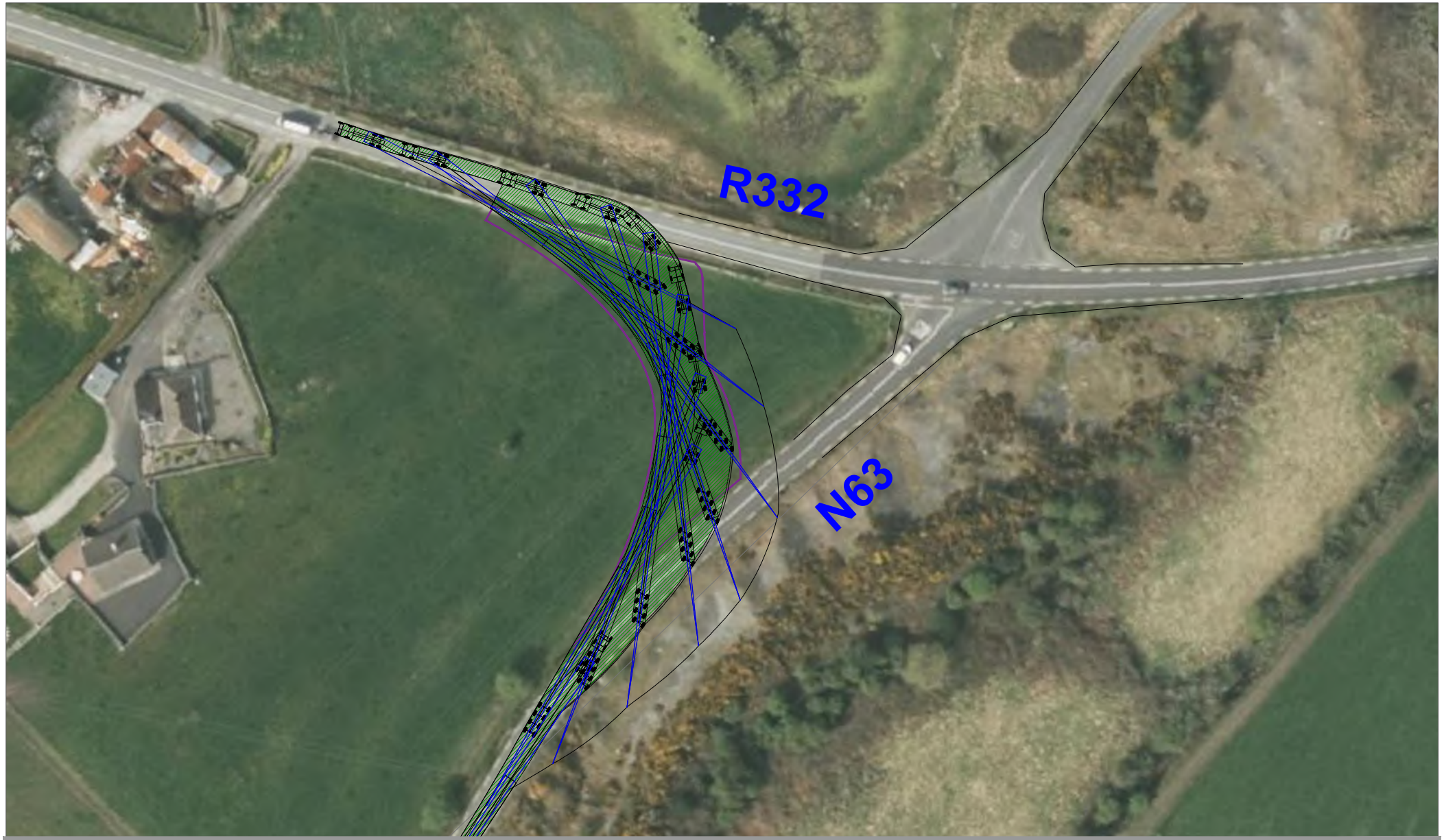
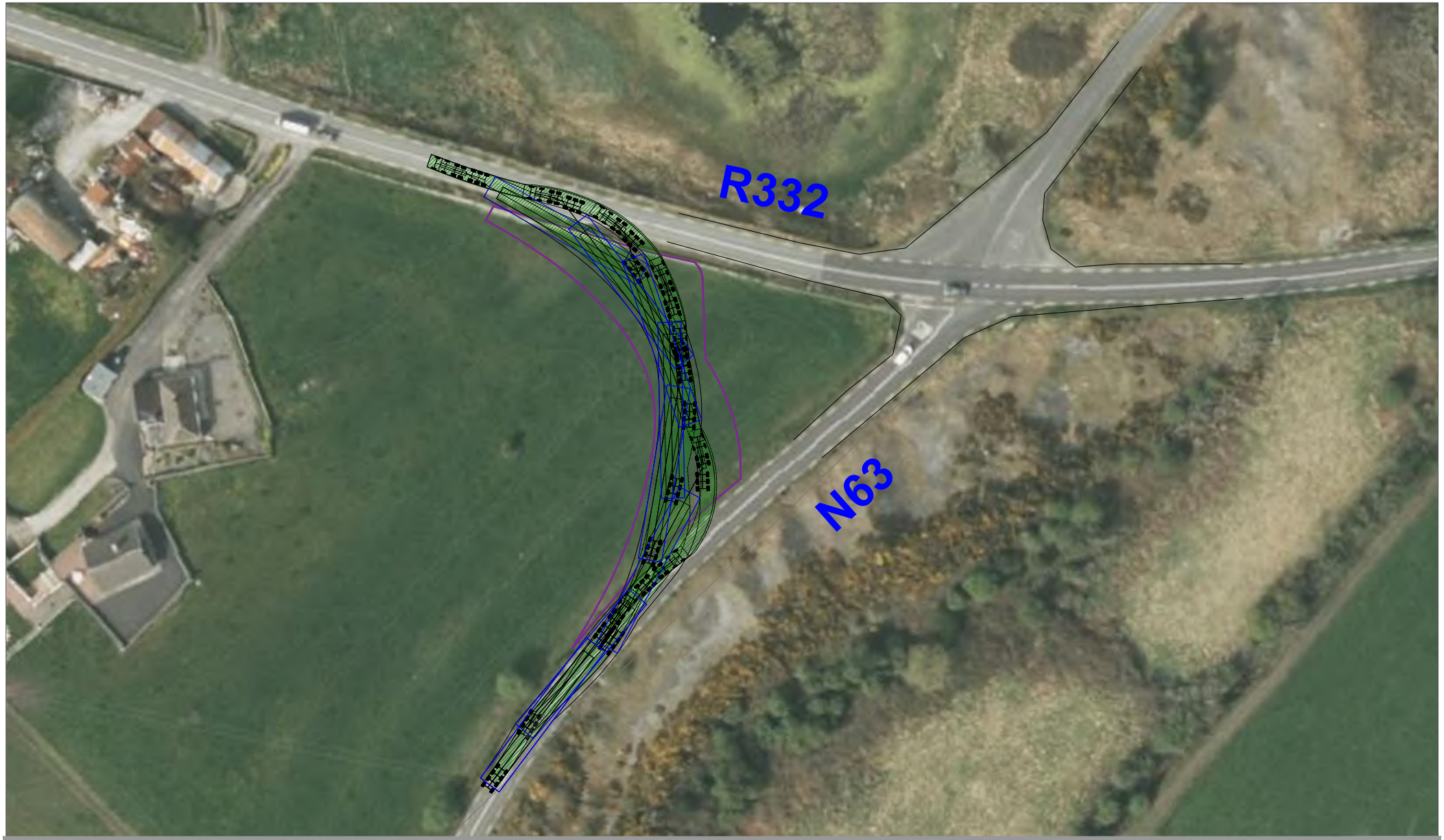


NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-15 Location 5 - N63 / R332 junction, blade extended artic (81m blade with scissors lifter)

PROJECT: Cooloo Wind Farm, County Galway			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Neoen		SCALE: 1:1000	
PROJECT NO: 9510	DATE: 18.10.23	DRAWN BY: AL	



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-16 Location 5 - N63 / R332 junction, tower extended artic

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.10.23	DRAWN BY:	AL

ALAN LIPSCOMBE
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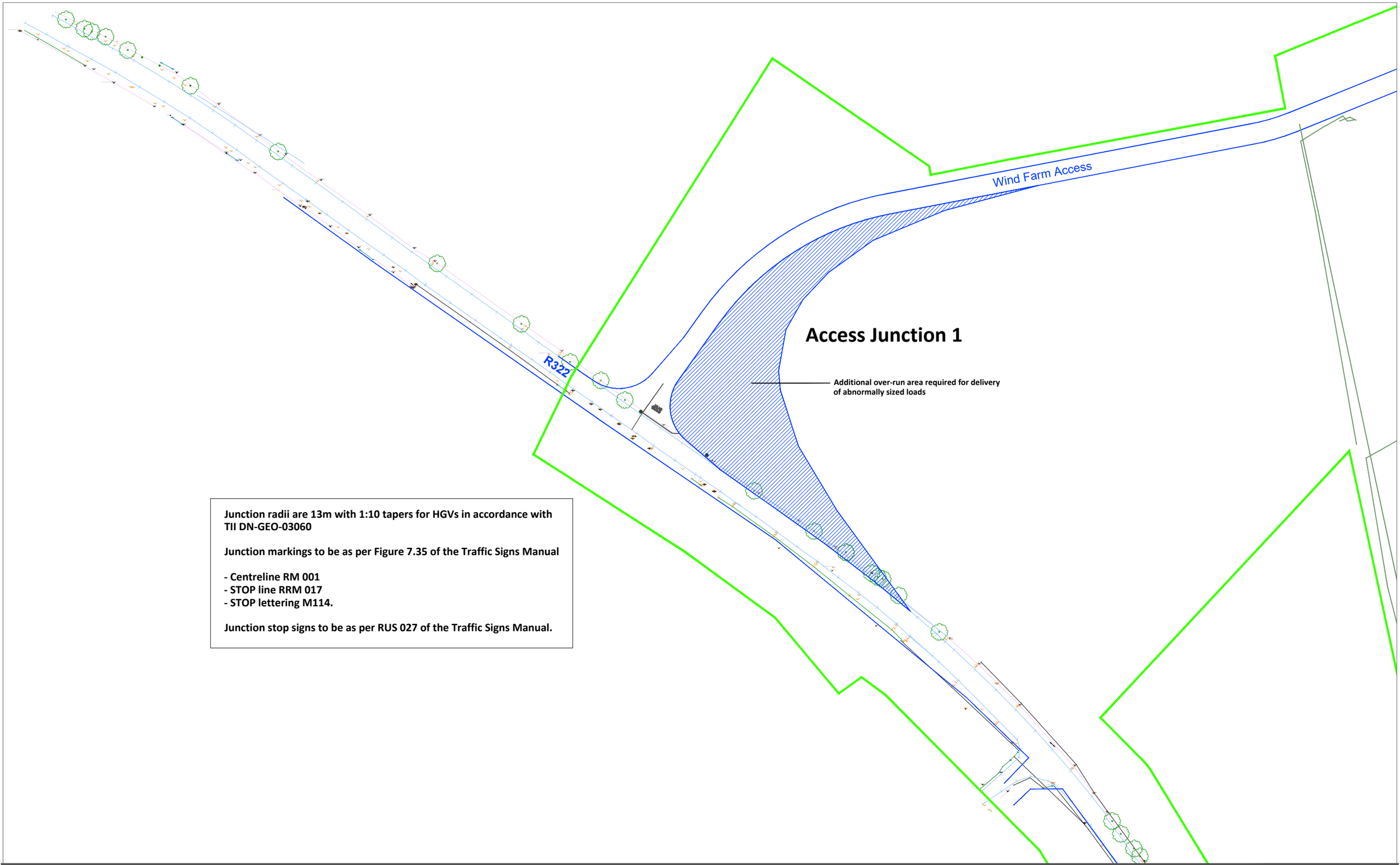


Junction radii are 13m with 1:10 tapers for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-17 Access junction 1 - Access off R332, junction layout

PROJECT: Cooloo Wind Farm, County Galway			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Neoen		SCALE: 1:1000	
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY: AL	

The proposed junction includes a run-over area at the northeastern corner in order to facilitate the delivery of the abnormally sized turbine loads. On completion of the delivery of the abnormally sized loads the temporary run-over areas will be closed off to traffic with the layout resorting to the standard junction layout described above.

The required visibility splays for an 80 kph speed limit, 160m along the nearside carriageway edge taken from a setback of 3.0m, are available along the R332 to the west and east, as shown in Figure 15-18. The figure also shows the full forward 160m forward visibility for traffic approaching from the east to observe a vehicle waiting to turn right into the Proposed Wind Farm site. It is noted that there are existing shrubs and bushes that partially constrain the forward visibility splay. In mitigation it is proposed that the following measures are implemented;

- The bush / shrubs on the south side of the R332 are trimmed in order to maximise forward visibility. It is estimated that a forward visibility of approximately 140m may be achieved by trimming the roadside bushes alone.
- An application to Galway County Council for a temporary reduction of the speed limit on this section of the R328 to 60 km/h during the 18 month construction phase of the Proposed Project,
- The introduction of Traffic signs in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). The proposed traffic management measures will be submitted to Galway County Council's Roads section for agreement prior to the construction phase.
- The provision of a flagman at all times that the proposed access junction is in use during the construction phase.
- The closure of the site access by means of temporary fencing and gates during periods when the access is not in use, including evenings during the construction phase.
- The permanent closure of the site access junction on completion of the construction phase. This junction will only be opened for the purpose of the replacement of large component parts.

The autotrack assessment shown in Figures 15-19 and 15-20 demonstrates that the temporary access proposed on the R332 will accommodate the turning requirements of the blade and tower transport vehicles. Similarly, the autotrack assessment set out in Figure 15-21 demonstrates that the junction layout proposed to accommodate the standard HGVs will accommodate a large articulated HGV.

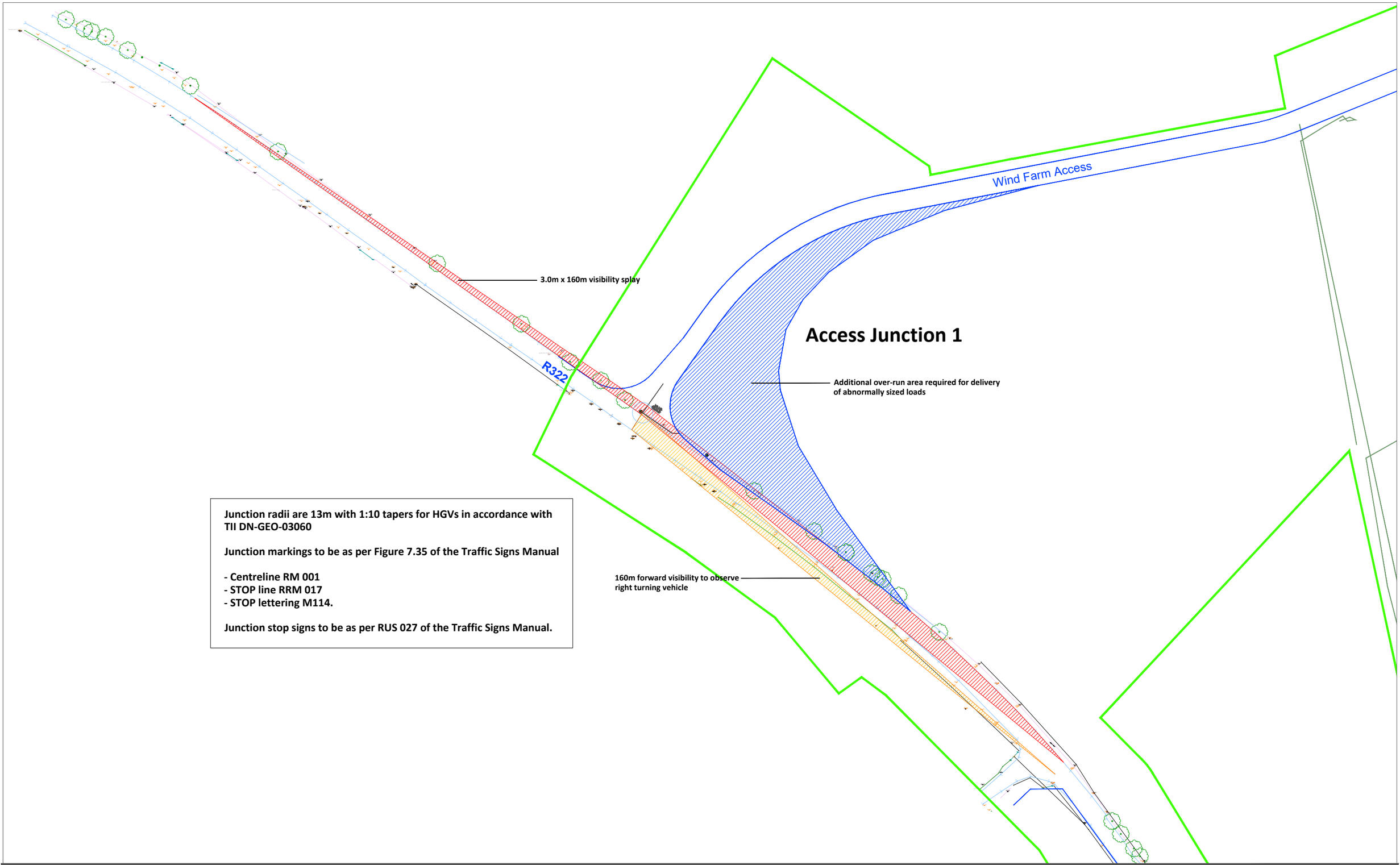
Access junction 2 – Crossing of the L6506

This crossing point of the Proposed Wind Farm access road over the L6506 local road together with the 90m visibility splays taken from a 2.4m setback from the carriageway edge, appropriate for a 60 kph speed limit, are shown in Figure 15-22.

It is proposed that construction traffic will cross the local road at this location during the construction phase of the Proposed Wind Farm, which will be low in frequency, once the Proposed Wind Farm is operational. There will be no turning movements between the local road and the access junction at this junctions and the site accesses will be gated when not in use. All abnormally sized loads will be accompanied by a Garda escort and a Flagman will be present at these junctions on busy days during the construction period.

Access junction 3 – Connection with local track for access to substation

The proposed layout for this junction that connect a local track to the access proposed or the substation is shown in Figure 15.23. Visibility splays taken from a 2.4m setback from the carriageway edge, appropriate for a 60 kph speed limit, are provided. It is proposed that this access will be gated and closed at all times apart from during the construction of the substation and during maintenance visits when the Proposed Project is operational.



Junction radii are 13m with 1:10 tapers for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-18 Access junction 1 - Access off R332, junction layout with visibility splays

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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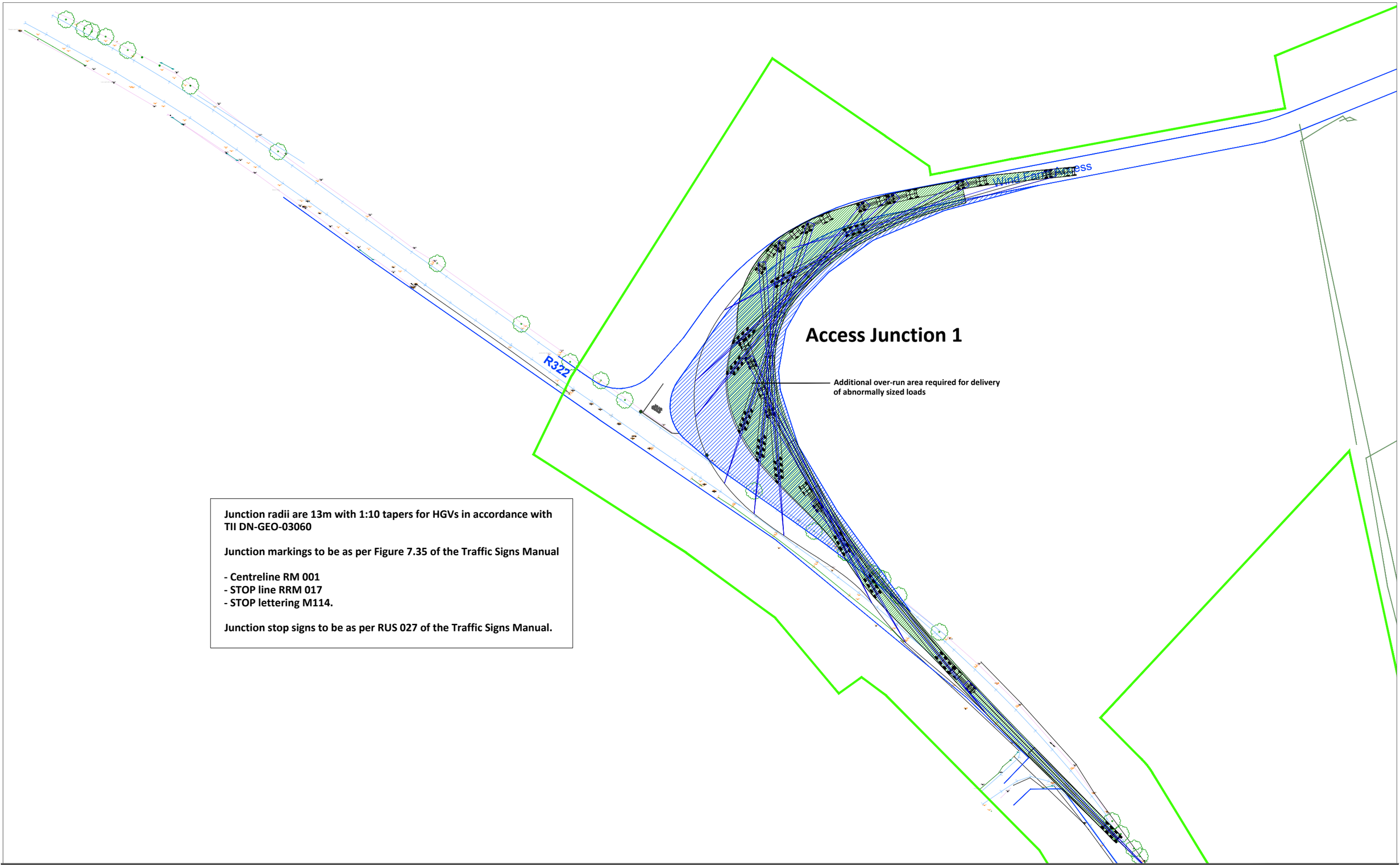


Junction radii are 13m with 1:10 tapers for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

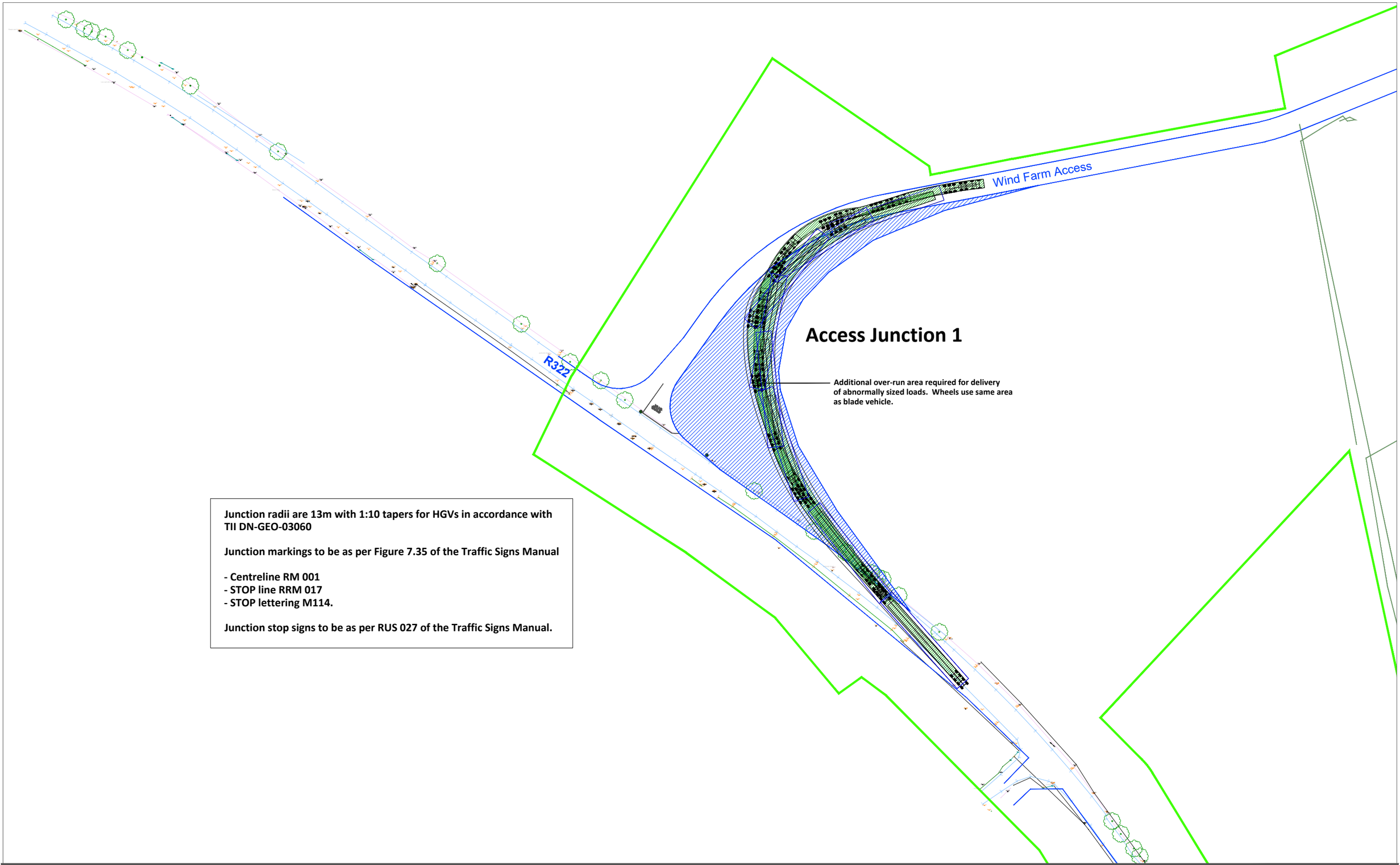
NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-19 Access junction 1 - Access off R332, blade extended artic (81m blade with scissors lifter)

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS



Junction radii are 13m with 1:10 tapers for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- **Centreline RM 001**
- **STOP line RRM 017**
- **STOP lettering M114.**

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

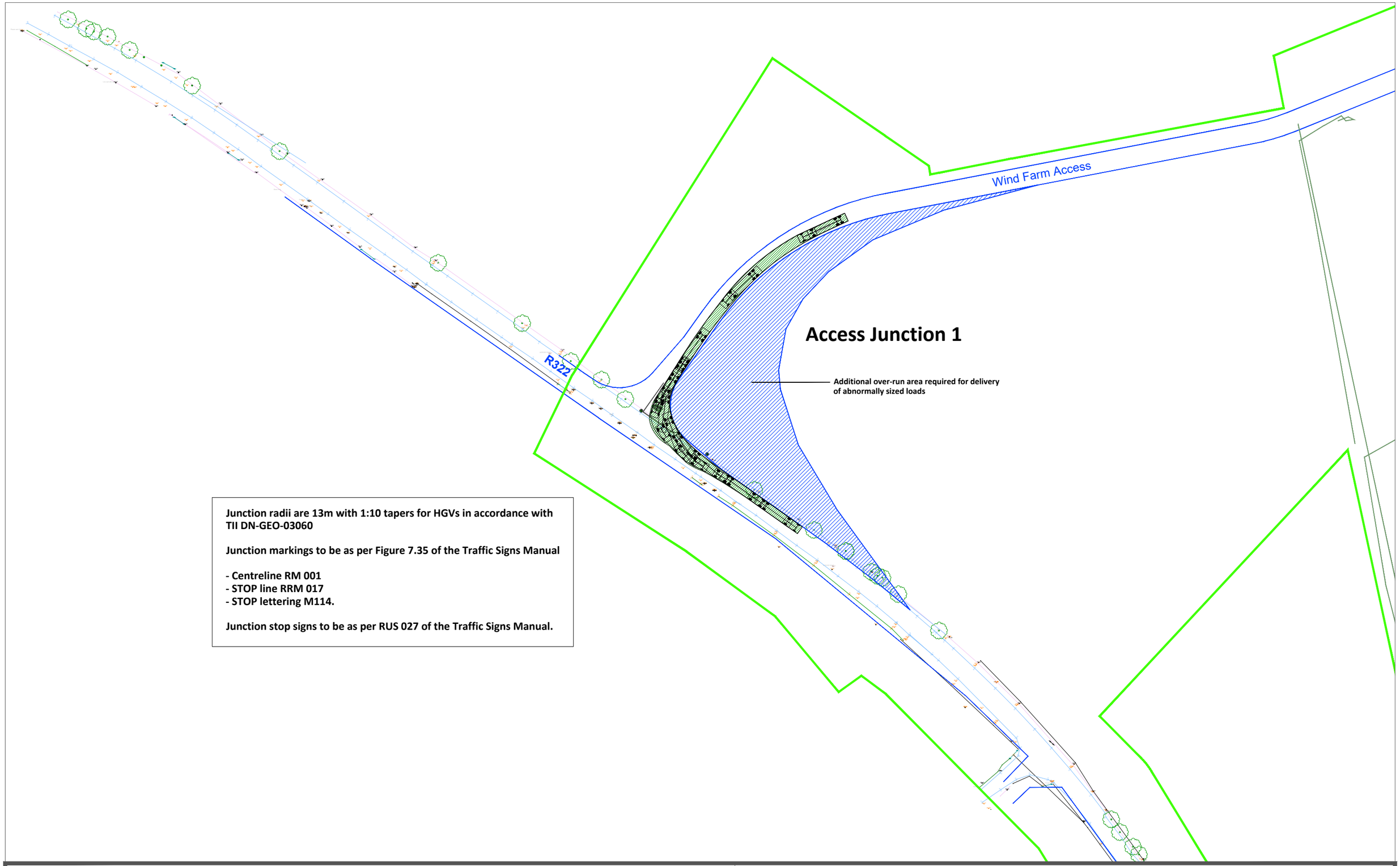
NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-20 Access junction 1 - Access off R332, tower extended artic

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 10.09.25	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS



Junction radii are 13m with 1:10 tapers for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- **Centreline RM 001**
- **STOP line RRM 017**
- **STOP lettering M114.**

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-21 Access junction 1 - Access off R332, standard large articulated HGV

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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Access Junction 2

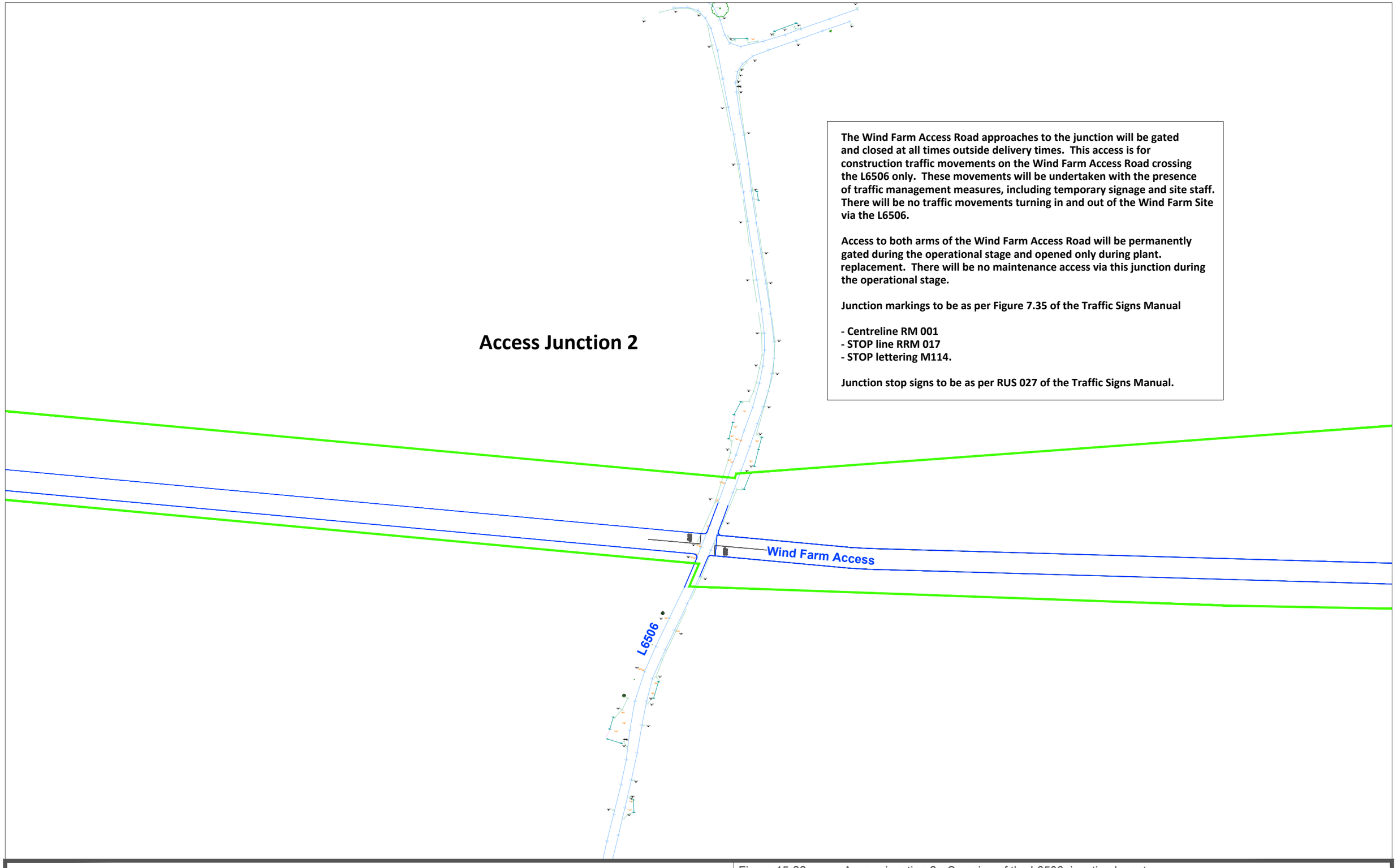
The Wind Farm Access Road approaches to the junction will be gated and closed at all times outside delivery times. This access is for construction traffic movements on the Wind Farm Access Road crossing the L6506 only. These movements will be undertaken with the presence of traffic management measures, including temporary signage and site staff. There will be no traffic movements turning in and out of the Wind Farm Site via the L6506.

Access to both arms of the Wind Farm Access Road will be permanently gated during the operational stage and opened only during plant. replacement. There will be no maintenance access via this junction during the operational stage.

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-22 Access junction 2 - Crossing of the L6506, junction layout

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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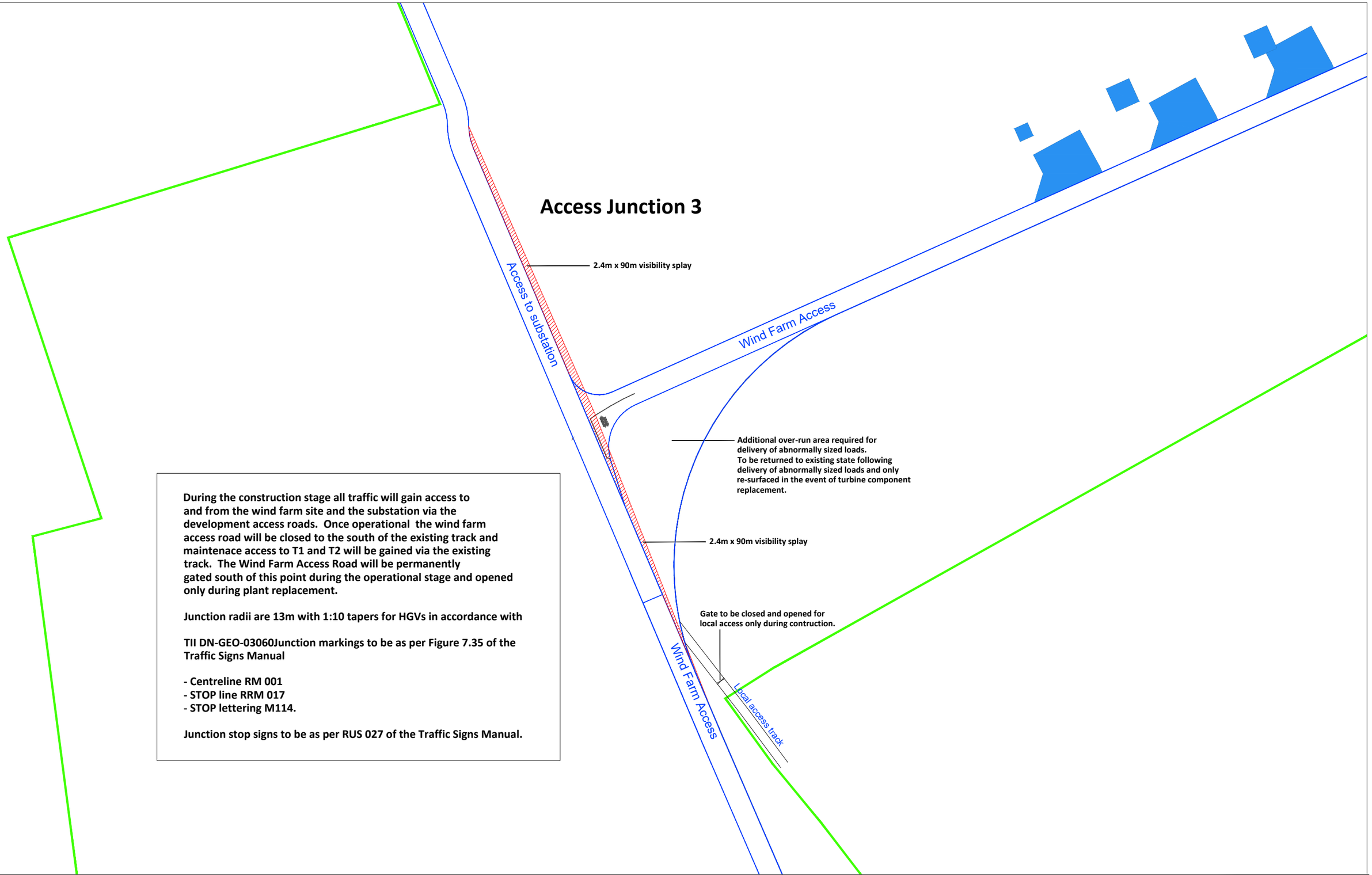
Access Junction 3



During the construction stage all traffic will gain access to and from the wind farm site and the substation via the development access roads. Once operational the wind farm access road will be closed to the south of the existing track and maintenace access to T1 and T2 will be gained via the existing track. The Wind Farm Access Road will be permanently gated south of this point during the operational stage and opened only during plant replacement.

Junction radii are 13m with 1:10 tapers for HGVs in accordance with

TII DN-GEO-03060Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-23 Access junction 3 - Connection with local track, junction layout with visibility splays

PROJECT: Cooloo Wind Farm, County Galway			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Neoen		SCALE: 1:1000	
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY: AL	

Access junctions 4 and 5 – Crossings of the L6301

Access junctions 4 and 5 are will both be used during the construction and operational phase from the L6301 local road network. The access points of the Proposed Wind Farm access road over the L6301 together with the 90m visibility splays taken from a setback of 2.4m are shown for Access junction 4 in Figure 15-24 and for Access junction 5 in Figure 15-25.

It is proposed that construction traffic will cross the local roads during the construction phase of the Proposed Project, and will also be used for maintenance trips once the Proposed Wind Farm is operational. Abnormally sized loads will be accompanied by a Garda escort and a Flagman will be present at these junctions on busy days during the construction period.

15.1.11 Provision for Sustainable Modes of Travel

15.1.11.1 Walking and Cycling

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

15.1.11.2 Public Transport

There are no existing bus routes that pass the Proposed Wind Farm site on the R332. While there are bus services that travel on the N63 to the east of the Proposed Wind Farm site, including Bus Eireann Service Nos 65 and 425, this would involve a 2.1km walk on a section of the R332 which has no pedestrian facilities. Public transport is not therefore considered a viable mode of transport for construction staff. Car-pooling will be encouraged for the transportation of staff to and from the Proposed Wind Farm site in order to minimise traffic generation and parking demand on the site.

Similar conditions apply to the Proposed Grid Connection underground electrical cabling route. Construction staff for this element of the Proposed Project will travel to the Proposed Wind Farm site by car and will then be transported to the point of construction by car or minibus.

15.1.12 Likely and Significant Effects and Associated Mitigation Measures

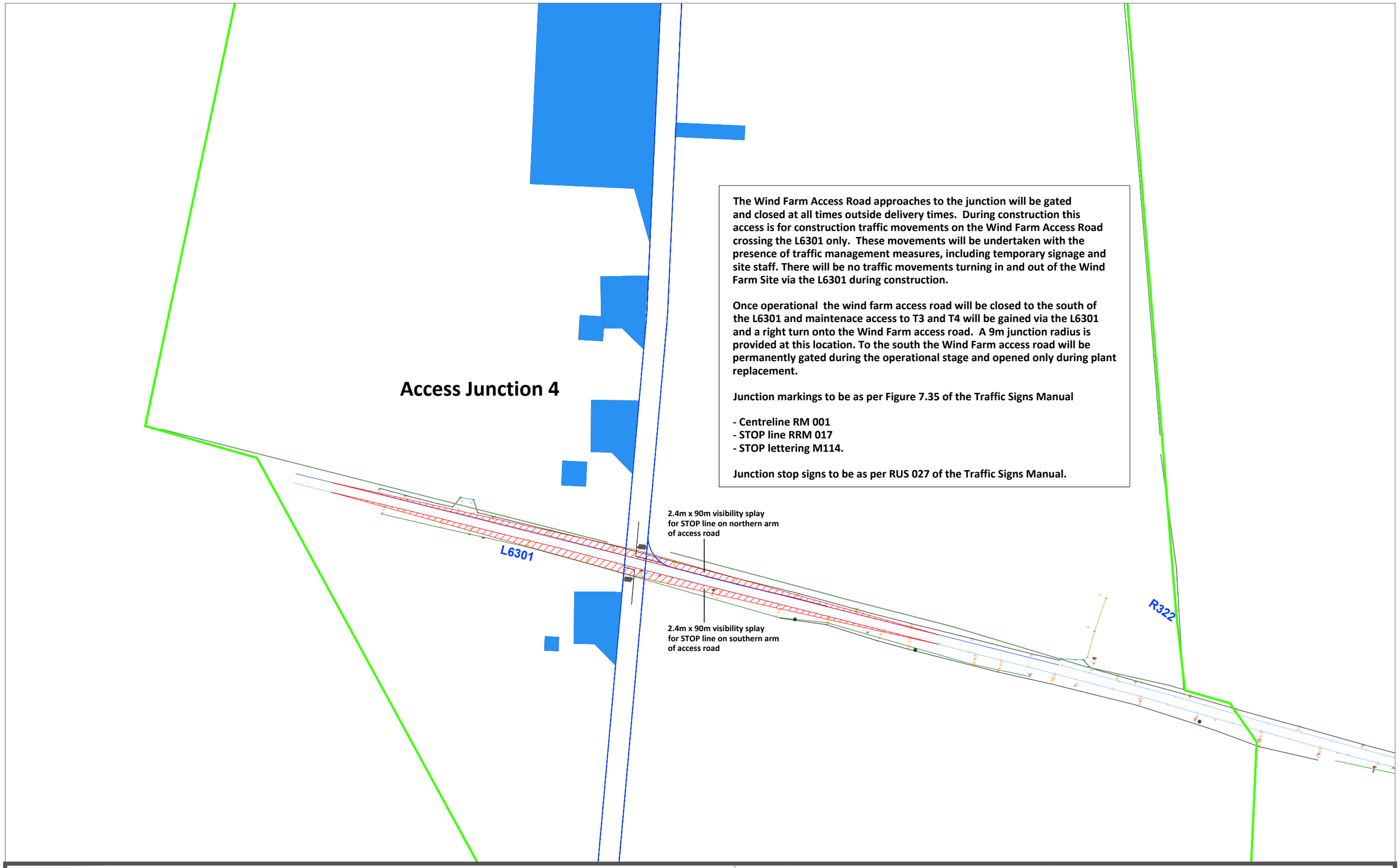
15.1.12.1 'Do-Nothing' Scenario

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

15.1.12.2 Construction Phase

During the 9 days when the concrete foundations are poured, the effect on the surrounding road network will be that an additional 584 PCUs will travel to/from the Proposed Wind Farm site. On the delivery route it is forecast that the increase in traffic volumes on these days will range from between +6.5% and +11.8% on the N63 (Links 1 to 3). On the R322 leading to the Proposed Wind Farm site (Link 4) where background traffic flows are lower, it is forecast that traffic flows will increase by 30.4%. On these busiest 9 days it is estimated that this will have a temporary, negative and slight effect on the N63 and R332. No Significant effects are forecast.

During the remaining 314 days when the construction of the Proposed Wind Farm continues, including the site preparation and groundworks and construction of the , an additional 329 PCUS will travel to and from the Site. It is forecast that the increase in traffic volumes on these days will be between +3.6%



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-24 Access junction 4 - Crossing of the L6301, junction layout with visibility splays

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 18.09.25	DRAWN BY:	AL

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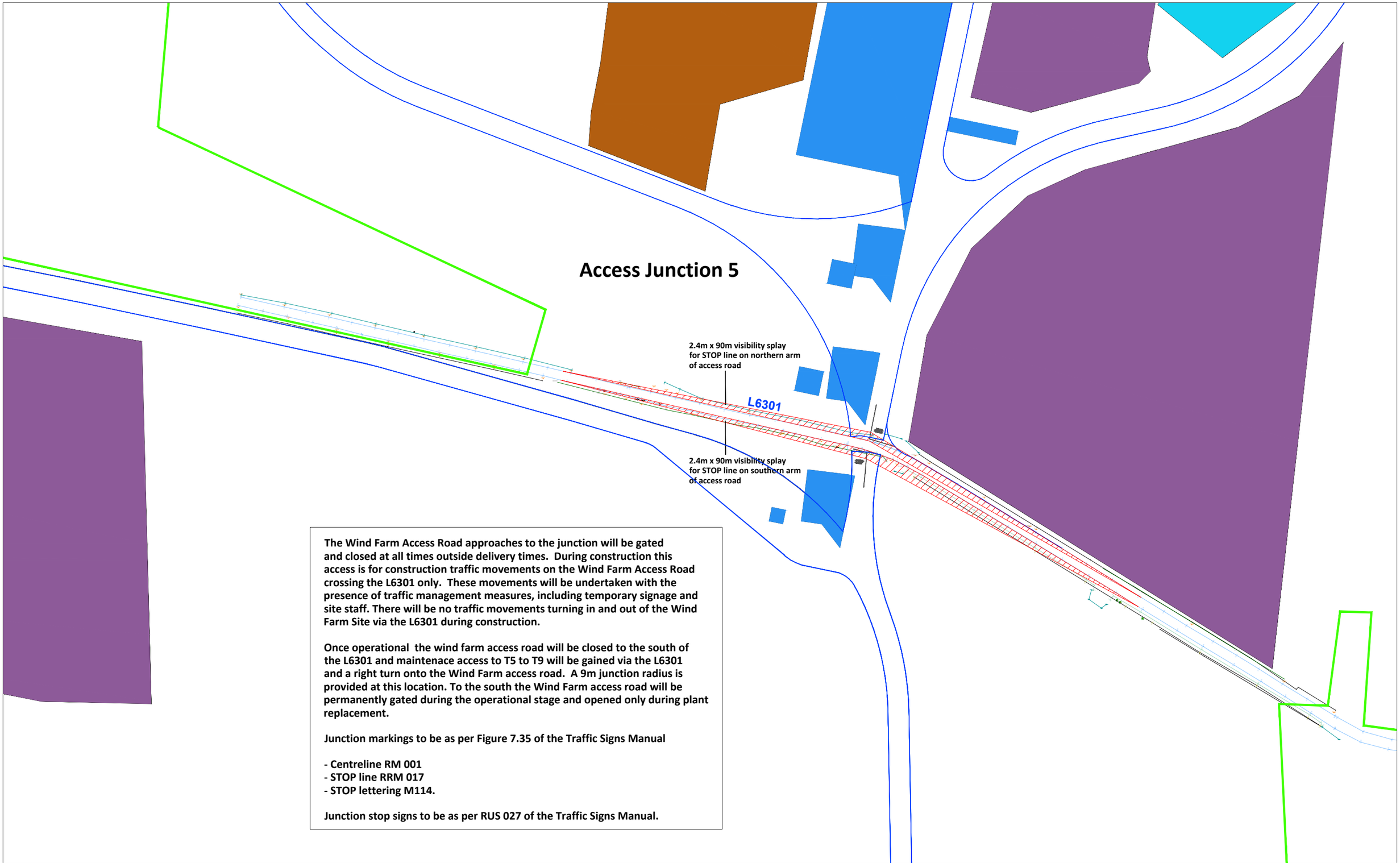

The Wind Farm Access Road approaches to the junction will be gated and closed at all times outside delivery times. During construction this access is for construction traffic movements on the Wind Farm Access Road crossing the L6301 only. These movements will be undertaken with the presence of traffic management measures, including temporary signage and site staff. There will be no traffic movements turning in and out of the Wind Farm Site via the L6301 during construction.

Once operational the wind farm access road will be closed to the south of the L6301 and maintenace access to T5 to T9 will be gained via the L6301 and a right turn onto the Wind Farm access road. A 9m junction radius is provided at this location. To the south the Wind Farm access road will be permanently gated during the operational stage and opened only during plant replacement.

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-25 Access junction 5 - Crossing of the L6301, junction layout with visibility splays

PROJECT:	Cooloo Wind Farm, County Galway		
CLIENT:	Neoen	SCALE:	1:1000
PROJECT NO: 9510	DATE: 24.09.25	DRAWN BY:	AL

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and 6.7% on the N63 (Links 1 to 3). On the R322 leading to the Proposed Wind Farm site (Link 4) it is forecast that traffic flows will increase by 17%. On these 341 days it is estimated that this will have a temporary, negative and slight effect on the N63 and R332 leading to the Proposed Wind Farm site. No Significant effects are forecast.

With respect to the traffic volumes that will be generated during the construction of the underground electrical cabling route, it is estimated that there will be approximately 30 daily return trips made by trucks removing spoil and transporting materials to the site, and 4 return trips made by a car to transport construction staff, to and from the Site. By its nature the effect impacts of these additional trips on the network will be transient and will therefore be temporary and slight.

During the 24 days / nights that the abnormal loads carrying the large turbine components travel to the Proposed Wind Farm site, an additional 105 PCUs will travel to/from the Proposed Project. It is forecast that the increase in traffic volumes on these days will be between +1.2% and 2.1% on the N63 (Links 1 to 3), while on the R322 leading to the Proposed Wind Farm site (Link 4) it is forecast that traffic flows will increase by 5.5% on these 24 days / nights. It is forecast that there will be a temporary, slight negative effect on the TDR as the delivery of the abnormally sized loads is undertaken at night. No Significant effects are forecast.

For 9 days an additional 64 PCUs will travel to/from the Proposed Wind Farm site delivering smaller component parts using standard HGVs, it is forecast that the increase in traffic volumes on these days will range 0.7% and +1.3% on the N63 (Links 1 to 3). On the R322 leading to the site (Link 4) it is forecast that traffic flows will increase by 3.3%. On these 9 days it is considered that the additional traffic will have a temporary imperceptible negative effect on the N63, and a temporary slight negative effect on the R339 leading to the site. No Significant effects are forecast.

15.1.12.3 Operational Phase

The impacts on the surrounding local highway network will be negligible given that there will only be an average of 3 trips made to and from the Proposed Wind Farm site by car or light goods vehicle per day, with none required for the Proposed Grid Connection underground electrical cabling route. The effects of the maintenance traffic on the surrounding highway network will therefore be imperceptible.

15.1.12.4 Decommissioning Phase

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

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

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

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

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

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

15.1.12.5 Mitigation Measures

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

Mitigation by Design

Mitigation by design measures include the following;

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

Mitigation Measures During the Construction Stage

The successful completion of the Proposed Project will require significant coordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage in order minimize the effects of the additional traffic generated by the Proposed Project. A detailed **Traffic Management Plan (TMP)**, incorporating all the mitigation measures included as Appendix 15-2 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior to construction works commencing on Site. In addition, the traffic management measures proposed for the following construction traffic scenarios are set out for the grid connection in Appendix 15-2: Traffic Management Plan for Cooloo Wind Farm Development;

- Delivery of Abnormally sized loads,
- Management of Standard HGVs on R332 leading to site,
- Traffic management measures during construction of cable grid connection

The detailed TMP will include the following:

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

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

Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, or traffic diversions during the construction of the grid connection, via letter drops and posters in public places. Information will include the contact details of

the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to record the condition of the roads. A post construction survey will be carried out after works are completed. Where required the extent and timing of these surveys will be agreed with the local authority. This will include the implementation of temporary alterations to road network at critical junctions, as highlighted in Section 15.1.9.

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

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

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

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

Standard permitted axial loads – Will not be exceeded.

Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the access junction on the R332 during the 18 month construction period. All measures will be in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). A member of construction staff (flagman) will be present at the access junction on the R332 during the 9 days on which the concrete turbine foundations are poured and at the site access crossing locations on the L6506 and L6301 during all delivery days during the construction phase.

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

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

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

It is confirmed that details for the Traffic Management Plan for the Proposed Project will be agreed with the Road Section of Galway County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase.

Mitigation Measures During Operational Stage

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

Mitigation Measures During Decommissioning Stage

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

15.1.12.6 Residual Effects

Construction Stage

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

Operational Stage

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

Decommissioning Stage

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

15.1.12.7 Cumulative Effects

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

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

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

- Project status (proposed to operational)

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

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

- Other wind farms,
- Other applications in the Environmental Impact Assessment (EIA) process.
- Strategic Infrastructure Development (SID) applications made to An Coimisiún Pleanála.

Other wind farms

The other permitted and proposed wind farm developments within a 25 km buffer zone around the Proposed Project that were considered to have potential traffic related cumulative impacts are set out below in Table 15-28. It is noted that developments consisting of one single turbine are not included.

It is noted that the port of entry for all 4 wind farms will likely be Galway, so theoretically there is the potential that there could be cumulative impacts at the port and on the TDR in close proximity to the port should the delivery of the turbines for one or more of these developments be done simultaneously. It is however the case that even if the port has the handling and storge capacity to provide for more than one of these developments at a time, it is assumed that the Garda would limit the delivery from the port to one convoy of 3 vehicles per night, so the cumulative impacts would not occur at this location.

Of the 4 wind farm developments listed, based on the criteria set out above (project status, overlap of delivery routes and traffic volumes) it is estimated that there is one (Cloonlusk Wind Farm) for which there is a high potential for cumulative impacts with the Proposed Project, due to the high level of overlap of the TDR and general construction routes. It is therefore proposed that the construction phase of the Proposed Project will be scheduled, where possible, to avoid the construction phases of these 2 no. Wind Farms. This will ensure that the potential for cumulative effects is minimised. In the event that the construction phase of the Proposed Project overlaps with that of the Cloonlusk Wind Farm it is estimated that the cumulative impacts will be negative, short term and will be slight.

Table 15-28 Summary of other wind farms considered in cumulative assessment and potential for cumulative traffic effects with Proposed Development

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 - Cloonlusk Wind Farm (2 turbines) – GCC Planning references 08/2407 and 08/2408	Permitted	High	Low	High
2 -Clonberne Wind Farm (11 turbines) – ACP	Being considered by ACP	Low	Medium	Low

Reference PC07.307058				
3 – Laurclavagh Wind Farm (8 turbines) – ACP Reference PA07.319307	Being considered by ACP	Low	Medium	Low
4 - Gannow Wind Farm (8 turbines)	Pre-application stage	High	Medium	Low

Other development applications in the Planning Process (with the local authorities and with ACP)

There are a total of 18 other developments currently within the 10 km buffer zone progressing through the planning process (8 permitted with Galway / Mayo County Councils and 10 being considered by ACP) with the potential for cumulative impacts with the Proposed Project, as set out in Tables 15-29 and 15-30.

Of these there are 3 developments where it is considered that the potential for cumulative impacts is High. Two of these involve overhead line works originating at the existing Cloon Substation which may be mitigated against by ensuring that the works proposed in the proximity of the existing substation for these developments is not undertaken simultaneously to that proposed for the Proposed Project. In the event that either of these developments is constructed at the same time as the Proposed Project it is forecast that the cumulative impacts will be negative, short term and slight in terms of severity.

The third development where it is considered that the potential for cumulative impacts is High is the proposed quarry located in Ballyglunin, due to its proximity to the TDR and general construction delivery route for the Proposed Project. Again, it is forecast that the cumulative impacts will be negative, short term and slight in terms of severity.

Table 15-29 Summary of other developments with Local Planning Authorities considered in cumulative assessment and potential for cumulative traffic effects with Proposed Development

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 - County Galway - Planning permission for upgrade the existing 220k overhead line (49km) between the existing Cashla 220kV Substation in	Permitted	Low	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
the townland of Barrettspark, Co. Galway & Tower 138 in the townland of Oughtagh, Co. Galway. County Galway Planning Ref 23/355.				
2 - 10-year permission for Solar Farm at Cloonascragh, Tuam. County Galway Planning Reference 19/1315.	Permitted	Medium	Low	Low
3 – County Galway – Application for an amendment planning application to 2 above. County Galway Planning Reference 24/61190, ACP reference - 306685-20).	Permitted	Medium	Low	Low
4 – County Galway - For a 10 year planning permission for the construction of a solar PV farm and ancillary infrastructure at Cloontoa, Rinkippeen, Cloonascragh,	Permitted	Medium	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
Barnacurragh and Ballykeaghra, Tuam, Co Galway. County Galway Planning Reference 20/1387.				
5 - County Galway - For quarrying operations including the extraction of sand and gravel. County Galway Planning Reference 22/60819.	Permitted	Medium	Low	Low
6 – Counties Galway and Mayo – Application to refurbish the existing Castlebar-Cloon 110kV overhead line (57km). between the existing Castlebar 110kV substation in County Mayo, and the existing Cloon 110kV substation in County Galway. County Galway Planning Reference 22/1030.	Permitted	Low	High	High
7 County Galway - For a ten-year	Permitted	Medium	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
planning permission for an electrical transformer compound. County Galway Planning Reference 25/60096.				
8 As for 6 above. County Mayo Works to refurbish the existing castlebar-cloon 110kv overhead line which is approximately 57km long. County Mayo Planning Reference 22/780.	Permitted	Low	High	High

Table 15-30 Summary of other developments with ACP considered in cumulative assessment and potential for cumulative traffic effects with Proposed Development

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 - County Galway - 28 no. dwelling houses, vehicular access from R332 and all associated site development works. Halfstraddle, Ballygaddy Road, Tuam, Co. Galway. ACP Ref 30560.	Permitted	Low	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
2 - County Roscommon - Permission for the development at this site, the existing Cloon to Lanesboro 110 kV Overhead Line which is approximately 65 kilometres long. Ballyleague, Co. Roscommon. ACP Ref 302597.	Permitted	High	Low	High
3 - County Galway - Conversion and change of use of first floor to 17 apartments and development from basement to roof level of the premises. Townparks, Tuam, County Galway ACP Ref 304472.	Permitted	Low	Low	Low
4 - County Galway - For proposed quarry. McTigue Quarries, Cartron Quarry, Co. Galway. ACP Ref 306155.	Permitted	Low	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
5 - County Galway - Construction and operation of solar PV Farm, Cloonascragh, Tuam, Co Galway. ACP Ref 306685.	Permitted	Low	Low	Low
6 - County Galway - Construction of a Concrete Batching Plant on and adjacent to a Quarry site previously approved under Planning Reference 06/2275 and An Bord Pleanala Reference PL.07.222783. Cartron, Belclare, Tuam, Co. Galway. ACP Ref 307791.	Permitted	Low	Low	Low
7 - County Galway - N63 Liss to Abbey Realignment Scheme. In the townlands of Culliagh South, Culliagh North, Liss, Chapelfield, Abbey, Clashard, Moyne and Newtown, County Galway.	Permitted	High	High	NA – it is noted that it is assumed in the assessment that this road improvement scheme will be in place for the construction phase of the Proposed Project.

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
ACP Ref 312875.				
8 - County Galway - Quarrying operations including the extraction of minerals. Cloonascragh, Tuam, Co. Galway. ACP Ref 317330.	Permitted	Low	Low	Low
9 - County Galway - Permission for development consisting of the importation of inert soil & stone material for the site restoration of a former gravel pit for a period of ten years & all associated ancillary works. Brackloon, Ballyglunin, Tuam, Co. Galway. ACP Ref 318460.	Permitted	High	Low	High
10 - County Galway – Development of quarry and associated site development and operational works. Lomaunaghbau	Permitted	Medium	Low	Low

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
n, Tuam, Co. Galway County. ACP Ref 321022.				

15.2 Telecommunications and Aviation

15.2.1 Introduction

This section of the EIAR assesses the likely significant effects of the Proposed Project on other material assets such as telecommunications and aviation assets. This section should be read in conjunction with Appendix 15-4 Telecommunications Impact Assessment Report.

The full description of the Proposed Project, including proposed turbine locations and elevations, is provided in Chapter 4 of this EIAR.

Section 15.2.3 describes the way in which wind turbines can potentially interfere with telecommunications signals or aviation activities. Section 15.2.4 presents details on scoping and consultation carried out to date with relevant consultees and how identified effects will be avoided, Section 15.2.5 provides details on a Telecommunications Impact Assessment undertaken by Ai Bridges, and the likely significant effects are assessed (and mitigation measures proposed) in Section 15.2.6.

15.2.1.1 Statement of Authority

This section of the EIAR, has been prepared by Evan Connolly and Brandon Taylor and reviewed by Eoin McCarthy, all of MKO. Evan is an Environmental Scientist with over one year of private consultancy experience . Evan holds a B.Sc. in Earth and Ocean Science from the University of Galway and an interinstitutional M.Sc. in Sustainable Resource Management: Policy & Practice from University of Galway and University of Limerick. Evan's strengths and areas of expertise are in environmental sustainability, geology, hydrology and oceanography. Since joining MKO Evan has been involved as a Project Planning Consultant on a range of wind energy infrastructure projects. Within these projects Evan has been responsible for the drafting and reviewing of EIAR chapters, geological mapping as well as assisting with proposed project fee proposals and scoping on behalf of clients. Brandon is an Environmental Scientist with over two years of private consultancy experience. Brandon holds a BSc (Hons) in Geography from McGill University, and a MSc (Hons) in Coastal & Marine Environments from the University of Galway. Brandon's key skills include scientific research and report writing, particularly in the context of local communities and their interactions with environmental stressors, and geospatial analysis and the application of GIS and remote sensing tools across the fields of renewable energy development, coastal zone management, and education and scientific communication. Since joining MKO, Brandon has been involved in the design and environmental impact assessment (EIA) of multiple large-scale onshore wind energy developments across Ireland, contributing to and managing the production of EIA reports. Eoin is a Project Director with McCarthy O'Sullivan Ltd. with over 14 years of environmental consultancy experience. Eoin holds B.Sc. (Hons) in Environmental Science from NUI, Galway. Eoin's key strengths and areas of expertise are in project management, environmental impact assessment, wind energy site selection and feasibility assessment. Since joining MKO in 2011, Eoin has been involved as a Graduate, Assistant and Project Environmental Scientist on a significant range of energy infrastructure, tourism, waste permit, flood relief scheme and quarrying projects. He has overseen some of the largest SID wind energy in Ireland in in that time. In his role as project manager, Eoin works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs. Eoin is also involved in the development of project strategy for the projects that he manages. He has held the role of project manager on over 550MW worth of wind energy projects. Within MKO Eoin plays a large role in the management of and sharing of knowledge with junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports.

The Telecommunications Impact Assessment was managed by Kevin Hayes of Ai Bridges. Kevin is a senior radio planner / engineer with Ai Bridges and holds a M.Eng., B.Eng. in Communications & & Electronic Engineering with over 30 years of experience in telecommunications network design, telecommunications software modelling services radio and rollout of turnkey solutions for telecommunication software design projects. Kevin Hayes takes overall responsibility for the approval of all Telecommunications, Aviation and Television Impact Statements provided by Ai Bridges.

Ai Bridges is a leading supplier of telecommunications software prediction modelling solutions and services for the renewable industry sector and also provide comprehensive turnkey solutions and have extensive experience and knowledge of network design, implementation and deployment of telecommunications software solutions. Ai Bridges have been involved in the wind energy sector since 2007 and have a team of qualified and trained personnel with 200+ years' experience. More recently Ai Bridges have undertaken software modelling of Aviation Impact Assessments and well as EMC\EFF assessments for Solar Park pre-planning projects. They have undertaken Telecommunications & Aviation consultant roles in Environmental Impact Assessment Reports (EIAR) on behalf of wind farm clients and delivered Mitigation Measure strategy solutions to remediate wind farm impacts on telecommunications, aviation and television &radio networks. Ai Bridges has uses proprietary 3D software prediction models, based on industry standards, that can predict the impact of a wind farm development on telecommunications and television transmission networks at the pre-construct development stage.

15.2.2 Methodology and Guidance

The methodology for the assessment included in this section focuses particularly on the scoping and consultation exercise conducted with telecoms operators and aviation authorities. Telecommunications operators and aviation authorities were contacted in February 2021 as part of the early design stage and again in February 2024 in order to determine the presence of telecommunications links either traversing or in close proximity to the Proposed Wind Farm site.

Scoping was carried out in line with the EPA Guidelines (EPA, 2022), and the 'Best Practice Guidelines for the Irish Wind Energy Industry' (Irish Wind Energy Association, 2012) which provides a list of telecommunications operators for consultation. In addition to this, consultation was also carried out with Commission for Communications Regulation (ComReg) in February 2021 and February 2024 in order to identify any other additional licensed operators in the vicinity of the Proposed Wind Farm site to be contacted, who may not have been on the list of main operators.

During the scoping and consultation exercise undertaken, Ai Bridges were engaged to carry out a Telecommunications Impact Assessment for the Proposed Project, which is included as Appendix 15-4, to assess the potential impact of the Proposed Wind Farm on identified telecoms links and propose possible mitigation measures. Using the technical information obtained during the desktop survey assessments and consultation process, a telecommunications impact analysis was carried out utilising radio planning\modelling software. Further detail on the methodology for the Telecommunications Impact Assessment is included in Section 15.2.5 below and Appendix 15-4.

A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 of this EIAR. Consultation with the telecommunications operators and aviation bodies informed the constraints mapping process, which in turn informed the layout of the Proposed Wind Farm, as described in Chapter 3, Section 3.5.2 of the EIAR..

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

15.2.2.1 Legislation, Policy and Guidance

This section has been carried out in accordance with the 'EIA Directive' as mended by Directive 2014/52/EU and having regard, where relevant, to guidance and policy documents listed below:

- Galway County Development Plan 2022-2028
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022)
- Draft Air Corps Wind Farm/Tall Structures Position Paper (August 2014)
- Department of Environment, Heritage and Local Government (2006) Wind Energy Development Guidelines for Planning Authorities "the Guidelines"
- Department of the Environment, Heritage and Local Government (2019) Draft Revised Wind Energy Development Guidelines for Planning Authorities 'the draft Guidelines'
- Irish Wind Energy Association (2012) Best Practice Guidelines for the Irish Wind Energy Industry
- ESB Networks (2019) Code of Practice for Avoiding Danger from Overhead Electricity Lines.
- ESB (2017) EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland
- Irish Rail (2018) CCE Department Technical Guidance Document CCE-TMS-310 Guidance on Third Party Works
- Irish Rail (2009) CCE Departmental and Multidisciplinary Standard I-DEP-0121 Third Party Works: Additional Details of Railway Safety Requirements.

15.2.3 Background

15.2.3.1 Broadcast Communications

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

15.2.3.2 Domestic Receivers

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

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

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

15.2.3.3 Other Signal Types

Wind turbines have the potential to affect other signal types used for communication and navigational systems, for example tower-to-tower microwave communication links, and airborne and ground radar systems. Interference with radar systems occurs when wind turbines are located close to an airport or directly in line with the instrument landing approach. The nearest operational airport is Galway Airport located approx. 26.6km southwest of the Proposed Wind Farm site and the nearest operational airfield is Craughwell Airfield which is located approx. 25.9km south of the Proposed Wind Farm site. The published Corine Land Cover Maps (www.epa.ie) identify that the closest international airport to the Proposed Wind Farm site is the Ireland West Airport Knock, located approximately 46.5km north of the Proposed Wind Farm. Other airports/airfields in the vicinity of the Proposed Wind Farm include Shannon Airport, which is located approximately 87km south of the Proposed Project. Connemara Airport, located over 59km to the west of the Proposed Wind Farm site, and the University of Galway helipads which are both located approximately 34.6km to the west of the Proposed Wind Farm site.

All airports listed above are outside the range at which such issues would be expected, and as detailed in Table 15-26 below, the Irish Aviation Authority noted no issues with the Proposed Project however they issued observations as discussed in Section 15.2.5.3.2.

15.2.4 Electromagnetic Interference

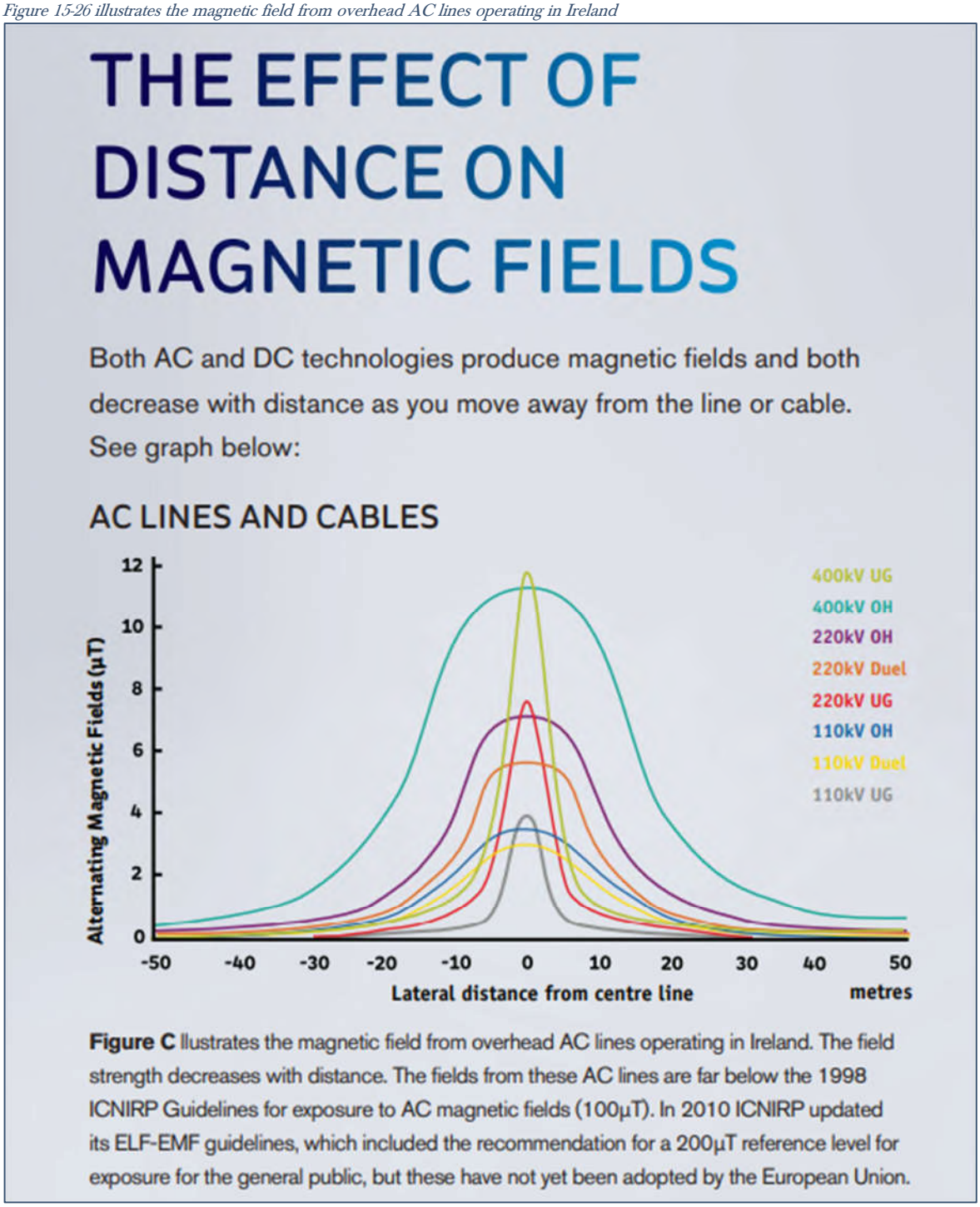
Both the adopted '*Wind Energy Development Guidelines for Planning Authorities'* produced by the Department of the Environment, Heritage and Local Government in 2006 (hereafter referred to as the 2006 Guidelines (DoEHLG, 2006)) and the *Draft Wind Energy Development Guidelines'* (December 2019) (hereafter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

Developers are advised to contact individual local and national broadcasters and mobile phone operators to inform them of proposals to develop wind farms. This consultation has been carried out by MKO as part of the assessment of the Proposed Project as summarised below in Table 15-31; full details are provided in Section 2.7 in Chapter 2 of this EIAR.

15.2.4.1.1 *ESB (2017) EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland'*

Electric and Magnetic Fields occur both naturally and from man-made sources. All electricity, both natural and man-made, produces two types of fields: electric fields and magnetic fields which are referred to as EMF. Two types of technology can be used to transmit electricity, alternating current (AC) and direct current (DC). Both AC and DC power lines produce electric and magnetic fields. AC lines produce AC electric and magnetic fields and DC lines produce static electric and magnetic fields. ESB Networks transmission and distribution networks are AC systems. Please see Figure 15-17 reproduced from the 2017 ESB information booklet which demonstrates the alternating magnetic field of AC overhead lines and underground cables. As shown below, EMF from 110kV overhead lines and underground cables diminishes quickly with distance from the potential impacted receptor, with EMF from underground 110kV cables, diminishing from 4µT to 0.5µT at 10m away from the cable, reducing to almost 0µT at 20m.

Figure 15-26 illustrates the magnetic field from overhead AC lines operating in Ireland



15.2.4.2 Aviation

The draft 2019 Guidelines note that wind turbines or any structure exceeding 90 metres (m) in height are considered obstacles to aerial navigation and need to be shown on aviation charts. Contact with the Irish Aviation Authority (IAA) is advised at the pre-planning stage of consultation to ensure that a proposed wind farm will not cause difficulties with air navigation safety, including airports, radar and aircraft guidance systems.

In addition, the Irish Air Corps (IAC) drafted the '*Air Corps Wind Farm/Tall Structures Position Paper*' in 2014 (hereafter referred to as the IAC Position Paper), with the intent of ensuring IAC operations and training may be accomplished in a safe and economical manner, relevant aerodromes remain viable for air traffic, the ability to train military flying skills is protected and vital navigation routes are protected to safeguard the ability of the IAC to fulfil its role.

In line with the above, the IAC notes they are opposed to any wind farms or tall structures in the following areas:

- Lands underlying military airspace used for flying activity, including designated Military Operation Areas (MOA)
- Areas wherein military flying occurs at low levels
- Critical low level routes in support of IAC operational requirements

The IAC Position Paper also notes that in all locations where wind farms or masts are permitted, they should be illuminated by high intensity strobe lights, be identifiable hazards relative to additional lighting in the vicinity and remain visible to night vision equipment.

Following the guidance above, consultation with the IAA and the Department of Defence (DoD) has been carried out by MKO as part of the assessment of the Proposed Project as summarised below in Table 15-29; full details are provided in Section 2.6 in Chapter 2 of this EIAR.

15.2.4.3 Scoping and Consultation with Telecommunications and Aviation Operators

A telecoms scoping exercise was conducted by MKO in November 2021 as part of early stage feasibility of the Proposed Project. As part of the EIAR scoping and consultation, MKO contacted the relevant national and regional broadcasters, fixed and mobile operators, aviation authorities and other relevant consultees in April 2023. Consultation was also carried out with ComReg in order to identify any other additional licenced operators in the vicinity of the Proposed Wind Farm site to be contacted, who may not have been on the list of main operators. Due to the time elapsed, a follow up telecoms scoping exercise was undertaken in February 2024.

The responses received from the telecommunications and aviation consultees are summarised below in Table 15-31.

A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 of this EIAR.

Table 15-29 Telecommunications and aviation Scoping Responses

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required
Broadcasting Authority of Ireland	Received 19th February 2024	No	No
ComReg (Commission for Communications Regulation)	Received 16th February 2024	N/A – Provided list of Telecommunications Operators in vicinity of the Proposed Wind Farm site.	N/A
Eircom Ltd/Eir	Received 19th February 2024	No	No
ESB	Received 2nd November 2021, 11th March 2022, Follow up sent 16th April 2024, Received 28th August 2025	Yes	There are 4 no. links in the area. See Section 15.2.4.4 below
Enet	Received 16th April 2024	No	No
Fastcom	Follow up 16th February 2024, No response received	N/A	No
Hibernian Towers	Follow up 16th February 2024, No response received	N/A	No
Imagine Networks	Received 11th November 2021, Follow up sent 16th February 2024, no response received	No	N/A
JFK Communications	Received 2nd August 2023	No	No
Whizzy Internet Limited	Follow up 16th February 2024, No response received	N/A	No
Lackabeha Services	Received 2nd August 2023	No	No
TETRA Ireland	Received 24th April 2023	N/A	No
Three Ireland Ltd	Received 20th February 2024	Yes	There is 1 no. link in the area. See

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required
			Section 15.2.4.4 below.
Viatel	Follow up sent 16th February 2024, No response received	No	N/A
Virgin Media Ltd	Received 16th February 2024	No	N/A
Vodafone Ireland Ltd	Received 19th February 2024	N/A	No
Western Broadband Network	Follow up 16th February 2024, No response received	N/A	No
RTE Transmission Network (2rn)	Received 17th April 2023	No	See Section 15.2.4.4 below for details

The scoping responses from the telecommunications and aviation consultees are described below. Relevant copies of scoping responses are provided in Appendix 2-1.

15.2.4.4 Broadcasters

Of the scoping responses received from telephone, broadband and other telecommunications operators, those who highlighted an initial potential interference risk are summarised below.

The full scoping responses received from all operators are provided in Appendix 2-2. As listed in the table above, there are 2 telecoms providers with links within the Proposed Wind Farm site. Three Ireland Ltd. has a link in proximity to the northern area of the Proposed Wind Farm site. ESB also have links transversing the Proposed Wind Farm site intersecting the Three link to the north. Assessments of potential impacts on these links were carried out by Ai Bridges (Appendix 15-4). Details of the correspondence can be found below and in Appendix 2-2.

Three

Three replied on the 20th of February 2024 to a scoping request from MKO, noting that there is a Three link to the north of the Proposed Wind Farm site. As such, Three have requested a 50m buffer on turbine locations from their link. Impact on this link was be assessed by Ai Bridges. which is included in Appendix 15-4 and summarised in Section 15.2.5 below.

ESB

ESB responded to MKO scoping request on the 2nd of November 2021 requesting confirmation site boundaries which were then provided by MKO. Following these correspondence ESB confirmed the presence of Point to Multipoint radio links crossing the site boundary to the north. These links were assessed by Ai Bridges and is outlined in Appendix 15-4 Telecommunications Impact Assessment. In response to follow-up scoping issued in April 2024, ESB responded on the 28th August 2025 identifying an exclusion zone around the links previously identified. This has been taken into consideration within Appendix 15-4.

RTE/2rn

2rn replied on the 17th of April 2023 to a scoping request from MKO, noting that 2rn have no fixed links in a 5km radius of the Proposed Wind Farm site. The operator stated that *'There is however a risk of interference to broadcast coverage to viewers in the area. We would therefore ask that a protocol be signed between the developer and 2rn should the site go ahead.* A signed protocol is in place between 2rn and the Developer for the Proposed Project.

A standard Protocol Document will be prepared by 2rn for the Proposed Wind Farm and has been signed by Neoen (the Applicant) prior to the construction of the Proposed Wind Farm. Protocol Document ensures that in the event of any interference occurring to RTÉ television or radio reception due to operation of a wind farm, the required measures as set out in the Protocol Document, will be carried out by the developer to rectify this. The Protocol Document ensures that the appropriate mitigation is carried out in the event of any unanticipated broadcast interference arising to RTÉ television or radio reception as a result of the Proposed Wind Farm site.

15.2.4.4.2 *Aviation*

As noted in above, scoping responses were received from the following aviation consultees:

- Irish Aviation Authority (IAA)
- Department of Defence (DoD)

Pertinent information has been summarised below, however the scoping response in Appendix 2.1 should be referenced to for further detail:

Department of Defence

The IAC Position Paper sets out the Air Corps position on the appropriate siting and management of wind farms and tall structures. The IAC Position Paper details Air Corps assets within which tall structures such as wind farms are not recommended and/or require early engagement with the Department of Defence (DoD).

The DoD was contacted by MKO on the 17th April 2023 and a response was received on the 5th May 2023 which provided the following observations:

1. *All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week.*

2. *Obstacle lighting should be incandescent. If LED or other lighting types are used, should be a type visible to Night Vision equipment. Obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength.*

3. *Light intensity to be of similar value to that emitted in the visible spectrum of light.*

4. *Any Irish Air Corps (IAC) requirements are separate to Irish Aviation Authority (IAA) requirements.*

In response to the lighting requirements requested by the DoD, the proposed turbines will be included on mapping, fitted with obstruction lighting and entered into aircraft navigation databases to ensure they will be avoided during flight.

Irish Aviation Authority

A scoping request was issued to the Irish Aviation Authority (IAA) on the 17th April 2023 regarding potential for impacts from the Proposed Project on aviation assets. MKO received a response on the 13th June 2023 noting should a formal planning application be submitted, the IAA will likely offer the following general observations:

"In the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to:

1. *agree an aeronautical obstacle warning light scheme for the wind turbine development,*
2. *provide as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location and*
3. *notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection."*

15.2.5 Telecommunications Impact Assessment

Following the scoping and consultation exercises undertaken by MKO in 2021 and 2024 by MKO, Ai Bridges were engaged to carry out a Telecommunications Impact Assessment (TIA) for the Proposed Project, which is included as Appendix 15-4. Appendix 15-4 details the field and desktop surveys undertaken to determine if ESB and Three Ireland point-to-point radio links highlighted in the MKO scoping exercise, would be impacted by the Proposed Wind Farm.

As identified in Section 15.2.4.1 in response to the telecoms scoping exercise ESB identified in November 2021 that they have 4 no. point to multipoint radio links traversing the Proposed Wind Farm. A follow up response in March 2022 then recommended a buffer clearance zone of the 2nd Fresnel zone plus 150m to allow for location accuracy of the link ends, turbine construction and ellipsoid conversion anomalies, plus 100m for turbine micrositing. Based on the above, the sections of Proposed Wind Farm (T06 and T07) would be proposed within the requested setback buffers. Three Ireland identified in March 2021 that they have 1 no. microwave link traversing the Proposed Wind Farm. A follow up response in February 2024 outlined the same link and recommended a 50m setback distance.

Following this response the Applicant commissioned Ai Bridges Ltd to evaluate and assess the possible impacts of the Proposed Wind Farm. A 3D analysis of the Three Ireland radio link was carried out which showed a clearance distance greater than the requested 50m buffer from the nearest proposed turbine (T07). To assess the ESB radio link network in the vicinity of the Proposed Wind Farm, Ai Bridges undertook field surveys in the area surrounding the Proposed Wind Farm. The field survey map and survey results are presented in Section 4.1 of Appendix 15-4.

From the findings of the field surveys, 2 no. antennae locations were found not to be constructed:

- Permitted Shannah Beg Solar Farm (PL Ref 171195 and 2360943)
- Permitted Rathleg Solar Farm (PL Ref 17295)

While both projects have planning permission to be constructed during the lifetime of the Proposed Wind Farm, the TIA notes the link coordinates provided by ESB during in the MKO scoping process differ from the coordinates included in the submitted planning documents. Using the coordinates included in the planning documents, Ai Bridges' carried out a 3D analysis of the radio links which shows no impacts on any ESB link's critical 0.6F1 Fresnel Zone by T06 and a small incursion on the existing Glenamaddy and Castlerea link's critical 0.6F1 Fresnel Zone by T07.

From the assessment above, T07 was identified to have potential impacts on 2 no. existing ESB radio links. The TIA outlines the following mitigation measures:

1. Microsite T07 to minimise obstruction in Glenamaddy and Castlerea Radio Link Fresnel Zones.
2. Relocate the monopoles at the Glenamaddy and Castlerea 38kV stations

Based on the findings of the TIA, the Applicant elected to microsite T07 accordingly and the final proposed turbine location is as outlined in Section 4.3.1.1.1 of Chapter 4. This turbine location is approx. 11.4m from the 2nd Fresnel Zone of the Three Ireland link. The TIA provides further mitigation measures following consultation with Three Ireland, including redirecting the link via an existing telecoms mast in Creevagh. Prior to construction, the Applicant will seek an agreement with Three Ireland to ensure the Proposed Wind Farm will not interfere with the existing Three Ireland radio link.

The exclusion zone identified by ESB in their most recent correspondence from the 28th August 2025 was also considered in the context of the above TIA. Further to their assessment conclusions, a letter of reliance from Ai Bridges is included as part of the TIA included in Appendix 15-4.

Following the implementation of the measures outlined in the TIA, the Proposed Wind Farm will not have a significant effect on the existing ESB and Three Ireland telecoms network.

15.2.6 Likely Significant Effects and Associated Mitigation Measures

15.2.6.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, there would be no change to existing telecommunications and aviation operations in the area.

The opportunity to capture part of Galway's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would be lost.

15.2.6.2 Construction Phase

The potential for electromagnetic interference from proposed turbines may only occur during the operational phase of the Proposed Wind Farm and the Proposed Grid Connection. There are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction phase of the Proposed Wind Farm or Proposed Grid Connection and therefore no mitigation required.

Potential impacts during turbine erection and commissioning of the Proposed Wind Farm are assessed in the operational phase impact assessment (Section 15.2.6.3 below).

15.2.6.3 Operational Phase

15.2.6.3.1 *Telecommunications*

Pre-Mitigation Impact

Proposed Wind Farm

Consultation regarding the potential for electromagnetic interference from the Proposed Project was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. ESB and Three Ireland links were identified within the Proposed Wind Farm site. Without mitigation measures, there could be the potential for interference of the wind turbine blades on the identified links which traverse the Proposed Wind Farm Site. This would be a long-term, negative, significant effect on telecommunications.

Proposed Grid Connection

None identified.

Mitigation Measures

In the event of interference occurring to telecommunications, the 2006 Guidelines acknowledge that *'electromagnetic interference can be overcome'* by the use of divertor relay links out of line with the wind farm.

As summarised in Section 15.2.5 above, following the analysis included in the TIA in Appendix 15-4, mitigation measures implemented include the micrositing of T07 in order to minimise obstruction of ESB links.

In addition, following the recent correspondence from ESB in relation to their exclusion zone, Ai Bridges were commissioned to carry out an independent Telecommunications ImpactAssessment Study to assess the possible impacts to the ESB Networks radio links due to the proposed Wind Farm development. There are technically viable Mitigation Measure Solutions available to offset any potential impact due to the proposed turbines. These are shown in Appendix 1 o Appendix 15-5 of this EIAR.

It should be noted that UHF radio links are inherently robust to obstacle interference, and there are numerous precedents of existing UHF telemetry polling radio links, operated by ESB Networks, that are obstructed by operational wind farms and terrain with no reports of impact on radio link performance. These precedents are shown Appendix 2 of Appendix 15-4. There are also precedents of mitigation measure solutions that have been presented to ESB Networks, for wind farms which have subsequently been granted planning permission (Appendix 3 of Appendix 15-5).

In order to address the potential impact on the Three Ireland link, the following mitigation measures are proposed:

- Relay the Three Ireland radio link between Cloonriddia and Moylough via an existing Telecoms Mast (i.e. Creevagh). This would involve the installation of two microwave radio links:
  - PTP radio between Cloonriddia and Creevagh
  - PTP radio between Creevagh and Moylough
- Once-off installation of two microwave radio links to be covered by the wind farm developer are estimated to be in the order of €10,000 - €15,000
- The proposed mitigation measure would involve supply and provisioning of the
  - 2 no microwave radio links including radio antennas, cables connectors, etc.
  - Rigging and Installation Services
  - Design & Commissioning Services

Should the Proposed Project receive a grant of permission, the Applicant will continue consultation and seek an agreement with Three Ireland in advance of the construction and operation of the Proposed Project.

Prior to the construction of the Proposed Wind Farm, A protocol agreement will be signed between 2rn and the Applicant. The Protocol Document ensures that in the event of any interference occurring to television or radio reception due to operation of the Proposed Wind Farm, the required measures, as set out in the Protocol Document, will be carried out by the Applicant to rectify this. The Protocol Document ensures that the appropriate mitigation is carried out in the event of unanticipated broadcast interference arising to television or radio reception as a result of the Proposed Wind Farm.

Residual Effect

Following the implementation of the above, the Proposed Project will have an long-term imperceptible neutral residual effect on the telecommunications signals of any operator, which is Not Significant.

Significance of Effects

There will be no significant effect on telecommunications as a result of the Proposed Project.

15.2.6.3.2 *Aviation*

Pre-Mitigation Impact

Proposed Wind Farm

There are no IAA or DoD assets within the Proposed Wind Farm site or surrounds that may be impacted by the proposed turbines. Therefore, there are no potential impacts.

Proposed Grid Connection

None identified.

Mitigation Measures

None Proposed.

As no impacts were identified by the IAA or DoD, no mitigation measures are required. However, the following IAA and DoD requests will be complied with should the Proposed Project be consented:

Irish Aviation Authority

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

Department of Defence

4. *All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week.*
5. *Obstacle lighting should be incandescent. If LED or other lighting types are used, should be a type visible to Night Vision equipment. Obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength.*
6. *Light intensity to be of similar value to that emitted in the visible spectrum of light.*
7. *Any Irish Air Corps (IAC) requirements are separate to Irish Aviation Authority (IAA) requirements.*

Residual Effect

With the implementation of the above, the Proposed Project will have a long-term imperceptible neutral residual effect on aviation assets which is Not Significant.

Significance of Effects

There will be no significant effects on aviation operations as a result the Proposed Project.

15.2.6.4 Decommissioning Phase

As stated in Section 15.2.6.2 above, the potential for electromagnetic interference from wind turbines occurs only during the operational phase of the Proposed Project. There are no electromagnetic

interference impacts associated with the construction or decommissioning phases of the Proposed Project, and therefore no mitigation required.

15.2.6.5 Cumulative Effects

Chapter 2, Section 2.7 of this EIAR describes the methodology used in compiling the list of permitted or proposed projects and plans in the area, (wind energy or otherwise) considered in the assessment of cumulative effects, and provides a description of each project, including current status, and is set out in Section 2.7 in Chapter 2 of this EIAR. During the development of any large project that holds the potential to effect telecoms or aviation, the developer is responsible for engaging with all relevant telecom operators and the relevant aviation authorities to ensure that the proposal will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the developer for each individual project is responsible for ensuring that the necessary mitigatory measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact cannot arise.

As outlined above in Section 15.2.6.3.2, the Proposed Project will have no residual effect on aviation as all lighting requirements will be met by the Applicant.

Therefore, there will be no cumulative effects relating to the Proposed Project and surrounding projects in relation to telecommunications or aviation.

15.3 Other Material Assets

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

15.3.1 Methodology and Guidance

The methodology for this assessment includes:

- Scoping exercise with stakeholders;
- Desk study, including review of available maps and published information followed by mapping of constraints;
- Likely Significant Effects and Mitigation Measures

Consultation with all statutory consultees, bodies with environmental responsibility and other interested parties is detailed in Chapter 2 of the EIAR. Scoping was undertaken in line with Section 3.3 'Scoping' of EPA, 2022[1] on the information to be contained in EIARs.

15.3.2 Scoping and Consultation

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

[1] *EPA, 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf*

A scoping response was received from Irish Rail on the 18th of May 2023 that said no impact was anticipated on any of their infrastructure or services due to the Proposed Project. No scoping response was received from the Water department of the local authority. A scoping and consultation exercise was conducted with utilities operators, as outlined below in Section 15.3.3.1. A full description of the scoping and consultation exercise is provided in Chapter 2 of this EIAR.

15.3.2.1 Utilities

Uisce Eireann

A scoping response was received from Uisce Eireann the 20th of March 2023 stating that they do not have the capacity to comment on individual projects, but general aspects of Water Services should be considered in the EIA where relevant. Some of the items to be considered are listed below. Please see Chapter, Section 2.7 for a full list of Uisce Eireann comments. It should be noted that the Proposed Project does not intend to connect into Uisce Eireann assets. The scoping response did not provide details in relation to specific water services within the Site.

1. *Where the development proposal has the potential to impact an Uisce Éireann Drinking Water Source(s), the applicant shall provide details of measures to be taken to ensure that there will be no negative impact to Uisce Éireann's Drinking Water Source(s) during the construction and operational phases of the development. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified as part of the report.*
2. *Where the development proposes the backfilling of materials, the applicant is required to include a waste sampling strategy to ensure the material is inert.*
3. *Mitigations should be proposed for any potential negative impacts on any water source(s) which may be in proximity and included in the environmental management plan and incident response.*
4. *Any and all potential impacts on the nearby reservoir as public water supply water source(s) are assessed, including any impact on hydrogeology and any groundwater/ surface water interactions.*
5. *Impacts of the development on the capacity of water services (i.e. do existing water services have the capacity to cater for the new development). This is confirmed by Uisce Éireann in the form of a Confirmation of Feasibility (COF). If a development requires a connection to either a public water supply or sewage collection system, the developer is advised to submit a Pre-Connection Enquiry (PCE) enquiry to Uisce Éireann to determine the feasibility of connection to the Uisce Éireann network.*
6. *The applicant shall identify any upgrading of water services infrastructure that would be required to accommodate the proposed development.*
7. *In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an Uisce Éireann collection network.*
8. *In relation to the management of surface water; the potential impact of surface water discharges to combined sewer networks and potential measures to minimise and or / stop surface waters from combined sewers.*
9. *Any physical impact on Uisce Éireann assets – reservoir, drinking water source, treatment works, pipes, pumping stations, discharges outfalls etc. including any relocation of assets.*
10. *When considering a development proposal, the applicant is advised to determine the location of public water services assets, possible connection points from the applicant's site / lands to the public network and any drinking water abstraction catchments to ensure these are included and fully assessed in any pre-planning proposals. Details, where known, can be obtained by emailing an Ordnance Survey map identifying the proposed location of the applicant's intended development to datarequests@water.ie.*

11. *Other indicators or methodologies for identifying infrastructure located within the applicant's lands are the presence of registered wayleave agreements, visible manholes, went stacks, valve chambers, marker posts etc. within the proposed site.*
12. *Any potential impacts on the assimilative capacity of receiving waters in relation to Uisce Éireann outfalls including changes in dispersion / circulation characterises. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified within the report.*
13. *Any potential impact on the contributing catchment of water sources either in terms of water abstraction for the development (and resultant potential impact on the capacity of the source) or the potential of the development to influence / present a risk to the quality of the water abstracted by Uisce Éireann for public supply should be identified within the report.*
14. *Where a development proposes to connect to an Uisce Éireann network and that network either abstracts water from or discharges wastewater to a "protected"/ sensitive area, consideration as to whether the integrity of the site / conservation objectives of the site would be compromised should be identified within the report.*
15. *Mitigation measures in relation to any of the above ensuring a zero risk to any Uisce Éireann drinking water sources (Surface and Ground water).*

Department of the Environment, Climate and Communications

A scoping request was sent to the Department of the Environment, Climate and Communications the 8th of May 2023. A response has been received the same day stating they do not provide observations for individual projects and developments.

EirGrid

A scoping request was sent to EirGrid on the 17th of April 2023 and again on the 8th of May 2023. No response was received.

Gas Networks Ireland (GNI)

GNI supply MKO their latest infrastructure data quarterly. The latest data share illustrating all GNI infrastructure was provided to MKO in August 2025. The data indicates that there is no GNI infrastructure is located within or adjacent to the Site with the nearest infrastructure being approximately 11.3km to the west of the Proposed Project footprint in Tuam Co. Galway.

Irish Rail

A scoping response was received from Irish Rail on the 27th of April 2023 noting that the Proposed Wind Farm is remote from the railway network and does not concern Irish Rail. They also state should the Proposed Grid Connection be planned to cross railway property, the Applicant must enter into a wayleave agreement with Irish Rai and CIÉ for the crossings.

15.3.3 Baseline Environment

15.3.3.1 Existing and Built Services and Utilities

The Proposed Project has been designed to avoid identified services and utilities where insofar as possible. Prior to commencement of construction detailed site investigations will be carried out to confirm design assumptions and undertake additional surveys to identify any new services and utilities and ensure they will not be impacted by the Proposed Project. The construction of the Proposed Grid Connection would also be subject to a Road Opening License (ROL). The timing of these works would therefore be controlled by the ROL process with the relevant Local Authority.

15.3.3.1.1 Electricity

There are overhead and underground electricity transmission and supply cables within the vicinity of the Site. An existing 220kV overhead line is located approx. 1.3km west of the Proposed Wind Farm (T07). The Proposed Grid Connection underground cabling route passes under the 220kV overhead electricity line in the townlands of Moyne and Newtown, Co. Galway. An existing 110kV overhead line is located approx. 2km north of the Proposed Wind Farm site (T07). There are no 38kV or higher known existing underground electricity cables present on the Proposed Wind Farm site or along the Proposed Grid Connection underground cabling route.

15.3.3.1.2 Gas

There are no gas mains located within the Site.

15.3.3.1.3 Water

There are no known existing water services within the Proposed Wind Farm development footprint, however it has been assumed that there is the potential to encounter local water services within the subject Site. Damage of underground services during construction operations could potentially result in disruption to those local services, and a risk to health and safety of site staff.

Prior to the commencement of construction, a survey of the Site will be undertaken to identify and ensure any services and utilities will not be impacted by the Proposed Project.

15.3.3.1.4 Motorways

The Site is approximately 1km west of the nearest motorway (the M18) at its closest point (i.e., Proposed Grid Connection). The Proposed Wind Farm will not directly interact with the motorway outside of proposed turbine and abnormal load delivery. Impacts associated with traffic and transport are outlined in Section 15.1 of Chapter 15 Material Assets.

15.3.3.1.5 Railways

As identified in Section 4.8.6.4 of Chapter 4 Description, the Proposed Grid Connection will also cross over the Athenry to Tuam railway no longer in use at 1 no. location, located entirely within the public road corridor.

15.3.3.2 Waste Management Services

There are no EPA-licensed or local authority-authorised waste facilities or activities located within the Site. The closest, authorised municipal waste facility is located approximately 27.4km southwest of the Site in Oranmore, Co. Galway.

A Waste Management Plan (WMP) has been prepared and forms part of the Construction and Environmental Management Plan (CEMP) in Appendix 4-2 of the EIAR.

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

All waste generated on Site will be contained in waste skip at a waste storage area on Site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The expected waste volumes generated on Site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste streams generated on site will be deposited into a single waste skip. The waste material will be transferred to a Materials Recovery Facility (MRF)

by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal.

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

Further details on waste management are presented in the CEMP which is included as Appendix 4-5.

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

15.3.4 Likely Significant Effects and Associated Mitigation Measures

15.3.4.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, the potential to impact on other material assets would not arise.

The opportunity to capture part of Galway's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would be lost.

15.3.4.2 Construction Phase

The construction of the Proposed Project will be unlikely to have an impact on above ground or underground built services or waste management. The Proposed Project infrastructure has been designed to avoid existing underground electricity cables and other services and can be described as mitigation by design, therefore there is no potential to give rise to effects on electrical and other services.

Proposed Mitigation Measures

Notwithstanding the above, specific measures are incorporated into the CEMP, included as Appendix 4-5 of this EIAR, to ensure that the construction of the Proposed Project will not have effect on underground electrical cables and built services at the Site. The mitigation measures include the following:

- Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.
- Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.
- Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.

- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.

Residual Effects

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

Significance of Effects

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

15.3.4.3 Operational Phase

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

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

15.3.4.4 Decommissioning Phase

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

The works required during the decommissioning phase are described in Section 4-10 in Chapter 4 of this EIAR. Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent. Based on the assessment outlined above in Section 15.3.4.2, there will be no significant effects on existing and built services, or waste management as part of the decommissioning phase.

15.3.4.5 Cumulative Effects

The potential for impact between the Proposed Project, and other relevant developments has been carried out with the purpose of identifying what influence the Proposed Project (Proposed Wind Farm and Proposed Grid Connection combined) will have on the surrounding environment when considered cumulatively and in combination with relevant existing permitted or proposed projects and plans in the vicinity of the Site, as set out in Chapter 2 of this EIAR. Please see Section 2.8 of Chapter 2 for cumulative assessment methodology.

Included within proposed projects, the potential for cumulative impacts with other wind farms is considered. There are 3 no. operational wind farms (Park Athenry Single Turbine, Clooncon East Single Turbine and Cloonlusk Wind Farm) within 20 kilometres of the proposed turbines, as well as the permitted Cloonascragh Wind Turbine, proposed Clonberne Wind Farm, proposed Laurclavagh Wind Farm and proposed Gannow Wind Farm. There will be a Significant Positive cumulative effect on

electrical supply with the commissioning of the Proposed Project along with the existing operational and permitted wind farms within the area.

In addition to the Proposed Project, the following permitted and proposed developments are acknowledged to have connections to the Cloon 110kV substation:

- Proposed Laurclavagh Wind Farm
  - Grid connection assessed in EIAR supporting the planning application appealed to An Bord Pleanála, however this project component was not part of the planning application
- Permitted Tuam Energy Park Solar Farm (Pl Ref 2461190)
- Permitted refurbishment to the existing Castlebar-Cloon 110kV overhead line (Pl Ref 221030)

The potential for cumulative effects with these nearby energy developments are not significant from the perspective of built services and waste management. With regard to grid connection cabling routes, there is potential for cumulative effects of the Proposed Grid Connection underground cabling route in conjunction with the permitted Tuam Energy Park Solar Farm underground cabling route to Cloon 110kV substation for approx. 635 metres. The construction of the Proposed Grid Connection would be subject to a Road Opening License, as would any other similar nearby grid connection works. The timing of these works would therefore be controlled by the road opening licensing process with the relevant Local Authority and would not overlap. It is also likely that the construction phases of these projects will not overlap with the construction phase of the Proposed Project.

There were no other potential cumulative effects identified as part of this assessment.

On the basis of the assessment above, the Proposed Project will have no impact on built services and waste management. It is on this basis that it can be concluded that during the construction, operational and decommissioning phases, there would be a short-term imperceptible cumulative effect on built services and waste management from the Proposed Project and permitted or proposed projects and plans in the area as set out in Section 2.8 in Chapter 2 of this EIAR.