

Environmental Impact Assessment Report (EIAR)

Crumhach Wind Farm, Co. Sligo

Chapter 15 - Material Assets



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GLOSSARY OF TERMS

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

GLOSSARY OF ACRONYMS

Acronym	Definition
% Sat	Degree of Saturation
ACP	An Coimisiún Pleanála
ComReg	Commission for Communications Regulation
DoD	Department of Defence
DoT now DoTT&S	Department of Transport
DTT	Digital Terrestrial Television
EMF	Electric and Magnetic Fields
HGV	Heavy Goods Vehicles
IAA	Irish Aviation Authority
IAC	Irish Air Corp
LGV	light goods vehicles
MMaRC	Motorway Maintenance and Renewal Contractors
MRF	Materials Recovery Facility
OHL	Overhead Lines
PCU	Passenger Car Units
PPP	Public-Private Partnerships
RDO	National Roads Design Office
RFC	Ratio of Flow to Capacity
ROL	Road Opening License
RWMP	Resource Waste Management Plan
SCC	Sligo County Council
SNH	Scottish Natural Heritage
TDR	Turbine Delivery Route
TII	Transport Infrastructure Ireland
TMP	Traffic Management Plan

TTA

Traffic and Transport Assessment

15.

MATERIAL ASSETS

Material Assets are defined in the “*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*” (EPA, 2022)¹ as “*built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure*”.

Material assets may be either of human or natural origin. This chapter of the Environmental Impact Assessment Report (EIAR) addresses the likely significant effects of the Proposed Project on Traffic and Transport (Section 15.1), Telecommunications and Aviation (Section 15.2) and Other Material Assets, i.e. utilities and waste management (Section 15.3), which are economic material assets of human origin.

The cultural assets of Cultural Heritage are addressed in Chapter 14 of this 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 10: Air Quality, and 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).

Waste Management in the context of the Proposed Project is included in Chapter 4: Description of the Proposed Project. EPA Waste Management pertaining to the construction, operation and decommissioning of the Proposed Project is summarised in Section 4.4.1.7 of Chapter 4 of the EIAR. Traffic volumes generated by the removal of waste from the Proposed Project to 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.

As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references: ‘Proposed Project’, ‘the Site’, ‘Proposed Wind Farm’, ‘Proposed Turbines’, ‘Proposed Grid Connection Route’, ‘Existing Wind Farm’ and ‘Existing Grid Connection’. Please see Section 1.1.1 of this EIAR for further details. A detailed description of the Proposed Project is provided in Chapter 4 of this EIAR.

15.1

Traffic and Transport

15.1.1

Introduction

15.1.1.1

Background and Objectives

This section of the EIAR assesses the effects on roads, traffic, and transport of the traffic movements that will be generated during the construction, operational and decommissioning phase of the Proposed Project.

For developments of this nature, the construction phase is the critical period with respect to the traffic effects experienced on the surrounding road network, both in terms of the additional traffic volumes that will be generated on the road network and the geometric requirements of the abnormally large loads associated with the wind turbine components. The requirements of the additional traffic and

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

abnormal loads generated during the construction phase have been assessed for the external highway network that will provide access to the Proposed Project site.

The magnitude of the increase in traffic volumes experienced on the surrounding network is identified during the various construction stages of the Proposed Project. A traffic management plan is also provided in Section 15.1.8 aimed at minimising the traffic impact on the local highway network. Refer also to Appendix 15-2 of this EIAR, for the Traffic Management Plan (TMP).

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 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 University of 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: Ardderroo, Derrinlough, Knocknamork, Shehy More, Cloncreen, Derrykillew, Ballyhorgan, Lettergull, Barnadivane, Cleanrath, Knockalough, Sheskin South and Borrisbeg.

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, established in 2014, 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 Ltd., Ireland's first lens-based traffic data collection business. Clients of Traffinomics Ltd. include TII, Local Authorities and many leading retailers.

The turbine delivery route (TDR) was identified by the Applicant and surveyed by Digital Land Surveyors Ltd. Digital Land Surveyors Ltd. is a firm of surveyors based in Letterkenny, Co. Donegal who provide Nationwide Land and Engineering surveying service and a Consultant Land Acquisition and Arbitration Service.

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 1.2.1 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.

15.1.1.4 Scoping and Consultation

Section 2.7 of Chapter 2: Background of the Proposed Project of this EIAR describes the scoping and consultation exercise undertaken for the Proposed Project. Scoping was conducted in May 2024 to determine the content, depth and extent of topics to be covered in the environmental information to be submitted to the competent authority. Relevant to this chapter, responses were received from the Transport Infrastructure Ireland and Department of Transport.

Transport Infrastructure Ireland

Transport Infrastructure Ireland (TII) responded to scoping via an email dated 25th September 2024. In their response TII provided a list of recommendations to be followed when preparing the EIAR. All relevant TII guidelines and policies have been adopted in the preparation of this assessment, including the following:

- PE-PDV-02045, Transport Assessment Guidelines, Transport Infrastructure Ireland, May 2014;
- PE-PAG-02017, Project Appraisal Guidelines, Unit 5.3, Travel Demand Projections, Transport Infrastructure Ireland, October 2021;
- DN-GEO-03060, Geometric Design of junctions, Transport Infrastructure Ireland, May 2023;
- GE-STY-01024 Road Safety Audit Guidelines, TII, December 2017; and
- DN-GEO-03030 Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes, TII, April 2021.

Specific issues raised by TII include the following as set out in Table 15-1a:

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

ID	Comment/Recommendation	Response
National Road Network		
1	Consultations should be had with relevant Local Authority / National Roads Design Office (RDO) with regard to locations of existing and future roads schemes.	Consultation has been undertaken with Sligo County Council (SCC) as set out below.
2	TII would be specifically concerned with the 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 construction material and turbine component delivery routes in terms of link flows are set out in Sections 15.1.6 of the EIAR. An assessment of the capacity of the N59/L2702 junction is set out in Section 15.1.6.1 An assessment of the impacts during the construction of the Proposed Grid Connection Route is set out in Section 15.1.7. A swept path analysis undertaken for the abnormally large loads on the Turbine Delivery Route is set out in Section 15.1.9 of the EIAR. The assessment sets out the temporary local measures that will be required on the national, regional and local road networks during the construction of the Proposed Project.

ID	Comment/Recommendation	Response
3	The developer should assess the visual impacts of existing national roads,	The landscape and visual impacts of the Proposed Project on receptors along primary transport routes are assessed in detail in Chapter 13: Landscape and Visual of the EIAR
4	The EIAR should have regard to any prior Environmental Impact Statement or Assessment Report and all conditions and/or modifications imposed by An Bord Pleanála (now An Coimisiún Pleanála) regarding road schemes in the area. The developer should in particular have regard for any potential cumulative impacts.	All conditions imposed by Sligo County Council and An Bord Pleanála (now An Coimisiún Pleanála) have been considered for road schemes in the area. All conditions imposed by Sligo County Council will be adhered to, and the cumulative traffic related impacts are assessed in Section 15.1.16.
TII Publications		
4	The developer, in preparing EIAR, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works).	The design of the access junctions is in accordance with TII guidelines. The proposed design and visibility splays for the proposed access junctions are shown in Figures 15-6 to 15-24.
5	It would be important that, where appropriate, subject to meeting the applicable thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. In relation to national roads, TII's TTA Guidelines (TII Publication No. PE-PDV-02045) should be referred to in relation to the proposed development with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of TII's TTA Guidelines, which addresses requirements for sub-threshold TTA.	It is confirmed that the assessment presented in this section of the EIAR is undertaken in accordance with Traffic and Transport Assessment Guidelines, TII (2014).
6	Any improvements required to facilitate development should be identified. It will be the responsibility of the developer to pay for the costs of any improvements to national roads to facilitate the private development proposed as TII will not be responsible for such costs,	The Applicant agrees with this condition.

ID	Comment/Recommendation	Response
7	The designers and assessors are asked to consult TII Publications to determine whether a Road Safety Audit is required. Any road safety audit requirements should be addressed.	A Road Safety Audit has been undertaken for the Proposed Project and is summarised in Section 15.1.12 with the report included as Appendix 15-4. In addition, a DN-GEO-03030 TII Design Report has been undertaken for the N59 which is summarised in Section 15.1.12 and is included as Appendix 15-5. The report will be uploaded onto TII's departures portal.
TII Environmental Assessment Guidance		
8	The EIAR should have regard to TII's Environmental Assessment and Construction Guidelines, including the Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March 2014), The EIAR should consider the European Communities (Environmental Noise) Regulations, 2018, (S.I. no. 549 of 2018), and 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 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (National Roads Authority, 2014)),	The potential impacts of the Proposed Project with regards noise set out in Chapter 12: Noise and Vibration of this EIAR.
Haul Routes Utilising the National Road Network		
9	TII recommends that the applicant/developer should clearly identify the haul routes proposed and fully assess the network to be traversed. TII notes that Section 5.2 of the EIAR Scoping Report outlines an indicative proposed turbine component delivery route to a site which utilises the N56, N15, N4 and N59, national road network. Where abnormal 'weight' loads are a feature of the development, e.g. turbine, substation components, etc., 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 capacity to accommodate any abnormal 'weight' load proposed. Any requirements for 'Exceptional	A detailed assessment of the abnormal load route is provided in Section 15.1.9. Consultation will be undertaken with these bodies prior to the delivery of abnormally large loads.

ID	Comment/Recommendation	Response
	Abnormal Loads' should also be addressed in accordance with TII Publications. In addition, the haul route should be assessed to confirm capacity to accommodate abnormal 'length' loads and any temporary works required are identified.	
10	The national road network is managed by a combination of Public-Private Partnership (PPP) Concessions, Motorway Maintenance and Renewal Contracts (MMaRC) and local road authorities in association with TII. The applicant/developer should also consult with all PPP, MMaRC Contractors and road authorities over which the haul route traverses to ascertain any operational requirements, including delivery timetabling, etc. to ensure that the strategic function of the national road network is safeguarded. Where temporary works within any MMaRC boundary are required to facilitate the transport of substation 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.	Consultation will be undertaken with these bodies prior to the delivery of abnormally large loads.
Grid connection and cable routing		
11	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 (e.g. N59 Corhawnagh to Crockacullion Scheme). In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc.	An assessment of the Proposed Grid Connection Route is included in Section 15.1.7. Alternative grid connection routes have been considered in Chapter 3: Site Selection and Reasonable Alternatives of this EIAR.
	Section 12.4.1.1 'Accelerate Renewable Electricity Generation' of the Climate Action Plan 2024 (CAP24) outlines the objective of reaching 80% of electricity demand from renewable sources by 2030 through a range of measures, including; 'All relevant public bodies will carry out their functions in a manner which supports the achievement of the renewable electricity targets, including, but not limited to, the use of road and rail infrastructure to provide a route for grid infrastructure where this is the	The Applicant agrees with this condition. Alternative grid connection routes have been considered in Chapter 3: Site Selection and Reasonable Alternatives of this EIAR.

ID	Comment/Recommendation	Response
	optimal solution’. Consistent with CAP24, for all renewable energy developments requiring grid connection to the national grid, TII recommends that a full assessment of all route alternatives for grid connection takes place, including alternatives to public roads, where appropriate. In TII’s experience, grid connection accommodated on national roads has the potential, inter alia, to result in technical road safety issues such as differential settlement due to backfilling trenches and can impact on ability and cost of general maintenance, upgrades and safety works to existing national roads. In addition, there is a finite road space available to accommodate all utilities in the road network. It is recommended that a coordinated approach to grid connection routing in this area is achieved to avoid risk to the effective delivery of renewable energy projects in the area.	
	Other consents or licences may be required from the road authority for any trenching or cabling proposals crossing the national road. TII requests referral of all proposals agreed and licensed between the road authority and the applicant which affect the national road network.	The Applicant agrees with this condition.
13	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.	The Applicant agrees with this condition.

Department of Transport

An initial scoping document was issued to the Department of Transport (DoT) on the 5th September 2024 with a response received on the 18th September 2024. The response refers to issues relating to the Proposed Grid Connection Route and works within the public road network, which are set out together with the Applicant’s responses in Table 15-1b.

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

ID	Comment/Recommendation	Response
1	Their presence within the public road could significantly restrict the Road Authority in carrying out its function to construct and maintain the public road and will likely add to the costs of those works post construction.	The Applicant and their Contractor will work with the Road Authority to minimise impacts on construction and maintenance of the road network through the scheduling of construction of sections of the route and agreement with diversion routes where required. It should be noted that any works within the public road corridor will be subject to a Road Opening Licence. This is a formal process through which the specific requirements of the Road Authority will be agreed.
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) or bog rampart the design needs to take account of all the variable ground conditions and not be based on a sample of the general soil conditions. This should include a constructability assessment to a 950mm minimum cover depth to the HV Cable on legacy roads, roads over peat/bog ramparts.	As set out in Section 15.1.12, all roads will be re-instated in line with the specification of the Road Section of Sligo County Council. The Road Opening Licence process includes for a long-term impact and reinstatement fees, that are held for a minimum of two years following the completion of works, to cover any road maintenance works that may be required. As identified in Chapter 8, there are areas of blanket peat along the Proposed Grid Connection Route; the majority of the lands surrounding the Proposed Grid Connection Route are comprised of agricultural lands, pastures, low density residential, industry and commercial forestry.
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 or additional drainage for climate adaptation).	The Proposed Grid Connection Route 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 and a complete operation and maintenance manual should be agreed with the Local Authority.	The Applicant agrees with this condition.

ID	Comment/Recommendation	Response
6	Examination of all available technologies including both Overhead Line (OHL) and Underground Cable (UGC) options or combinations of both) and route options other than the routing of cables along the public road the ensure the best performing route and technology option is selected.	Refer to Section 3.2.3.4 of Chapter 3: Site Selection and Reasonable Alternatives
6	Examination of options for connection to the national grid network at a point close to the wind farm so as to reduce the adverse impact on public roads.	Refer to Section 3.2.3.4 of Chapter 3: Site Selection and Reasonable Alternatives
7	Details of where within the road cross section cables are to be placed so as to minimise the effect on the Roads Authority in its role of construction and maintenance.	The location of the Proposed Grid Connection Route underground cabling within the public road corridor is shown on the detailed the grid connection drawing details in Appendix 4-7 of this EIAR. As noted above, any works within the public road corridor will be subject to a Road Opening Licence. This is a formal process through which the specific requirements of the Road Authority will be agreed.
8	Examination of details of any chambers proposed within the public road cross section so as to minimise the effect on the Roads Authority in its role of construction and maintenance.	The proposed locations of joint bays, communication chambers and earth sheath link chambers are shown in the detailed site layout drawings in Appendix 4-1 of this EIAR.
9	Elimination of permanent jointing bays from beneath the road pavement 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, temporary joint bays to be used in any public road installation.	Joint Bays cannot be eliminated from the Proposed Project underground cabling design due to physical limitations of cabling length. Extent of the joint bays on the public road has been minimised as much as possible and the Community Liaison Officer (CLO) has met with the Area Engineer to discuss the siting. Once the sections of cabling have been connected within each joint bay, the chamber will be backfilled and the road surface will be reinstated as per Road Authority specifications.
10	Prevention of the attachment of cables to all bridge structures and culverts by diverting them beneath or away from these structures and,	The proposed crossing methodologies of the Proposed Project at all watercourses is outlined in Table 4-7 in Chapter 4 and detailed drawings are provided in Appendix 4-1 of this EIAR.

ID	Comment/Recommendation	Response
11	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).	The proposed underground cabling design has been designed to have the smallest footprint possible. 3 no. trench for underground cabling is proposed as part of the Proposed Project.
13	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.	The Applicant agrees with this condition.
14	The developer should comply with all appropriate standards and, inter alia the Guidelines for Managing Openings in Public Roads, 2017.	The Applicant agrees with this condition.
15	The location of the cables should be recorded as exactly as possible (maybe using Building Information Modelling (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 local authority. This record should be lodged with the local authority and with ESB Networks for retention on their records.	The Applicant agrees with this condition.
16	All electric cables should be routed away from bridge structures and specifically, the developer should avoid attaching cables to road bridges. This would allow for the future maintenance of bridges without interruption of the electricity supply along the cables.	The Applicant agrees with this condition.
17	The replacement of culverts that have been excavated during the cable duct placement operation. The replacement culverts should be designed appropriately and include an allowance for the effects of climate change.	The Applicant agrees with this condition.
18	The developer should 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	The Applicant agrees with this condition.

ID	Comment/Recommendation	Response
	Controller should be required to maintain an agreed contacts list with the Roads Authority.	

Sligo County Council

Sligo County Council (SCC) were contacted in relation to scoping in 2024 and a response was received from SCC Planning Department on the 27th of September 2024. They noted the following elements in relation to the Proposed Project as set out in Table 15-1c.

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

ID	Comment/Recommendation	Response
1	It is the opinion of Sligo County Council Planning Department that this application should include Waste Management Plans for both the construction and operational phases of the proposed development.	A waste management plan is included within the Construction and Environmental Management Plan in Appendix 4-5 of this EIAR
2	It is the opinion of Sligo County Council Planning Department that this assessment should include any proposed firefighting measures that may be associated with the proposed battery storage facility and any potential impacts on water quality.	Battery Energy Storage System is no longer part of the Proposed Project.
3	The forthcoming EIAR must have regard to the Sligo County Council Noise Action Plan for Sligo County and City 2018. It should be noted that there is also a Draft Sligo County Council Noise Action Plan 2024-2028 currently at public consultation stage.	The potential impacts of the Proposed Project with regards to noise set out in Chapter 12 of this EIAR.
4	The assessment should consider the cumulative impacts of the proposed development on the landscape as well as scenic routes and landscape sensitivity as set out in the Landscape Characterisation Map of the Sligo County Development Plan 2017-2023.	The potential impacts of the Proposed Project with regards to landscape and visual impacts are set out in Chapter 14: Cultural Heritage of this EIAR.
5	The applicant is advised to engage with Sligo County Council Roads Department to identify any precondition surveys to infrastructure that may be required along proposed delivery routes, as well as any permitting requirements and any alterations that may be required to facilitate the proposed delivery.	The Applicant agrees with this condition.
6	The Sligo County Development Plan is currently being reviewed and the proposed development should consider any pertinent policies within the Draft County Development Plan.	The Proposed Project has been designed with consideration of the Sligo County Development Plan 2024-2030.

ID	Comment/Recommendation	Response
7	Any forthcoming EIAR should outline clear proposals in relation to public consultation initiatives in line with the Department of the Environment, Climate Action and Communication's Code of Practice for Wind Energy.	Included in Section 2.7 of Chapter 2 of the EIAR.

15.1.1.5 Pre-planning Meetings

Sligo County Council

An in-person pre-planning meeting was held with Sligo County Council (SCC) with traffic and transport related issues raised as follows;

Meeting 26th February 2026

- SCC noted that there are ongoing and planned road renewal schemes that may be affected by the Turbine Delivery Route and Proposed Grid Connection Route
- SCC noted that a significant portion of the Proposed Grid Connection Route road network is constructed on bog rampart and advised that road closures may be required to prevent differential settlement during construction.

An assessment of the turbine delivery and construction traffic impacts is included in Section 15.1.5 below. The effects of the Proposed Grid Connection Route on the road network and proposed diversion routes during construction are detailed in Section 15.1.7 below.

An Coimisiún Pleanála

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

SID Meeting 24th November 2024 (1st meeting)

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

SID Meeting 2nd December 2025 (2nd meeting)

- ACP queried whether accommodation works along the turbine delivery route were required
- MKO clarified there would be works along the turbine delivery route and these areas would be included within the EIAR site boundary and assessed by the wider multidisciplinary team

15.1.1.6 Methodology and Section Structure

This chapter section 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 turbine delivery route, an assessment of base 2024 traffic flows and traffic forecasts during an assumed construction year of 2030 (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 review of the effects during of Proposed Project-generated traffic on links and junctions during construction phase (i.e. 24 months) and when the facility is operational (Section 15.1.5 –Traffic Effects During Construction and Operation and Decommissioning of the Proposed Project and Section 15.1.6 Link Capacity Assessment);
- A description of the abnormally large loads and vehicles that will require access to the site (Section 15.1.7 Construction Traffic Vehicles);
- An assessment of the effects during the construction of the Proposed Grid Connection Route works (Section 15.1.8 – Effect on Network of the Proposed Grid Connection Route);
- Traffic management of large deliveries and a geometric assessment of the routes and their capacity to accommodate the abnormal loads associated with the Proposed Project (Section 15.1.9 – Traffic Management of Large Deliveries and Section 15.1.10 – Abnormal Load Route Assessment);
- A review of the Proposed Wind Farm access junctions (Section 15.1.11 –Proposed Wind Farm Access Junctions);
- Summary of Road Safety Audit – (Section 15.1.12 – Road Safety Audit);
- Summary of DN-GEO-03030 TII Design Report – (Section 15.1.13 – Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes (DN-GEO-03030, TII);
- An assessment of the provision for sustainable modes of travel (in this case primarily with respect to the transport of construction staff) (Section 15.1.14 – Provision for Sustainable Modes of Travel);
- A description of potential effects of the Proposed Project on Roads and Traffic (Section 15.1.15 – Likely Significant Effects and Associated Mitigation Measures).

15.1.2 Receiving Environment

15.1.2.1 Site Location and Proposed Access Arrangements

The Proposed Project is located in County Sligo in the townlands listed in Table 1-1 of Chapter 1 of this EIAR and is shown in relation to the surrounding road network in Figure 15-1.

The Proposed Wind Farm is accessed via the L6309 and L2702 Local Roads off the N59 National Road, travelling in an east-west direction north of the Proposed Wind Farm site and the N17 National Road, which runs in a north-south direction to the southeast of the Proposed Wind Farm site. The Proposed Wind Farm site is currently served by a number of existing tracks and public roads.

As part of the Proposed Wind Farm, it is proposed to utilise 1 no. existing access/egress locations along the L6309, construct 2 no. new access/egress locations along the L2702 and 1 no. new access/egress location along the L6309. These access and egress entrances will be used throughout the construction, operation, and decommissioning phases of the Proposed Wind Farm to enable delivery of materials and turbine components (construction phase), maintenance and monitoring use (operational phase), and removal of Proposed Wind Farm infrastructure (decommissioning phase). The junctions that will provide access to the Proposed Wind Farm site are discussed in detail in Sections 15.1.4.1 and 15.1.11 of this EIAR, the locations and indicated in Figure 15-2 and the proposed use for each outlined in Table 4-5 of Chapter of the EIAR. In addition to these junctions there is a fifth access junction proposed on the east side of the L2702 to access the proposed onsite 110kV substation. The Proposed

Project is shown in the context of the national, regional and local highway networks in Figures 15-1 and 15-2.

15.1.2.2 Proposed Turbine Delivery Route

For the purposes of this EIAR, the Port of Killybegs has been selected and assessed to facilitate turbine delivery to the Proposed Wind Farm site.

A detailed assessment of the transport route was made from a point at which the route turns east on the N56 towards Donegal. The route is shown in Figure 15-1 and is discussed in detail in Section 15.1.8.

The route exits Killybegs Port and travel east on the N56 towards Donegal, further south along the N15 towards Sligo before continuing south on N4 through Ballysadare, and subsequently merging onto the N59 heading west towards Dromore West. Delivery vehicles will then head south on the L2702 before turning east towards the site entrance in the townland of Crowagh or Dunneill Mountain, along the L6309. The total length of the turbine delivery route from Killybegs Port is approximately 134km.

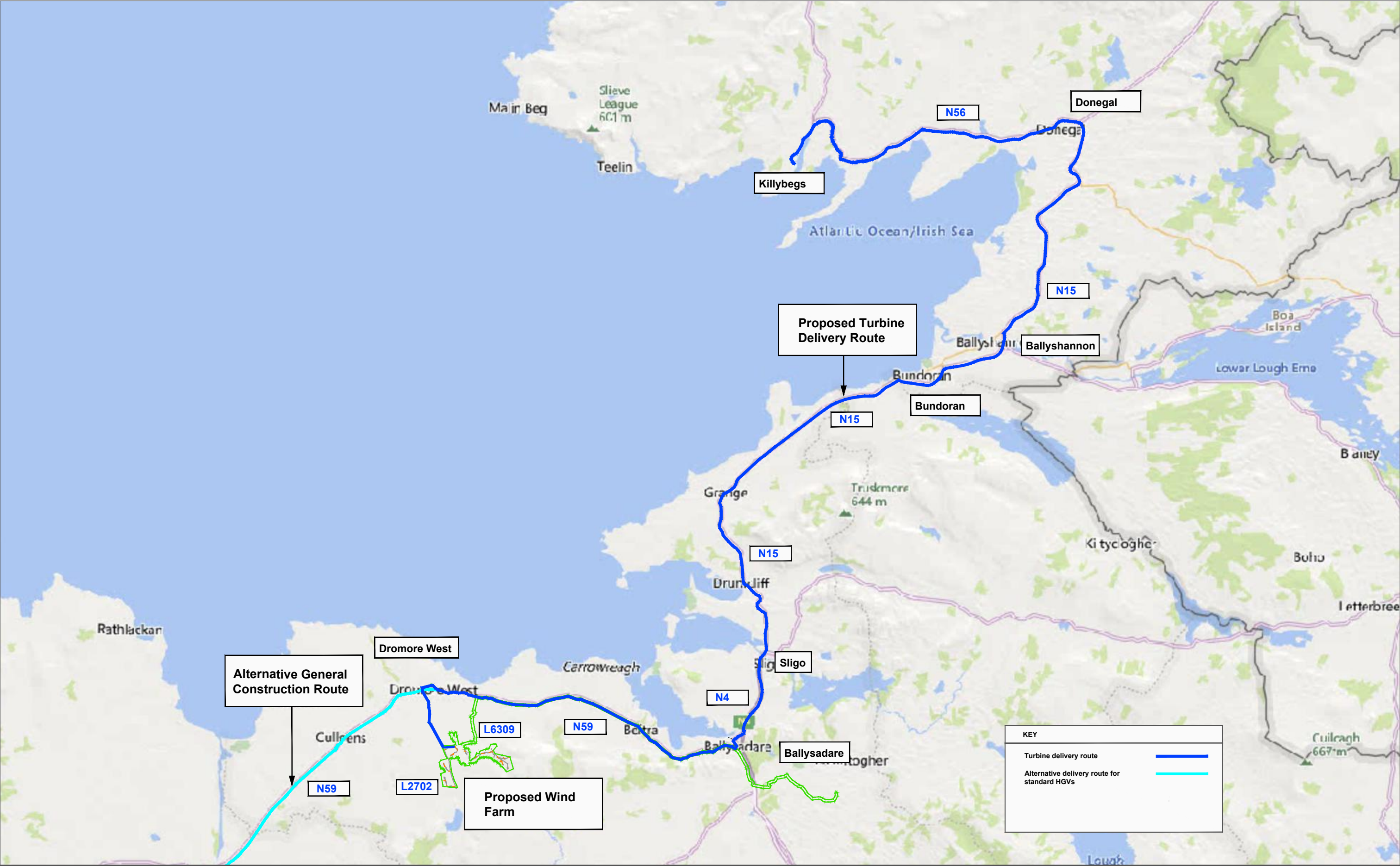
An assessment of the turning requirements of the abnormally large loads transporting the turbine components was undertaken by Digital Land Surveyors Ltd. and the Applicant at the various pinch points identified along the turbine delivery route from the N56 to the Proposed Wind Farm via Site, as indicated in Figure 15-3a and discussed in Sections 15.1.8 and 15.1.9 of this chapter; and are provided as Appendix 15-3 to the EIAR. The swept path assessment undertaken for the locations identified in Appendix 15-3 are discussed in Section 15.1.10.

Please note, the turbine delivery route follows a similar route to that of the Existing Wind Farm, which has had a successful delivery of abnormal loads.

15.1.2.3 Proposed Construction Traffic Haul Route

All concrete required for each turbine foundation will be delivered to the site in one day per foundation for a total of 17 days. While the majority of crushed stone for the construction of the Proposed Project will be sourced from the onsite borrow pits, a certain volume of crushed stone and hardcore materials and all ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries as shown in Figure 4-29 in Chapter 4 of this EIAR. All concrete deliveries provided by local quarries will access the Proposed Wind Farm via the main site entrance off the L6309 Local Road with the potential routes to the Proposed Wind Farm shown in Figure 15-1.

As shown in Figure 15-1, for the purposes of this EIAR, based on the location of potential suppliers of concrete and crushed stone, there are 2 no. additional routes (the R314 and L1321 to the N59 from the direction of Ballina, Co. Mayo in the west) that may be used for the delivery of these materials. These additional routes converge on the TDR with these locations included in the traffic impact assessment as discussed in Section 15.1.5 of this EIAR.



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-1 Locations included in autotrack assessment

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: NTS	
PROJECT NO: 11240	DATE: 22.04.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

15.1.2.4 Proposed Grid Connection Route

The Proposed Grid Connection Route will connect the Proposed Wind Farm into the national grid via the proposed onsite 110kV substation. The Proposed Grid Connection Route will originate at the proposed onsite 110kV substation and run northeast for approx. 130m through a proposed access track before turning east and then north along the L6309 Local Road network for approx. 6.6km. The Proposed Grid Connection Route then follows the N59 National Road east for approx. 22.9km before continuing southeast for 6.9km on the R290 Regional Road. The Proposed Grid Connection Route then joins the R284 Regional Road heading southeast for 2.8km on the L6234 Local Road before heading east onto the L5204 Local Road for 1.8km. From the L5204 the Proposed Grid Connection Route turns left and travels a final 400m into the existing Srananagh 220kV substation.

The townlands in which the Proposed Grid Connection Route will pass through are detailed in Table 1-1 of Chapter 1. Refer to Section 4.3.3 of Chapter 4 for further detail on the Proposed Grid Connection Route.

The Proposed Grid Connection Route and associated traffic-related impacts are discussed in Section 15.1.8.

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 a 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 nine locations included in the link flow assessment and for which base year traffic count data was collated for the years 2025 and 2026 are set out in Table 15-2 and shown in Figure 15-3b. The locations included in the assessment are as follows:

- Link 1 – N56 – West of Donegal,
- Link 2 – N15 – Between Ballyshannon and Donegal,
- Link 3 – N15 – Between Bundoran and Sligo,
- Link 4 – N4 South of Sligo,
- Link 5 – N59 – East of L2702,
- Link 6 – L2702 – South of N59,
- Link 7 – L6309 – Towards main access,
- Link 8 – L2702 – To turbines T1 to T5,
- Link 9 – N59 – Between Sligo and Ballina.

The traffic counts were obtained from 3 sources, as summarised in Table 15-2. Base year 2025 traffic flows were sourced from the Automatic Traffic Count data supplied by TII and utilised at 4 locations (2 locations on the N15, 1 on the N4 and 1 on the N59). Classified turning counts were undertaken on the 10th March 2026 for the purpose of this assessment by Traffinomics Ltd at the N59 / L2702 junction which provided traffic counts for these 2 locations. Traffic count data for the remaining 2 locations on the L6309 and the L2702 were also recorded on 10th March 2026 by means of automatic traffic count surveys undertaken by Traffinomics for the purpose of this EIAR. The traffic counts surveys at these 2 locations also recorded traffic speeds in order to inform the visibility splay requirements at the access junctions.

An assessment of the seasonal variation in traffic volumes by month was undertaken using the Automatic Traffic Count site maintained by TII on the N59 between Sligo and Ballina. Based on this

data it was established that traffic volumes during the survey month of March were exactly the average observed during the 12 months of the year with no seasonal adjustment required for the traffic counts undertaken during this month.

All base year 2024 traffic count data referred to above is included as Appendix 15-1.

Table 15-2 Link count locations, data source and year

Link	Data source	Year
1 – N56 – West of Donegal	Automatic traffic counter - TII	2025
2 – N15 – Between Ballyshannon and Donegal	Automatic traffic counter - TII	2025
3 – N15 – Between Bundoran and Sligo	Automatic traffic counter - TII	2025
4 – N4 - South of Sligo	Automatic traffic counter - TII	2025
5 – N59 – East of L2702	Classified turning count - Traffinomics	2026
6 – L2702 – South of N59	Classified turning count - Traffinomics	2026
7 – L6309 – To turbines T6 to T17	Automatic traffic counter - Traffinomics	2026
8 – L2702 – To turbines T1 to T5	Automatic traffic counter - Traffinomics	2026
9 – N59 – Between Sligo and Ballina	Automatic traffic counter - TII	2025

The all-day traffic flows observed for the base years 2025 / 2026 for all links are shown in terms of vehicle numbers in Table 15-3. The figures show that there is a considerable range in existing traffic volumes on the proposed turbine delivery route and construction traffic routes, ranging from 11,695 vehicles per day on the N56 West of Donegal (Link 1), to 10,137 and 8,960 vehicles per day on the N15 south of Donegal (Link 2 and 3). Traffic volumes peak on the dual section of the N4 south of Sligo with a daily volume of 25,441 vehicles (Link 4). On the N59 east and west of the L2702, daily volumes of 4,051 vehicles (Link 5) and 4,692 vehicles (Link 9) were observed. The local roads off which the existing and proposed wind farms are accessed were observed to provide for very low traffic volumes, with a daily flow of 66 vehicles recorded on the L6309 (Link 7) and 68 vehicles recorded on the L2702 (Link 8).

Table 15-3 Observed all day traffic flows by location, years 2025 & 2026 (2-way vehicles)

Link	2025	2026
1 – N56 – West of Donegal	11,695	NA

Link	2025	2026
2 – N15 – Between Ballyshannon and Donegal	10,137	NA
3 – N15 – Between Bundoran and Sligo	8,960	NA
4 – N4 - South of Sligo	25,441	NA
5 – N59 – East of L2702	NA	4,051
6 – L2702 – South of N59	NA	756
7 – L6309 – To turbines T6 to T17	NA	66
8 – L2702 – To turbines T1 to T5	NA	68
9 – N59 – Between Sligo and Ballina	4,692	NA

15.1.3.2 Background Traffic Volumes for the Assumed Construction Year 2030

This section describes the process adopted to produce background traffic forecasts for an assumed construction year of 2030.

Revised guidelines for forecasting annual growth in traffic volumes were produced by TII in October 2021, as set out by count in the Project Appraisal Guidelines (Unit 5.3 – Travel Demand Projections). The annual growth rates for light vehicles for County Sligo 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 7.6.% from 2025 to the year 2030, and by 6.0% between the years 2026 and 2030. Traffic flows for the base years 2025 and 2026 and the construction year of 2030 are compared in Table 15-6.

While the assumed construction year of 2030 may vary within the 10-year period for which planning permission is sought, 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 0.45% by the year 2030 (as shown in Table 15-4 as 1.0045) and, more importantly, the traffic volumes generated by the Proposed Project will remain unchanged regardless of construction year, as presented subsequently in Section 15.1.4.

The automatic traffic counts maintained by TII and the classified traffic counts undertaken for the purpose of this assessment were also used to determine the existing percentage of HGVs on the proposed turbine delivery routes and construction haul routes. The observed percentage of HGVs are shown in Table 15-7 and range from a minimum of 2.7% observed on the N56 west of Donegal Town (Link 1), to a maximum of 11.9% observed on the L2702 leading to the site (Link 6).

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

Year	Lights – Annual Factor			Lights – Cumulative Factor		
	Low	Medium	High	Low	Medium	High
2025	1.0133	1.0147	1.0178	1.000	1.000	1.000
2026	1.0133	1.0147	1.0178	1.013	1.015	1.018
2027	1.0133	1.0147	1.0178	1.027	1.030	1.036
2028	1.0133	1.0147	1.0178	1.040	1.045	1.054
2029	1.0133	1.0147	1.0178	1.054	1.060	1.073
2030	1.0133	1.0147	1.0178	1.068	1.076	1.092
2031	1.0028	1.0045	1.0082	1.071	1.081	1.101
2032	1.0028	1.0045	1.0082	1.074	1.085	1.110
2033	1.0028	1.0045	1.0082	1.077	1.090	1.119

Table 15-5 TII traffic growth rates by growth scenario

Period	New Factors		
	Low	Medium	High
2025 – 2030	1.068	1.076	1.092
2026 - 2030	1.054	1.060	1.073

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

Link	2025	2026	2030
1 – N56 – West of Donegal	11,695	NA	12,584
2 – N15 – Between Ballyshannon and Donegal	10,137	NA	10,907
3 – N15 – Between Bundoran and Sligo	8,960	NA	9,641
4 – N4 - South of Sligo	25,441	NA	27,375
5 – N59 – East of L2702	NA	4,051	4,294
6 – L2702 – South of N59	NA	756	801
7 – L6309 – To turbines T6 to T17	NA	66	70

Link	2025	2026	2030
8 – L2702 – To turbines T1 to T5	NA	68	72
9 – N59 – Between Sligo and Ballina	4,692	NA	5,049

Table 15-7 All day flows, percentage HGVs and flows by vehicle type, year 2030

Link	All day flow (vehs)	% HGV's	Vehicles		PCUs		
			HGVs	Cars / LGVs (Light Goods Vehicles)	HGVs	Cars / lgvs	Total
1 – N56 – West of Donegal	12,584	2.7%	340	12,244	815	12,244	13,059
2 – N15 – Between Ballyshannon and Donegal	10,907	5.5%	600	10,308	1,440	10,308	11,747
3 – N15 – Between Bundoran and Sligo	9,641	4.5%	434	9,207	1,041	9,207	10,248
4 – N4 - South of Sligo	27,375	3.5%	958	26,416	2,299	26,416	28,716
5 – N59 – East of L2702	4,294	6.6%	283	4,011	680	4,011	4,691
6 – L2702 – South of N59	801	11.9%	95	706	229	706	935
7 – L6309 – To turbines T6 to T17	70	3.0%	2	68	5	68	73
8 – L2702 – To turbines T1 to T5	72	11.8%	9	64	20	64	84
9 – N59 – Between Sligo and Ballina	5,049	3.1%	157	4,892	376	4,892	5,268

15.1.4 Proposed Project Traffic Generation

15.1.4.1 Proposed Access Junctions

While the design of the junctions that will provide access to the Proposed Wind Farm is discussed in Section 15.1.11, a summary of the proposed access junctions is provided below. The location of the proposed access junctions that will provide access to the Proposed Wind Farm are shown in Figure 15-2.

All construction traffic, including the removal of Existing Wind Farm turbines, delivery of the abnormally sized loads, the delivery of all general construction traffic, all staff construction traffic, and for the purpose of all maintenance traffic during the operational phase, will be provided via the following site access junctions;

Site Access Junction A – This proposed new junction off the L6309, will provide access for all traffic generated during the construction and operational phases to Proposed Turbines T06 and T07.

Site Access Junction B – The proposed new junction off the L2702, will provide access for all traffic generated during the construction and operational phases to Proposed Turbines T02 and T04.

Site Access Junctions C - The proposed improved existing junction off the L2702, will provide access for all traffic generated during the construction and operational phases to Proposed Turbines T01, T03 and T05.

Site Access Junction D - The proposed improved existing junction will provide access for all traffic generated during the construction and operational phases within the site of the Existing Wind Farm, including Proposed Turbines T08 to T17.

Site Access Junction E - The proposed new junction off the L2702, will provide access for all traffic generated during the construction and operational phases to the proposed onsite 110kV substation.

15.1.4.2 Development Trip Generation – During Construction

For the purpose of assessing the effects of traffic generated during the construction of the Proposed Project, the construction is considered in 2 Phases, as detailed in the development construction programme included in Section 4.7 and Table 4-6 of Chapter 4 of the EIAR which is summarised below.

The total number of deliveries that are forecast to be delivered to the Site for the civils element of the Proposed Project are set out in Table 15-8. It is estimated that a total of 25,902 deliveries by truck or standard articulated HGVs will be made to the site during this period. Of the total 25,902 loads they are split into the following;

- 1,275 loads will be generated during the 17 days that the concrete foundations are poured,
- The remaining 24,627 loads will be generated by the 2 periods that civils works will be undertaken on the site, one during Phase 1 and the other during Phase 2. For the purpose of this assessment, it is estimated that 12,314 loads will be delivered to the site during each of these civils work phases.

Construction Phase 1

It is estimated that Construction Phase 1 will last 242 working days and will involve general civil works and the decommissioning of the existing turbines, and will be split into the following types of days;

- **Civils - Concrete foundation pours** – On 17 days when one turbine concrete foundation will be poured each day resulting in approximately 75 deliveries per day hour over a 12 hour day.
- **Removal of existing turbines** – On 20 days the Existing Wind Farm 23 no. turbines will be removed from the site using standard HGVs. On these days it is forecast that on average 55 PCUs will be generated travelling to and from the site, as shown in Table 15-14.
- **Civils – General construction and construction of Proposed Grid Connection Route** – On the remaining 205 days of Phase 1, general construction civils construction works will be undertaken, including the construction of compounds, new access tracks and hardstands and the construction of the on-site substation. The construction of the Proposed Grid Connection Route between the on-site substation and the existing Srananagh 220kV substation will also be undertaken on these days.

The estimated additional daily traffic generated on the road network during these days are shown in Tables 15-9, 15-10 and 15-11. The figures show that on the 17 days that concrete will be delivered to the Proposed Wind Farm site, an additional 360 two-way PCUs will be added to the network (comprising 75 two-way HGV trips with 2.4 PCUs per movement), as shown in Table 15-9.

On the 20 days that the decommissioned turbines will be removed from the site it is estimated that an additional 55 PCUs will be generated by the Proposed Development, as shown in Table 15-10.

Similarly, on the 205 days when all other materials required for the civils construction Phase 1 are delivered to the Proposed Wind Farm site, traffic volumes on the local network will increase by an average of 288 PCUs, as set out in Table 15-11.

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

Material	Total no. Truck Loads	Truck type
Concrete	1,275	Concrete mixer
Delivery of plant	43	Large artic
Fencing & gates	4	Large artic
Compound setup	68	Large artic
Concrete binding and steel	31	Large artic
Ducting and cabling (internal)	534	Large artic
Tree felling	291	Large artic
Crane (to lift steel)	3	Large artic
Rock / stone / road construction	22,764	Truck
Substation	90	Large artic
Cranes for turbines	23	Large artic

Refuelling for plant	351	Large artic
Site maintenance	255	Large artic
Miscellaneous	170	Large artic
Total	25,902	

Table 15-9 Trip generation - Construction Phase 1 – Civils, Concrete foundation pours – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU value	Total PCUs	Total 2-way PCUs	Days	2-way PCUs/day
Concrete	1,275	Concrete mixer	2.4	3,060	6,120	17	360

Table 15-10 Trip generation - Phase 2 – Decommissioning existing turbines – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU value	Total PCUs	Total 2-way PCUs	Days	2-way PCUs/day
Removal of decommissioned turbines	230	HGVs	2.4	552	1,104	20	55.2

Table 15-11 Trip generation - Construction Phase 1 – Civils, General construction – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU value	Total PCUs	Total 2-way PCUs	Days	2-way PCUs/day
Various	12,314	Trucks	2.4	29,552	59,105	205	288.3

Construction Phase 2

It is estimated that Construction Phase 2 will last 267 days and will comprise the following types of delivery day;

Construction Phase 2 – Civils, general construction – On the first 42 weeks (205 days) of Phase 2, general civils works will continue for the proposed new 17 turbines including, the upgrade and widening of existing access tracks, construction of the new access road and the installation of cable ducts, as set out in Table 15-12.

➤ **Construction Phase 2 - Turbine delivery (abnormally sized loads)** – The total number of turbine components that will require to be delivered to the site are set out in Table 15-13, with a total of 136 abnormally sized loads to be delivered to the site and a further 68 loads to be delivered by standard HGVs. For the purpose 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 Project site on 5 days per

week, which is a common delivery frequency for large turbine components from the port of entry to the site. This will result in this stage taking 45 days/ nights (with one convoy comprising 4 loads) spread over a 9-week period with all deliveries made during the night. The actual trip number will be determined following consultations with An Garda Síochána. On these days a 2-way flow of 60 PCUs will travel to and from the Proposed Project site, as set out in Table 15-14.

- **Construction Phase 2 - Turbine component delivery – standard HGV** – Smaller turbine components will be delivered to the site by standard HGVs over 17 days at the rate of 2 days per week over a 9-week period. On these days an additional 19 PCUs will travel to and from the site, as shown in Table 15-15.

Table 15-12 Trip generation - Construction Phase 2 – Civils, General construction – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU value	Total PCUs	Total 2-way PCUs	Days	2-way PCUs/day
Various	12,314	Trucks	2.4	29,552	59,105	205	288.3

Table 15-13 Trip generation - Phase 2 – Wind turbine plant – total loads

Material	Units	Quantity per Unit	Total Quantity	Quantity per Truck	Total Truck Loads	Truck type
Nacelle	17	1	17	1	17	Extended Artic
Blades	17	3	51	1	51	Extended Artic
Towers	17	4	68	1	68	Extended Artic
Sub total					136	
Transformer	17	1	17	1	17	Large Artic
Drive train and blade hub	17	1	17	1	17	Large Artic
Base and other deliveries	17	2	34	1	34	Large Artic
Sub total					68	
Total					204	

Table 15-14 Trip generation - Phase 2 – Wind turbine plant, extended artic – 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

Material	Units	Truck Type	PCU Value	Total PCUs	2-way day	PCUs/
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 136 loads will take 45 nights spread over 9 weeks). It is noted that one convoy will have 4 vehicles						

Table 15-15 Trip generation – Phase 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 over 17 days spread over 2 days for 9 weeks			

Construction of the Proposed Grid Connection Route

It is estimated that the Proposed Grid Connection Route which has a total length of 41.6km will be constructed at an average rate of 100m per day, resulting in the construction of this component of the Proposed Project lasting 416 days. It is estimated that an average of 15 HGV trips, or 72 No. 2-way PCUs will travel to and from the point of construction per day, as set out in Table 15-16.

It is proposed that the Proposed Grid Connection Route is constructed concurrently with the Proposed Wind Farm, as is summarised in Chapter 4 Section 4.7.2.

Table 15-16 Trip generation – Phases 1 and 2 – Construction of Proposed Grid Connection Route – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU value	Total PCUs	Total 2-way PCUs	Days	2-way PCUs/day
Construction of Proposed Grid Connection Route	6,240	HGVs	2.4	14,976	29,952	416	72.0

Construction Employee Traffic

During the construction of the Proposed Project, it is estimated that approx. 100 jobs will be created. Of this total it is estimated that up to 70 staff members will be employed at any one time during the site preparation and groundworks stage of construction, reducing to a maximum of 45 staff at any one time during the turbine construction stage. 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 of the Proposed Project, reducing to 45 PCU trips during the turbine construction stage.

Summary of construction days and trip generation by delivery route

A summary of the 2-way delivery trips in terms of PCUs that will be generated on the 6 typical delivery days, together with the duration in days and the proposed access route, is shown in Table 15-17.

Table 15-17 Summary of trip generation by delivery day and delivery route

Delivery activity	Days	2-way HGV pcus	2-way car pcus	2-way total pcus	Delivery route
Construction Phase 1 - Concrete foundation delivery days	17	360	70	430	General construction materials delivery routes
Construction Phase 1 - Decommissioning + Grid construction	20	127 (55+72)	61 (45+16)	188	General construction materials delivery route
Construction Phase 1 - General construction + Grid construction	205	360 (288+72)	86 (70+16)	446	General construction materials delivery routes
Construction Phase 2 - General construction + Grid construction	205	360 (288+72)	86 (70+16)	446	General construction materials delivery routes
Construction Phase 2 - Turbine delivery	45	132 (60+72)	61 (45+16)	193	TDR + General construction

Delivery activity	Days	2-way HGV pcus	2-way car pcus	2-way total pcus	Delivery route
(abnormally sized loads) + Grid construction					materials delivery route
Construction Phase 2 - Turbine delivery (standard HGVs) + Grid construction	17	91 (19+72)	61 (45+16)	152	TDR + General construction materials delivery route
Total	509				

15.1.4.3 Development Trip Generation – During Operation

There will be 1 no. staff permanently present on the Proposed Wind Farm site once the Proposed Project is operational as in general it will be remotely monitored. The only traffic associated with the operational phase of the Proposed Wind Farm will be from maintenance and monitoring personnel that will gain access to the site via the proposed operational phase site entrances (i.e., Site Entrances A to D) as well as tourists and members of the local community accessing the Proposed Wind Farm site for the purposes of amenity via the Sligo Way Trail along the L2702 and L6309 local roads. There will be a similarly low level of maintenance trips generated by the proposed onsite 110kV substation, which will be accessed via Site Entrance E on the L2702 and Existing Wind Farm control buildings, which will be accessed via Site Entrance D.

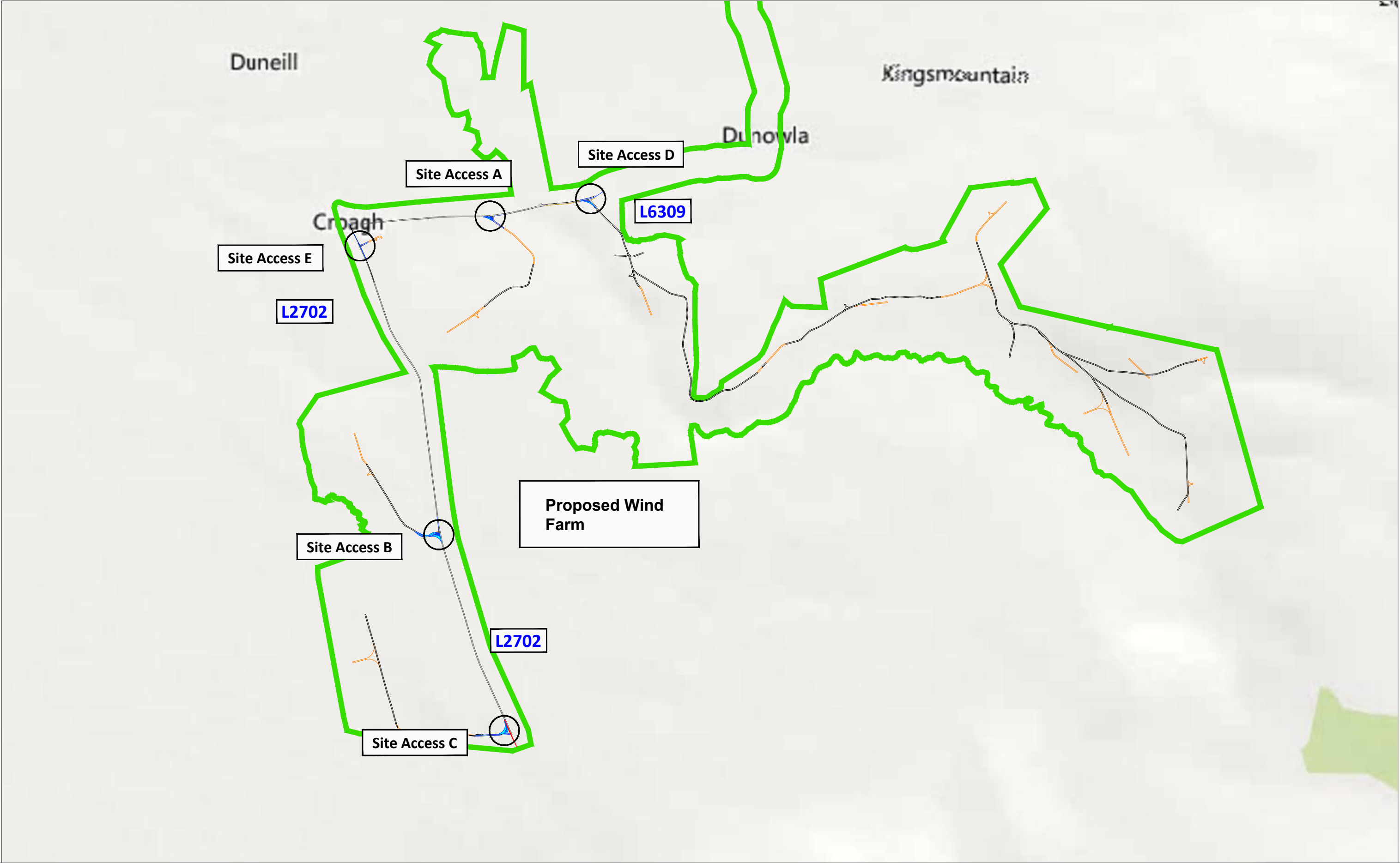
While there will be no scheduled trips required for the Proposed Grid Connection Route, maintenance may be required, although this will occur rarely generating a modest number of trips via a proposed access track on the L2702. It is estimated that the Proposed Wind Farm Site will generate a maximum of 2 trips (4 movements) by car / lgv per day.

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 1-2 staff employed on the Site at any time. The impact on the network of these trips during the operational stage is discussed in Section 15.1.14.3 below.

15.1.4.4 Development Trip Generation – During Decommissioning

Traffic generation to the Proposed Wind Farm during decommissioning will be significantly less than the construction phase presented in Section 15.1.4.2 above. This is because much of the materials (i.e. stone and gravel) brought into the site during construction will be left in-situ during the decommissioning stage. Please see Appendix 4-6 Decommissioning Plan for further detail.

During this phase, there will be no traffic generation as a result of the Proposed Grid Connection Route as these elements of the Proposed Project will not be decommissioned.

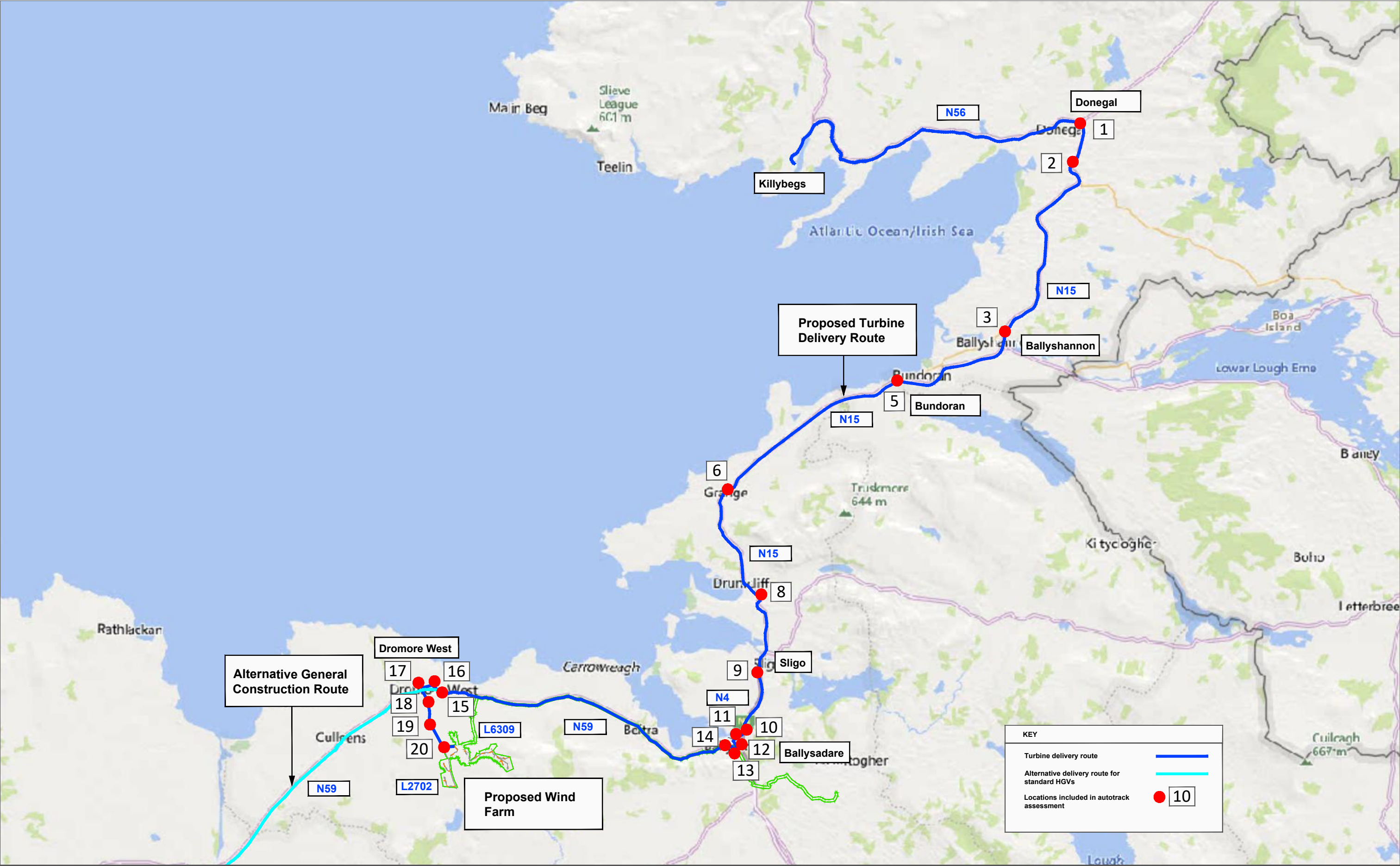


NOTES:
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-2 Location of existing and proposed access junctions

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: NTS	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

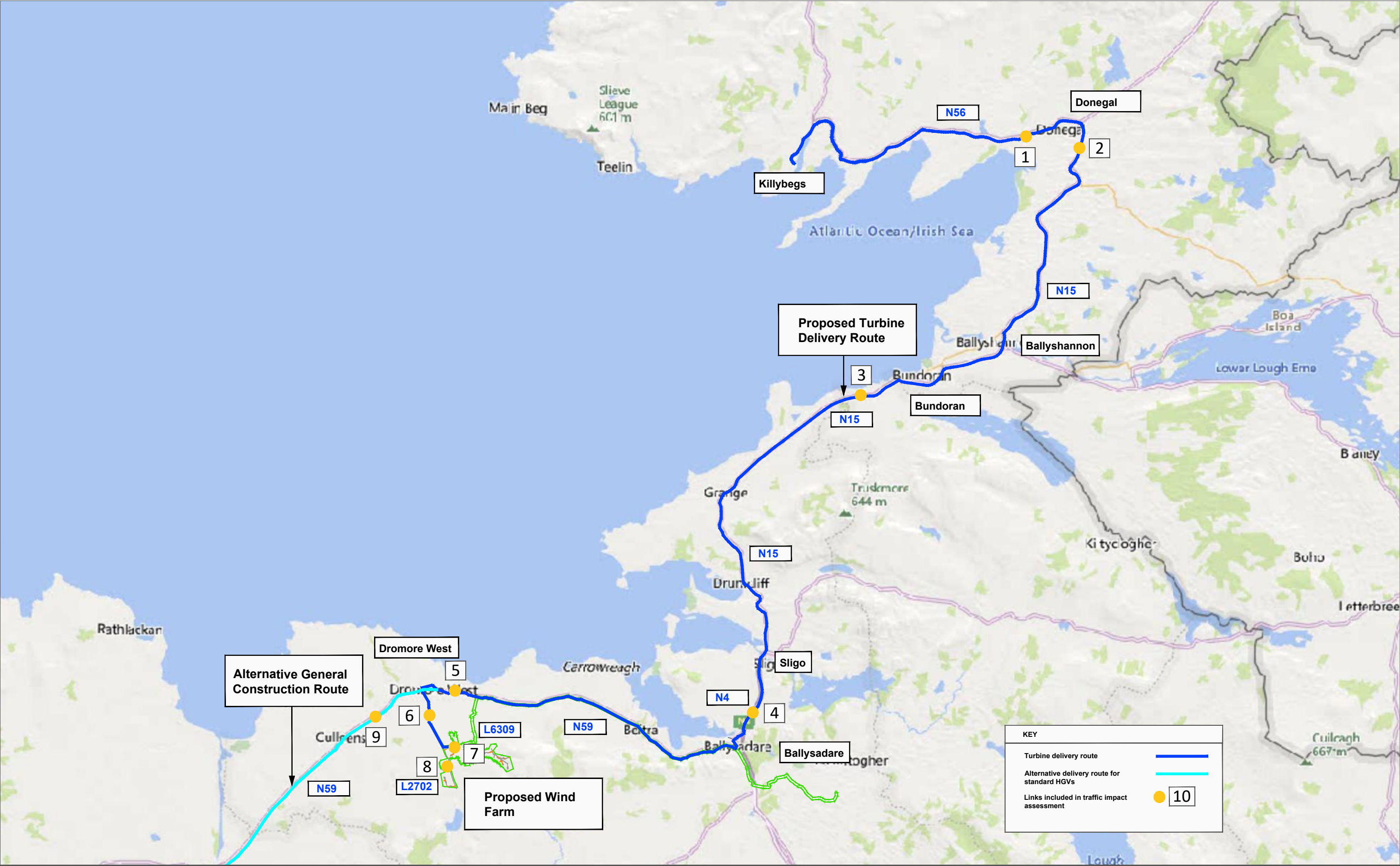


NOTES:
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-3a Locations included in autotrack assessment

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: NTS	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

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TRAFFIC & TRANSPORT CONSULTANTS



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-3b Location of links included in traffic impact assessment

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: NTS	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

15.1.5 Traffic Effects During Construction, Operation and Decommissioning of the Proposed Project

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

It should be noted that for the purpose of the assessment all vehicles travelling to and from the Proposed Wind Farm site have been assumed to do so from the same direction. The assessment is therefore based on a precautionary scenario, where all traffic generated by the Proposed Wind Farm site travels to/from the site via the same route, with the maximum increase in traffic volumes assessed on each link shown in Figure 15-4b.

The potential effects of the Proposed Grid Connection Route will have on the public road network is considered in Section 15.1.8.

15.1.5.1 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 15-18 to 15-23, 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 15-21 to 15-26. 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 Phase 1 – Wind Turbine Foundation Concrete Pouring

For 17 days when the concrete foundations are poured, an additional 430 PCUs will travel to/from the Proposed Project site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +3.3% to 4.2% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +1.5% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +9.2%, increasing to +46.0% as the route heads south onto the L2702 (Link 6) and background traffic volumes on the local road network reduce.

On the L6309 (Link 7) leading to the Site Access A and D, and on the L2702 (Link 8) leading to the proposed Site Accesses C, B and E, where background traffic volumes are very low (< 100 pcus per day) traffic flows on these days are forecast to increase by a factor of between 5 to 6.

For trips approaching from the west on the N59 (Link 9) it is forecast that traffic volumes will increase by +8.2% on these 17 days).

During Phase 1 – Removal of Existing Wind Farm Turbines and Proposed Grid Connection Route Construction

On these 20 days when the Existing Wind Farm turbines will be removed from the Proposed Wind Farm site at the same time as the construction of the Proposed Grid Connection Route continues, an additional 188 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.4% to 1.8% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.7% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +4.0%, increasing to +20.1% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Proposed Wind Farm site accesses A and D, and on the L2702 (Link 8) leading to Proposed Wind Farm site accesses B, C and E, traffic flows on these days are forecast to increase by a factor of between 2 to 3.

For trips approaching from the west on the N59 (Link 9) is forecast that traffic volumes will increase by +8.6% on these 20 days).

During Phase 1 – General Construction and Grid Construction

For 205 days when first phase general construction takes place on the Proposed Wind Farm at the same time Proposed Grid Connection Route construction commences, an additional 446 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +3.4% to 4.4% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +1.6% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +9.5%, increasing to +47.7% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Proposed Wind Farm site accesses A and D, and on the L2702 (Link 8) leading to Proposed Wind Farm site accesses B, C and E, traffic flows on these days are forecast to increase by a factor of between 5 to 6.

For trips approaching from the west on the N59 (Link 9) is forecast that traffic volumes will increase by +8.5% on these 205 days).

During Phase 2 – General Construction and Proposed Grid Connection Route Construction

The effects for these 205 days will be the same as for the General Construction and Grid Construction days for Phase 1, as set out above.

During Phase 2 – Delivery of Turbine Abnormally Sized Loads and Proposed Grid Connection Route Construction

On these 45 days when the abnormally sized loads will be delivered to the Proposed Wind Farm site at the same time as the construction of the Proposed Grid Connection Route continues, an additional 193 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.5% to 1.9% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.7% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +4.1%, increasing to +20.6% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Proposed Wind Farm site accesses A and D, and on the L2702 (Link 8) leading to Proposed Wind Farm site accesses B, C and E, traffic flows on these 45 days are forecast to increase by a factor of between 2 to 3.

During Phase 2 – Delivery of Turbine Standard Sized Loads and Proposed Grid Connection Route Construction

On these 17 days when the smaller turbine components will be delivered to the Proposed Wind Farm site using standard sized HGVs at the same time as the construction of the Proposed Grid Connection Route continues, an additional 152 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.2% to 1.5% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.5% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +3.2%, increasing to +16.3% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Proposed Wind Farm site accesses A and D, and on the L2702 (Link 8) leading to Proposed Wind Farm site accesses B, C and E, traffic flows on these days are forecast to increase by a factor of approximately 2.

Table 15-18 Daily traffic volumes on during - Phase 1 concrete pouring - background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	70	360	430	12,314	1,175	13,489
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	70	360	430	10,378	1,800	12,177
3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	70	360	430	9,277	1,401	10,678
4 – N4 - South of Sligo	26,416	2,299	28,716	70	360	430	26,486	2,659	29,146
5 – N59 – East of L2702	4,011	680	4,691	70	360	430	4,081	1,040	5,121
6 – L2702 – South of N59	706	229	935	70	360	430	776	589	1,365
7 – L6309 – To turbines T6 to T17	68	5	73	70	360	430	138	365	503
8 – L2702 – To turbines T1 to T5	64	20	84	70	360	430	134	380	514

Link	Background PCUs			Proposed PCUs		Project	Total PCUs (Background + Proposed Project)		
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	70	360	430	4,962	736	5,698

Table 15-19 Daily traffic volumes during turbine – Phase 2, existing turbine extraction + Proposed Grid Connection Route construction – standard artic HGVs, background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed PCUs		Project	Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	61	127	188	12,305	942	13,247
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	61	127	188	10,369	1,567	11,935
3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	61	127	188	9,268	1,168	10,436
4 – N4 - South of Sligo	26,416	2,299	28,716	61	127	188	26,477	2,426	28,904
5 – N59 – East of L2702	4,011	680	4,691	61	127	188	4,072	807	4,879
6 – L2702 – South of N59	706	229	935	61	127	188	767	356	1,123
7 – L6309 – To turbines T6 to T17	68	5	73	61	127	188	129	132	261
8 – L2702 – To turbines T1 to T5	64	20	84	61	127	188	125	147	272
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	61	127	188	4,953	503	5,456

Table 15-20 Daily Traffic volumes during – Phase 1 general construction + Proposed Grid Connection Route construction – background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	86	360	446	12,330	1,175	13,505
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	86	360	446	10,394	1,800	12,193
3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	86	360	446	9,293	1,401	10,694
4 – N4 - South of Sligo	26,416	2,299	28,716	86	360	446	26,502	2,659	29,162
5 – N59 – East of L2702	4,011	680	4,691	86	360	446	4,097	1,040	5,137
6 – L2702 – South of N59	706	229	935	86	360	446	792	589	1,381
7 – L6309 – To turbines T6 to T17	68	5	73	86	360	446	154	365	519
8 – L2702 – To turbines T1 to T5	64	20	84	86	360	446	150	380	530
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	86	360	446	4,978	736	5,714

Table 15-21 Daily Traffic volumes during – Phase 2 general construction + Proposed Grid Connection Route construction – background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	86	360	446	12,330	1,175	13,505
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	86	360	446	10,394	1,800	12,193

3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	86	360	446	9,293	1,401	10,694
4 – N4 - South of Sligo	26,416	2,299	28,716	86	360	446	26,502	2,659	29,162
5 – N59 – East of L2702	4,011	680	4,691	86	360	446	4,097	1,040	5,137
6 – L2702 – South of N59	706	229	935	86	360	446	792	589	1,381
7 – L6309 – To turbines T6 to T17	68	5	73	86	360	446	154	365	519
8 – L2702 – To turbines T1 to T5	64	20	84	86	360	446	150	380	530
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	86	360	446	4,978	736	5,714

Table 15-22 Daily traffic volumes during – Phase 2 turbine construction, extended artics + Proposed Grid Connection Route construction – background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed PCUs			Project			Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	61	132	193	12,305	947	13,252			
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	61	132	193	10,369	1,572	11,940			
3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	61	132	193	9,268	1,173	10,441			
4 – N4 - South of Sligo	26,416	2,299	28,716	61	132	193	26,477	2,431	28,909			
5 – N59 – East of L2702	4,011	680	4,691	61	132	193	4,072	812	4,884			

Link	Background PCUs			Proposed PCUs		Project	Total PCUs (Background + Proposed Project)		
6 – L2702 – South of N59	706	229	935	61	132	193	767	361	1,128
7 – L6309 – To turbines T6 to T17	68	5	73	61	132	193	129	137	266
8 – L2702 – To turbines T1 to T5	64	20	84	61	132	193	125	152	277
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	61	132	193	4,953	508	5,461

Table 15-23 Daily traffic volumes during Phase 2 turbine construction – standard artic HGVs + Proposed Grid Connection Route construction, background, Proposed Project generated and total (PCUs), year 2030

Link	Background PCUs			Proposed PCUs		Project	Total PCUs (Background + Proposed Project)		
	Car	HGV	Total	Car	HGV	Total	Car	HGV	Total
1 – N56 – West of Donegal	12,244	815	13,059	61	91	152	12,305	906	13,211
2 – N15 – Between Ballyshannon and Donegal	10,308	1,440	11,747	61	91	152	10,369	1,531	11,899
3 – N15 – Between Bundoran and Sligo	9,207	1,041	10,248	61	91	152	9,268	1,132	10,400
4 – N4 - South of Sligo	26,416	2,299	28,716	61	91	152	26,477	2,390	28,868
5 – N59 – East of L2702	4,011	680	4,691	61	91	152	4,072	771	4,843
6 – L2702 – South of N59	706	229	935	61	91	152	767	320	1,087
7 – L6309 – To turbines T6 to T17	68	5	73	61	91	152	129	96	225

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
8 – L2702 – To turbines T1 to T5	64	20	84	61	91	152	125	111	236
9 – N59 – Between Sligo and Ballina	4,892	376	5,268	61	91	152	4,953	467	5,420

Table 15-24 Summary daily effects of Proposed Project traffic – Phase 1 concrete pouring - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N56 – West of Donegal	13,059	430	13,489	3.3%	17
2 – N15 – Between Ballyshannon and Donegal	11,747	430	12,177	3.7%	17
3 – N15 – Between Bundoran and Sligo	10,248	430	10,678	4.2%	17
4 – N4 - South of Sligo	28,716	430	29,146	1.5%	17
5 – N59 – East of L2702	4,691	430	5,121	9.2%	17
6 – L2702 – South of N59	935	430	1,365	46.0%	17
7 – L6309 – To turbines T6 to T17	73	430	503	589.9%	17
8 – L2702 – To turbines T1 to T5	84	430	514	512.0%	17
9 – N59 – Between Sligo and Ballina	5,268	430	5,698	8.2%	17

Table 15-25 Summary daily effects of Proposed Project traffic- Phase 2, existing turbine extraction + Proposed Grid Connection Route construction – % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
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1 – N56 – West of Donegal	13,059	188	13,247	1.4%	20
2 – N15 – Between Ballyshannon and Donegal	11,747	188	11,935	1.6%	20
3 – N15 – Between Bundoran and Sligo	10,248	188	10,436	1.8%	20
4 – N4 - South of Sligo	28,716	188	28,904	0.7%	20
5 – N59 – East of L2702	4,691	188	4,879	4.0%	20
6 – L2702 – South of N59	935	188	1,123	20.1%	20
7 – L6309 – To turbines T6 to T17	73	188	261	257.9%	20
8 – L2702 – To turbines T? to T?	84	188	272	223.8%	20
9 – N59 – Between Sligo and Ballina	5,268	188	5,456	3.6%	20

Table 15-26 Summary daily effect of Proposed Project traffic – Phase 1 general construction + grid construction - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N56 – West of Donegal	13,059	446	13,505	3.4%	205
2 – N15 – Between Ballyshannon and Donegal	11,747	446	12,193	3.8%	205
3 – N15 – Between Bundoran and Sligo	10,248	446	10,694	4.4%	205
4 – N4 - South of Sligo	28,716	446	29,162	1.6%	205

5 – N59 – East of L2702	4,691	446	5,137	9.5%	205
6 – L2702 – South of N59	935	446	1,381	47.7%	205
7 – L6309 – To turbines T6 to T17	73	446	519	611.8%	205
8 – L2702 – To turbines T1 to T5	84	446	530	531.0%	205
9 – N59 – Between Sligo and Ballina	5,268	446	5,714	8.5%	205

Table 15-27 Summary daily effect of Proposed Project traffic – Phase 2 general construction + Proposed Grid Connection Route construction - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N56 – West of Donegal	13,059	446	13,505	3.4%	205
2 – N15 – Between Ballyshannon and Donegal	11,747	446	12,193	3.8%	205
3 – N15 – Between Bundoran and Sligo	10,248	446	10,694	4.4%	205
4 – N4 - South of Sligo	28,716	446	29,162	1.6%	205
5 – N59 – East of L2702	4,691	446	5,137	9.5%	205
6 – L2702 – South of N59	935	446	1,381	47.7%	205
7 – L6309 – To turbines T6 to T17	73	446	519	611.8%	205
8 – L2702 – To turbines T1 to T5	84	446	530	531.0%	205
9 – N59 – Between Sligo and Ballina	5,268	446	5,714	8.5%	205

Table 15-28 Summary daily effects of Proposed Project traffic- Phase 2 turbine construction, extended artic + Proposed Grid Connection Route construction – % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N56 – West of Donegal	13,059	193	13,252	1.5%	45
2 – N15 – Between Ballyshannon and Donegal	11,747	193	11,940	1.6%	45
3 – N15 – Between Bundoran and Sligo	10,248	193	10,441	1.9%	45
4 – N4 - South of Sligo	28,716	193	28,909	0.7%	45
5 – N59 – East of L2702	4,691	193	4,884	4.1%	45
6 – L2702 – South of N59	935	193	1,128	20.6%	45
7 – L6309 – To turbines T6 to T17	73	193	266	264.8%	45
8 – L2702 – To turbines T1 to T5	84	193	277	229.8%	45
9 – N59 – Between Sligo and Ballina	5,268	193	5,461	3.7%	45

Table 15-29 Summary daily effects of Proposed Project traffic- Phase 2 turbine construction – standard artic HGVs + Proposed Grid Connection Route construction – % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N56 – West of Donegal	13,059	152	13,211	1.2%	17
2 – N15 – Between Ballyshannon and Donegal	11,747	152	11,899	1.3%	17
3 – N15 – Between	10,248	152	10,400	1.5%	17

Bundoran and Sligo					
4 – N4 - South of Sligo	28,716	152	28,868	0.5%	17
5 – N59 – East of L2702	4,691	152	4,843	3.2%	17
6 – L2702 – South of N59	935	152	1,087	16.3%	17
7 – L6309 – To turbines T6 to T17	73	152	225	208.5%	17
8 – L2702 – To turbines T1 to T5	84	152	236	181.0%	17
9 – N59 – Between Sligo and Ballina	5,268	152	5,420	2.9%	17

15.1.6 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 15-30 to 15-33 with the capacity of the links on the route options, as shown in Table 15-30, varying from 42,000 vehicles per day on the dual section of the N4 south of Sligo, to 11,600 vehicles per day on the N56 and N15, to 5000 vehicles per day on the N59 and L2702, down to 3,000 vehicles per day on the L6309 and L2702.

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”.

While the above applies to the majority of the delivery routes to and from the Proposed Wind Farm site there are locations on the L6309 and the L2702 where the carriageway characteristics narrow to stretches of one-way operation. While there is no existing guidance in Ireland with respect to the link capacity for such situations, reference is made to a UK Department for Transport Traffic Advisory Leaflet 2/042 where it is recommended that a maximum hourly capacity for a single lane road with passing opportunities is 300 vehicles per hour. Based on this, a conservative 24-hour capacity of 3,000 PCUs (10 peak hours) per day is adopted.

Background traffic flows are compared to flows forecast for the various construction delivery stages in the construction year of 2030, in Table 15-31, with the percentage capacity reached for each stage shown in Table 15-32.

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

² <https://tsrgd.co.uk/pdf/tal/2004/tal-2-04.pdf>

- For the N56 west of Donegal (Link 1), it is forecast that this link will operate over capacity at Service Level D by the year 2030 with background traffic only (113%), with a forecast that this will increase by a maximum of 3% points to 116% during the construction of the Proposed Project.
- Similarly, for the N15 to the south of Donegal (Link 2), it is forecast that this link will operate at capacity at Service Level D by the year 2030 with background traffic only (101%), with a forecast that this will increase by a maximum of 4% points to 105% during the construction of the Proposed Project.
- The N59 to the east of the L2702 (Link 5), is forecast to operate within capacity based on background traffic levels (94%) and is forecast to operate at just over capacity (103%) during the constructions stage, while to the west of the L2702 (Link 9), it is forecast that the road will operate at 105% of capacity based on background traffic increasing to a maximum of 114% during the construction stage.
- All other links on the delivery routes are forecast to operate well within link capacity for the background traffic scenario and all construction day scenarios.

While it is considered that the magnitude of these forecast temporary increases in traffic flows will result in traffic impacts of slight in terms of severity, the following junctions on the TDR and general construction traffic route are included in the detailed junction capacity tests included in Section 15.1.6.1:

- N59 / L2702 junction in Dromore West.

Table 15-30 Delivery route link type and link capacity (at Level of Service D)

Link	Link type	Link capacity (Level of Service D)
1 – N56 – West of Donegal	Type 1 Single	11,600
2 – N15 – Between Ballyshannon and Donegal	Type 1 Single	11,600
3 – N15 – Between Bundoran and Sligo	Type 1 Single	11,600
4 – N4 - South of Sligo	Type 1 Dual	42,000
5 – N59 – East of L2702	Type 3 Single	5,000
6 – L2702 – South of N59	Type 3 Single	5,000
7 – L6309 – To turbines T6 to T17	Narrow local	3,000
8 – L2702 – To turbines T1 to T5	Narrow local	3,000
9 – N59 – Between Sligo and Ballina	Type 3 Single	5,000

Table 15-31 Delivery route link capacity and summary of link flows by construction delivery stage, year 2030

Link	Link capacity (Level of Service D)		Construction delivery stage					
			Phase 1 - Concrete pour + grid	Phase 1 -Existing turbine extraction + grid	Phase 1 - General construction + grid	Phase 2 - General construction + grid	Phase 2 -Turbine delivery (abnormally sized loads) + grid	Phase 2 -Turbine delivery (standard artic HGVs) + grid
1 – N56 – West of Donegal	11,600	13,059	13,489	13,247	13,505	13,505	13,252	13,211
2 – N15 – Between Ballyshannon and Donegal	11,600	11,747	12,177	11,935	12,193	12,193	11,940	11,899
3 – N15 – Between Bundoran and Sligo	11,600	10,248	10,678	10,436	10,694	10,694	10,441	10,400
4 – N4 - South of Sligo	42,000	28,716	29,146	28,904	29,162	29,162	28,909	28,868

Link	Link capacity (Level of Service D)		Construction delivery stage					
5 – N59 – East of L2702	5,000	4,691	5,121	4,879	5,137	5,137	4,884	4,843
6 – L2702 – South of N59	5,000	935	1,365	1,123	1,381	1,381	1,128	1,087
7 – L6309 – To turbines T6 to T17	3,000	73	503	261	519	519	266	225
8 – L2702 – To turbines T1 to T5	3,000	84	514	272	530	530	277	236
9 – N59 – Between Sligo and Ballina	5,000	5,268	5,698	5,456	5,714	5,714	5,461	5,420

Table 15-32 Delivery route link capacity and % of link capacity by construction delivery stage, year 2030

Link	Link capacity (Level of Service D)		Construction delivery stage					
		Background traffic	Phase 1 - Concrete pour + Proposed Grid Connection Route	Phase 2 - Existing turbine extraction + Proposed Grid Connection Route	Phase 1 - General construction + Proposed Grid Connection Route	Phase 2 - General construction + Proposed Grid Connection Route	Phase 2 -Turbine delivery (abnormally sized loads) + Proposed Grid Connection Route	Phase 2 -Turbine delivery (standard artic HGVs) + Proposed Grid Connection Route
1 – N56 – West of Donegal	11,600	113%	116%	114%	116%	116%	114%	114%
2 – N15 – Between Ballyshannon and Donegal	11,600	101%	105%	103%	105%	105%	103%	103%
3 – N15 – Between Bundoran and Sligo	11,600	88%	92%	90%	92%	92%	90%	90%

Link	Link capacity (Level of Service D)		Construction delivery stage					
4 – N4 - South of Sligo	42,000	68%	69%	69%	69%	69%	69%	69%
5 – N59 – East of L2702	5,000	94%	102%	98%	103%	103%	98%	97%
6 – L2702 – South of N59	5,000	19%	27%	22%	28%	28%	23%	22%
7 – L6309 – To turbines T6 to T17	3,000	2%	17%	9%	17%	17%	9%	7%
8 – L2702 – To turbines T1 to T5	3,000	3%	17%	9%	18%	18%	9%	8%
9 – N59 – Between Sligo and Ballina	5,000	105%	114%	114%	114%	109%	109%	108%

15.1.6.1 Effect on Junctions – During Construction

As identified in the previous Section 15.1.6, the capacity of the junction most affected on the delivery route is;

- N59 / L2702 junction in Dromore West.

In accordance with TII Guidelines the threshold for requiring a junction to be included in the detailed junction capacity tests are when traffic flows are forecast to increase by 10% or above with the introduction of development generated traffic. As per the link capacity assessment set out above the only junction on the National and regional road network that approaches this threshold on a temporary basis is the N59 / L2702 junction, where the traffic flows on the N59 arm are forecast to increase by a maximum of 9.5% (See Table 15-26). A detailed junction capacity test was therefore undertaken for this junction, as set out below.

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 scenarios tested are as follows;

- Construction year 2030,
- AM and PM peak hours,
- Base traffic (do nothing) traffic flows and With Development Construction traffic flows.

The greatest effect in terms of traffic will be experienced during peak hours when, during peak construction periods, approximately 86 workers (43 cars) will pass through it. It is assumed that deliveries of materials to the Proposed Project site will take place during the day after the workers have arrived, and before they leave at the end of the day and will therefore not occur at the same time. A precautionary scenario was, however, tested based on the maximum number of HGVs that will access and exit the site during any one hour, which will be 8 HGVs in and out, also travelling through the junctions during the AM and PM peak hours.

N59 / L2702 junction in Dromore West Junction Capacity Test Results

The AM and PM peak hour traffic flows for the base year 2026 and the proposed construction year of 2030 are shown in Figures 15-4a and 15-4b respectively. The additional traffic movements that are forecast to be generated by construction workers are shown in Figure 15-4c, while the maximum HGV movements and PCUs that may be generated in one hour are shown in Figures 15-4d and 15-4e

respectively. The resulting peak hour traffic movements for the with construction scenario in 2030 are shown in Figure 15-4f.

The results of the capacity test for this junction are set out in Table 15-33 and forecast that the development generated traffic will result in an increase to the maximum ratio of flow to capacity (RFC) from 3.0% to 16.5% during the AM peak hour, which will apply to traffic from the N59 accessing the L2702, and from 6.0% to 22.58% during the PM peak hour, which will apply to the right turn from the L2702 onto the N59. The results of the junction capacity tests show that the additional traffic movements passing through the junction will be accommodated and have a minor effect on the operation of the junction. The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% in accordance with TII guidelines.

Table 15-33 Junction capacity test results, N59 / L2702 / L63072 junction, AM and PM peak hours, without and with construction traffic, by time period, year 2030

Period	Location	Without construction traffic			With construction traffic		
AM		RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
	Left from L63072	0.6%	0.01	0.23	0.7%	0.01	0.24
	Straight and right from L63072	0.4%	0.00	0.14	0.4%	0.00	0.15
	Left from L2702	1.8%	0.02	0.12	4.0%	0.04	0.13
	Straight and right from L2702	5.2%	0.05	0.17	8.3%	0.09	0.18
	Right turn from N59 to L63072	0.0%	0.00	0.00	0.0%	0.00	0.00
	Right turn from N59 to L2702	3.0%	0.04	0.09	16.5%	0.29	0.11
PM		RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
	Left from L63072	0.0%	0.00	0.00	0.0%	0.00	0.00
	Straight and right from L63072	0.6%	0.01	0.11	0.6%	0.01	0.11

Period	Location	Without construction traffic			With construction traffic		
	Left from L2702	2.5%	0.03	0.13	13.9%	0.16	0.14
	Straight and right from L2702	6.0%	0.06	0.17	22.5%	0.29	0.22
	Right turn from N59 to L63072	0.5%	0.01	0.09	0.5%	0.01	0.09
	Right turn from N59 to L2702	2.8%	0.04	0.10	5.1%	0.08	0.11

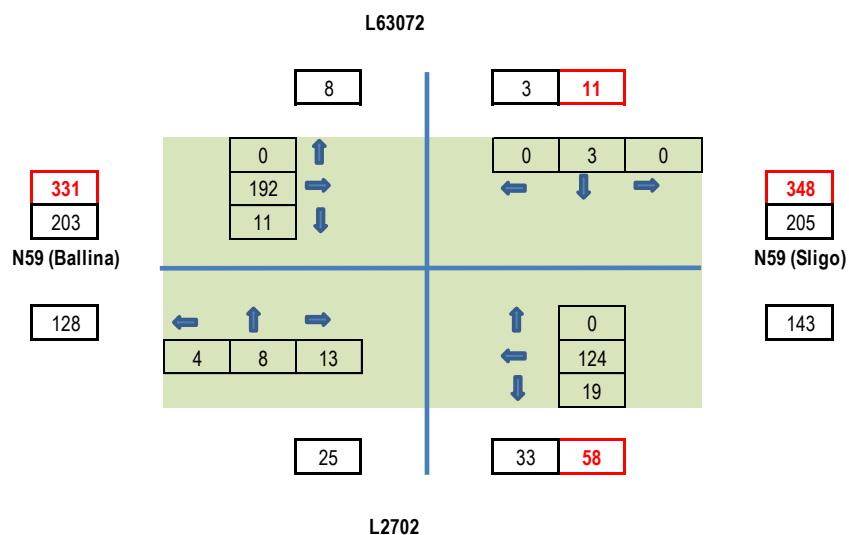
15.1.6.2 Effect on Link Flows – During Operation

Once the Proposed Project is operational it is estimated that there will be 1-2 staff members employed on site with a similar number of vehicle trips, that is 1-2 car/lgv trips to and from the Proposed Wind Farm 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.

15.1.6.3 Effect on Junctions – During Operation

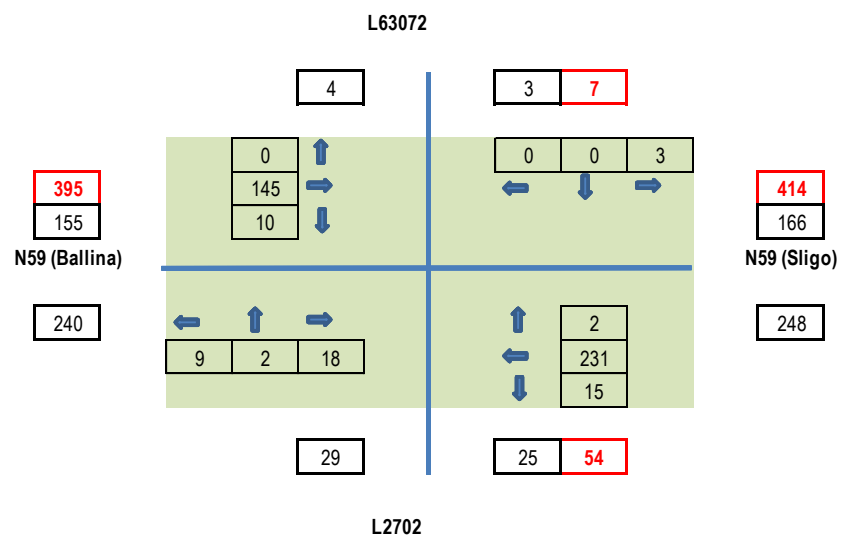
As discussed in Section 15.1.6 it is forecast that once operational, the Proposed Project is expected to generate a maximum of 1-2 car/lgv trips to and from the Proposed Wind Farm site per day for maintenance purposes. It is also likely that small numbers of amenity traffic will be attracted to the Proposed Wind Farm site. It is therefore concluded that the Proposed Project will have a negligible effect on the local network once constructed.

AM Peak hour - 08:00 to 09:00



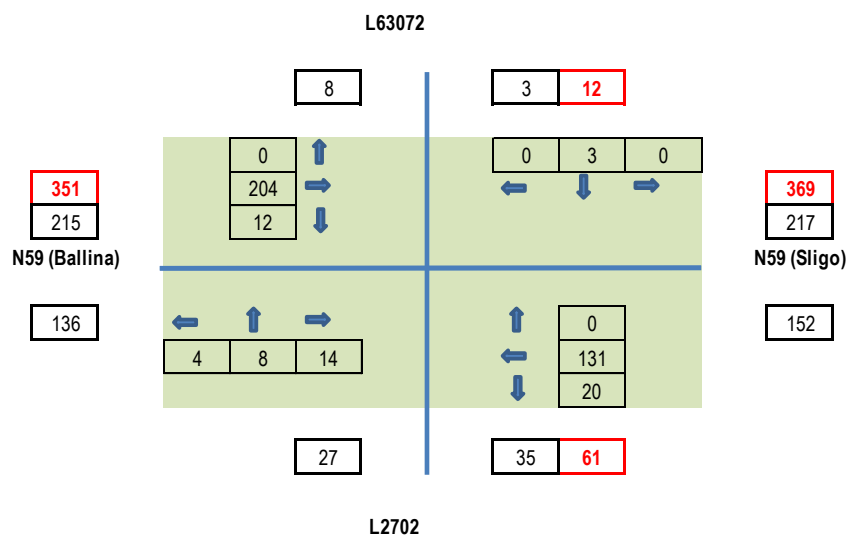
All flows in pcus

PM Peak hour - 17:00 to 18:00



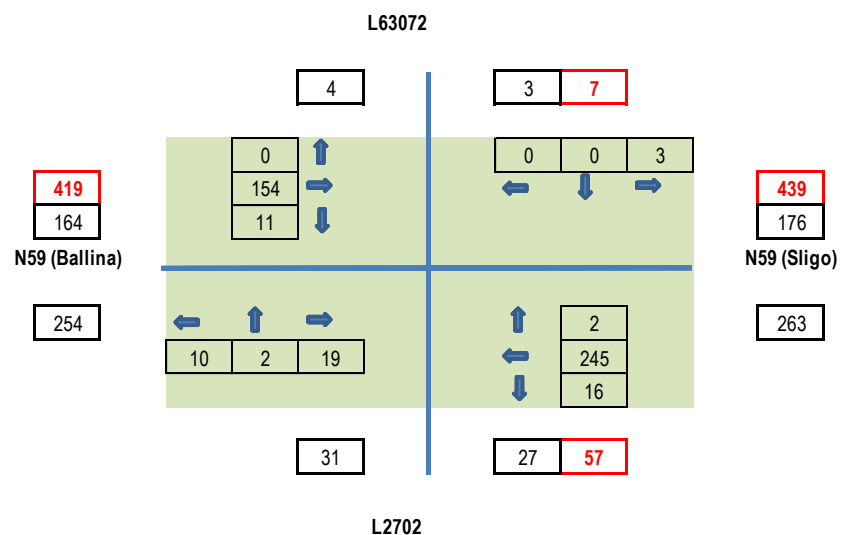
All flows in pcus

AM Peak hour - 08:00 to 09:00



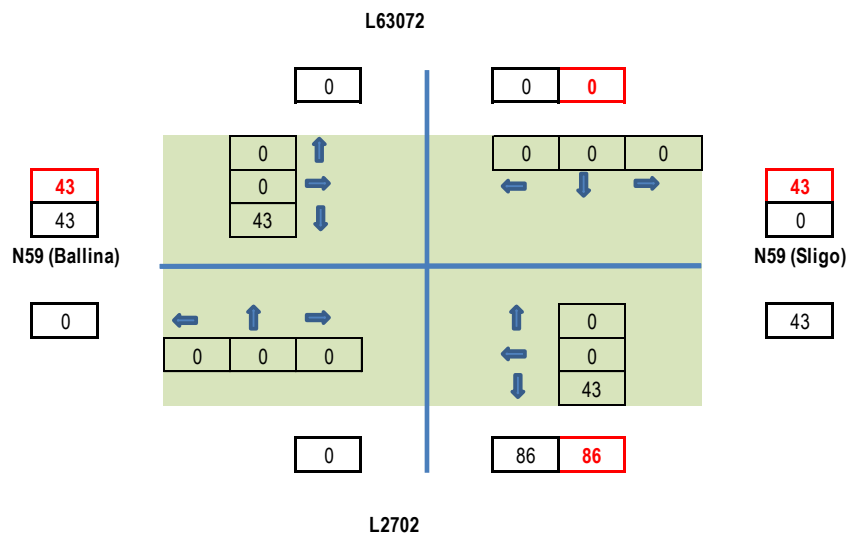
All flows in pcus

PM Peak hour - 17:00 to 18:00



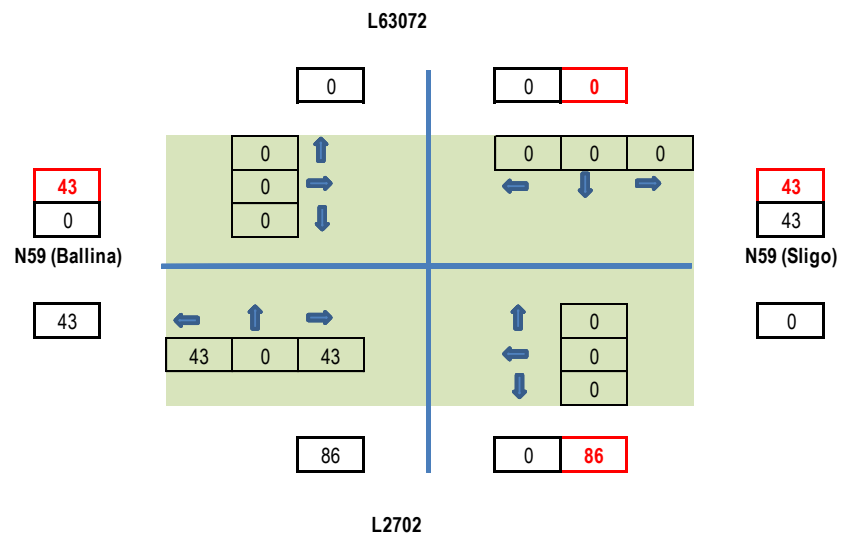
All flows in pcus

AM Peak hour - 08:00 to 09:00



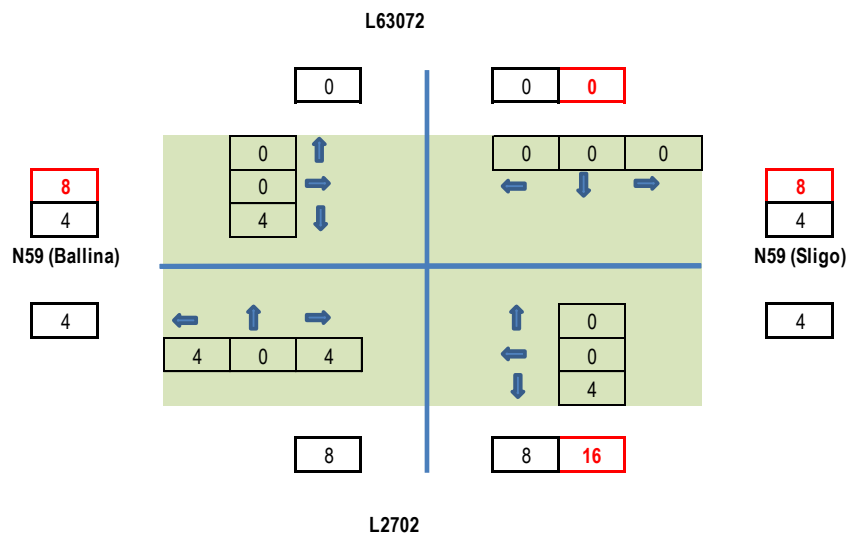
All flows in pcus

PM Peak hour - 17:00 to 18:00



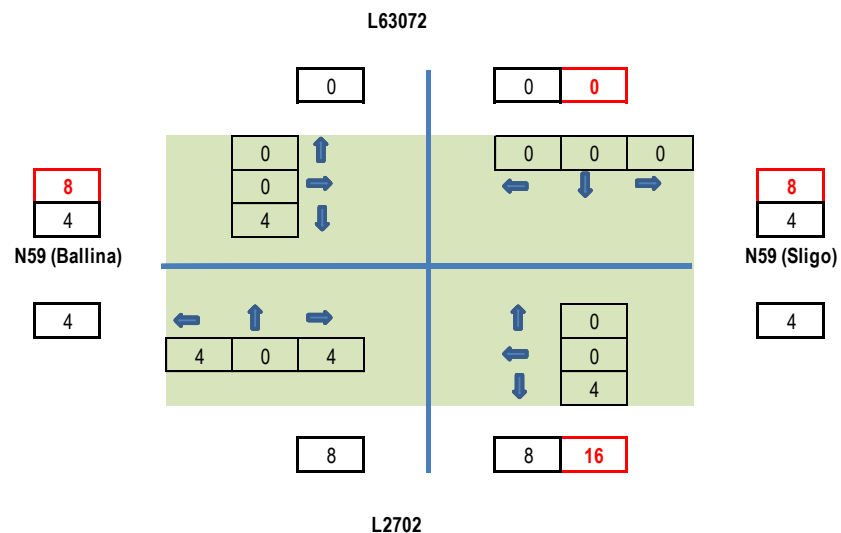
All flows in pcus

AM Peak hour - 08:00 to 09:00



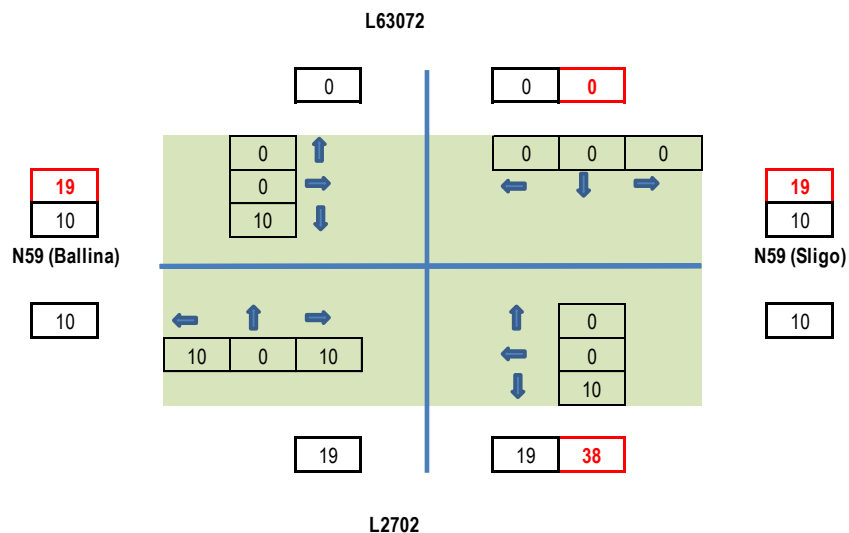
All flows in pcus

PM Peak hour - 17:00 to 18:00



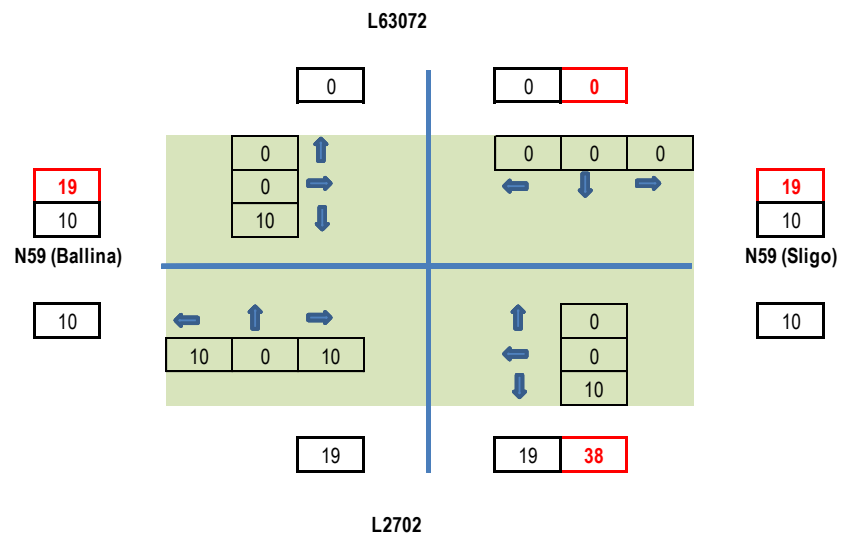
All flows in pcus

AM Peak hour - 08:00 to 09:00



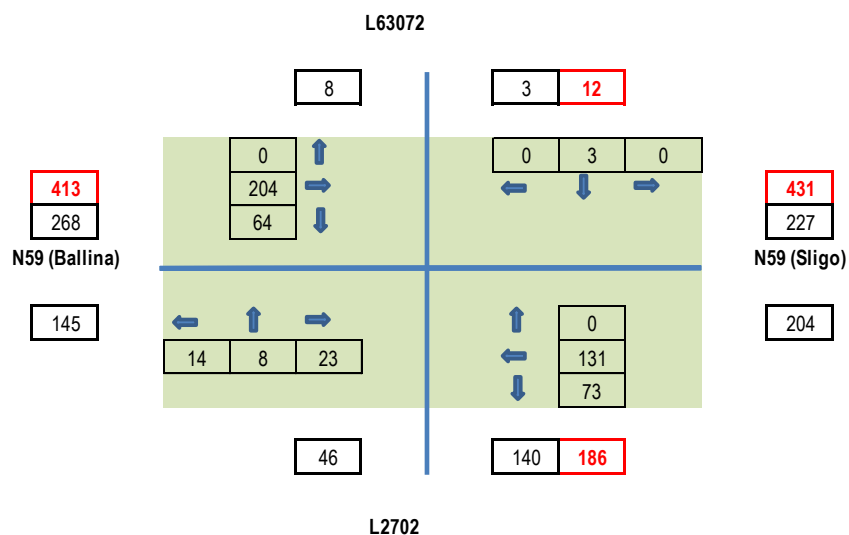
All flows in pcus

PM Peak hour - 17:00 to 18:00



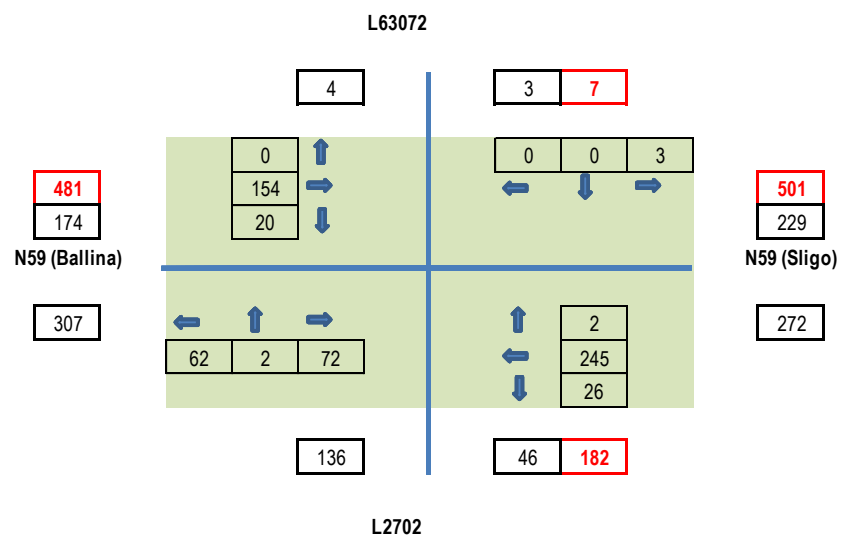
All flows in pcus

AM Peak hour - 08:00 to 09:00



All flows in pcus

PM Peak hour - 17:00 to 18:00



All flows in pcus

15.1.7 Construction Traffic Vehicles

The delivery of turbine components including blades, tower sections and nacelles is a specialist operation due to the oversized loads involved. With respect to the geometric requirements of the road network blades are the longest turbine component. In the case of the Proposed Project, Digital Surveyors Ireland Ltd. and the Applicant provided assessments for turbines with a blade length of 74m (Appendix 15-3).

For the purpose of this assessment set out in this EIAR, it is assumed that the blades, which are the largest turbine components, will be transported using an extended articulated Superwing carrier. As this method involves transporting the blade in a horizontal position it represents the precautionary case in terms of the geometric requirements on the road network.

Therefore, a proposed blade length of 74m has been assessed in the following sections. A confirmatory delivery assessment and program will be carried out by the turbine delivery company.

The critical vehicles in terms of size and turning geometry requirements and used in the detailed route assessment discussed in Section 15.1.8 are set out below.

The key dimensions of the vehicles tested are as follows:

Transport of Blades – Extended artic Superwing carrier

Total length of vehicle	83.9m
Length of blade	74.0m

Transport of Tower

Total length of vehicle	58.0m
Length of largest tower section	30.0m

The vehicles used to transport the nacelles will be shorter in length compared to the blade transporters.

All other vehicles requiring access to the Proposed Wind Farm site will be standard HGVs and will be significantly smaller than the design test vehicles. Standard HGVs and LGVs will navigate the National, Regional and Local Road networks to access the Proposed Project site.

15.1.8 Effect on Network of the Proposed Grid Connection Route

15.1.8.1 Proposed Grid Connection Route Construction on Road Network

A detailed description of the Proposed Grid Connection Route is provided in Section 4.3.3 of Chapter 4 of this EIAR. It is intended to connect the onsite 110kV substation to the existing Srananagh 220kV substation in the townland of Ballysumaghan, Co. Sligo via 110kV underground electrical cabling. The exact connection node is to be confirmed by EirGrid and subject to change at their request. The underground electrical cabling route is approx. 41.6km in length and located primarily within the public road corridor, with approx. 130m located within the Proposed Wind Farm.

The extent of the Proposed Grid Connection Route that will impact on the public road network is considered in the 7 sections, as shown in Figure 15-5a with 5 sections located on the public road network and 2 sections off road, one in the Proposed Wind Farm and the second in the site of the existing 220 kV Srananagh substation. The roads comprising each section of the route, together with the traffic management measure required during construction, the length and the estimated number of days required for construction, are set out in Table 15-34. Based on an estimated construction rate of 100m per day, it is estimated that the Proposed Grid Connection Route will take approximately 416 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 Route equates to a total of 41.6 kms and travels along 23.0 km of the national Road Network (N59), 9.7km of the Regional Roads (R290 and R284), with the remaining 8.4km of the on-road route sections travelling along the local road network (L6309 and L5204. An inspection of the route indicated that approximately 11.2 km of the on-road Proposed Grid Connection Route will require a road closure at the point of construction on any given day during the construction phase. It is estimated that for the remaining 29.9km it will be feasible to operate a Stop & Go traffic management system in order to maintain 2-way traffic flow.

The potential diversion routes that may be used during the construction of the various sections of the Proposed Grid Connection Route are set out in Table 15-35 and shown in Figure 15-5b. For sections 1, 4 and 5, which comprises 11.2 km of the total route, the diversions will result in existing traffic from regional and local roads being diverted onto other local and regional roads of a similar standard.

For the diversion routes shown in Figure 15-5b, the temporary additional trip length incurred by drivers during the construction of the Proposed Grid Connection will range from a minimum of 3.2km to a maximum of 10.7km, as shown in Table 15-35. It should be noted that the distances provided are an absolute maximum diversion that may be incurred for the various sections of the Proposed Grid Connection Route and are measured from either end of the section of the Proposed Grid Connection Route being constructed. In practice the number of trips that incur the full diversion will be very few. It is also noted that many drivers undertaking longer trips will divert onto other parallel routes further afield in order to avoid the closure, again, incurring significantly shorter actual diversions.

With respect to the traffic volumes that will be generated during the construction of the underground electrical cabling route, it is estimated that there will be approximately 15 daily return trips made by a truck transporting materials, and 4 made by a car to transport 10 construction staff to and from the Site. The impact of the additional traffic that will be generated on the network during the construction of the Proposed Grid Connection Route is presented in Section 15.1.15.2.

It is proposed that construction staff will travel to and from the point of construction along the Proposed Grid Connection Route by minibus, or alternatively, staff will travel to the site by carpooling

encouraged as part of a staff travel plan. By its nature the impacts of these additional trips on the network will be transient and will therefore be temporary and slight.

The construction methodology of providing a Proposed Grid Connection 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 authority and An Garda Síochána prior to construction works commencing on site.

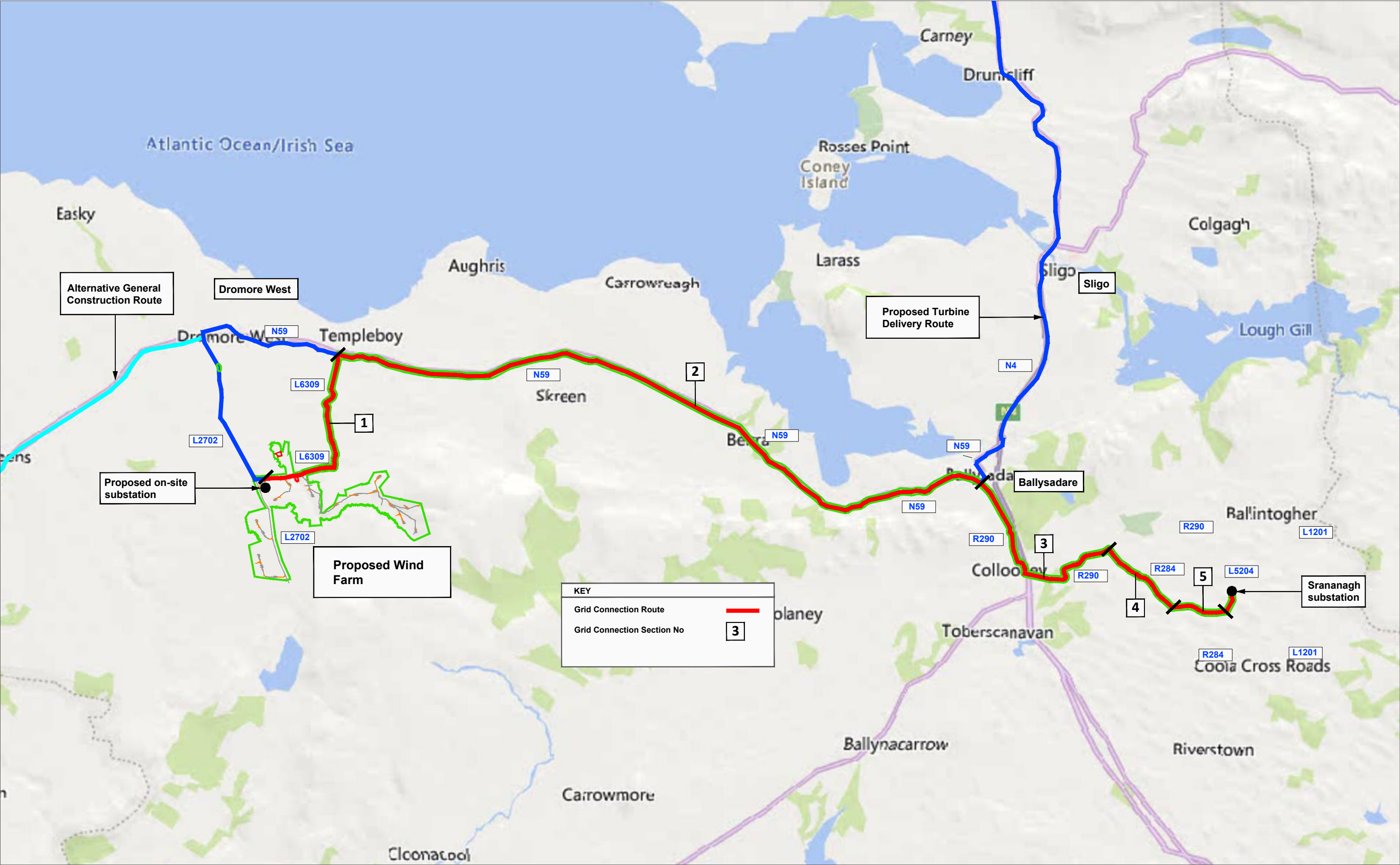
Table 15-34 Proposed Grid Connection Route link, traffic management measure, link length (km), construction duration (days)

Grid section	Proposed Grid Connection Route Section	Traffic management	Length (kms)	Construction duration (days)
110 kV On-sit substation	Off road at substation site	NA	0.1	1
Section 1	L6309	Closure	6.6	66
Section 2	N59	Stop & Go	23.0	230
Section 3	R290	Stop & Go	6.9	69
Section 4	R284	Closure	2.8	28
Section 5	L5204	Closure	1.8	18
Srananagh Substation	Off road at Srananagh substation site	NA	0.4	4
Total			41.6	416

Table 15-35 Proposed Grid Connection Route link, link length (km), potential diversion route, length of diversion route (km), additional trip length (km)

Grid section	Proposed Grid Connection Route Section	Length (kms)	Potential diversion route	Maximum length of diversion route (kms)	Maximum additional trip length (kms)
110 kV On-sit substation	Off road at substation site	0.1	NA	NA	NA
Section 1	L6309	6.6	L2702, N59	9.8	3.2

Grid section	Proposed Grid Connection Route Section	Length (kms)	Potential diversion route	Maximum length of diversion route (kms)	Maximum additional trip length (kms)
Section 2	N59	23.0	NA	NA	NA
Section 3	R290	6.9	NA	NA	NA
Section 4	R284	2.8	R290, L5204	11.7	8.9
Section 5	L5204	1.8	R284, R290, L5204	12.5	10.7
Srananagh Substation	Off road at Srananagh substation site	0.4	NA	NA	NA
Total		41.6			

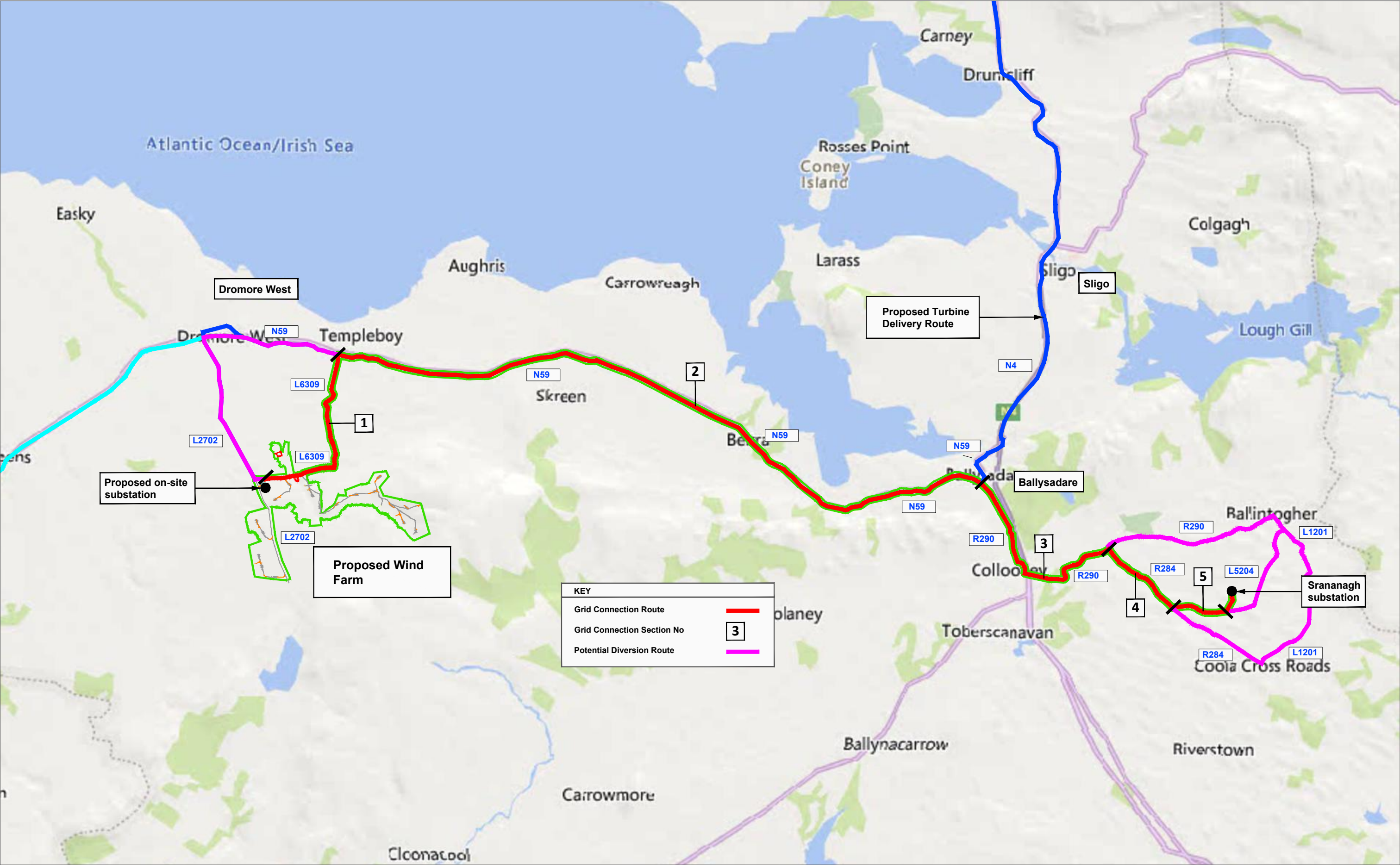


NOTES:
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-5a Proposed cable grid connection route

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: NTS	
PROJECT NO: 11240	DATE: 17.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-5b Proposed cable grid connection route and potential diversion routes

PROJECT: Crumhach Wind Farm, Co Sligo

CLIENT: SSE

PROJECT NO: 11240

DATE: 17.06.26

SCALE: NTS

DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

15.1.9 Traffic Management of Large Deliveries

Traffic management measures include 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, local road widening, and the provision of a temporary over-run areas over a roundabout centre island. Any upgrades to the public road network will be carried out in advance of turbine deliveries and following consultation and agreement with the relevant authorities. It is not anticipated that any sections of the local road network will be closed during the delivery of the abnormally sized loads.

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

15.1.10 Abnormal Load Route Assessment

Killybegs Port in County Donegal is the proposed point of arrival for all proposed turbine infrastructure (i.e., turbine blades, turbine towers and other large wind turbine components). Killybegs Port is a well-established port for the delivery of wind turbine components of similar scale into the State on a regular basis, as is the road network between the ports and the national road network.

A route assessment was undertaken covering the entire delivery route between Killybegs Port and the Proposed Wind Farm. An autotrack assessment from Killybegs Port, via the National and Local Road networks, to the Proposed Wind Farm is provided as Appendix 15-3. This assessment illustrates that the abnormal loads will be accommodated on these sections of the route with minor temporary alterations within the curtilage of the existing road network, please see further detail below.

For the section of the TDR approaching the Proposed Wind Farm site from the N15 Drumlonagher Roundabout located to the east of Donegal Town, to the exit off the N59 National Road at Dromore West and towards the proposed Site Entrances A to D located on the L6309 and L2702, a swept path assessment was undertaken at the locations shown in Figure 15-3a above. The assessment was undertaken 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.

The swept path analysis was undertaken for the transportation of a 74m blade by Digital Land Surveyors Ltd and the Applicant, with their assessment included as Appendix 15-3 to the EIAR. All of the works that are required on the public road network are summarised from the Digital Land Surveyors Ltd. Report. All measures will be required during the period that the abnormally sized loads are delivered to the site only. On completion of this stage all locations requiring temporary measures will be reinstated to the pre-delivery condition. It is estimated that these measures will be in place for a total of 45 nights spread over a 9-week period.

All locations referred to in the assessment summary below are included in Appendix 15-3: Autotrack Assessment Drawing of the EIAR. The locations discussed are as follows:

- > Location 1 – N15 Drumlonagher Roundabout
- > Location 2 – N15 Tullyearl Roundabout
- > Location 3 – N15 Erne Roundabout
- > Location 4 – N15 Drumacrin Roundabout
- > Location 5 – N15 Tullaghan Roundabout
- > Location 6 – Bend on N15 (Near Grange)
- > Location 7 – Bend on N15 (Drumcliff)
- > Location 8 – Bend on N15 (Rathcormac)
- > Location 9 – N4 Summerhill Roundabout
- > Location 10 – N4- N59 Junction
- > Location 11 – N59 South Bend
- > Location 12 – N59 Ballysadare Roundabout
- > Location 13 – N59 Ballysadare Bridge
- > Location 14 – N59 Abbeytown Bend
- > Location 15 – N59 Right Turn at Dromore West
- > Location 16 – Dromore West
- > Location 17 – Dromore West Turn South
- > Location 18 – Right Bend in L2702
- > Location 19 – Left Bend in L2702
- > Location 20 – L2702/L6309 Junction

Location 1 – N15 Drumlonagher Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and roundabout island during the delivery of the abnormally sized loads to accommodate blade and truck body oversail, including removal of street furniture. Vegetation will also require to be trimmed.

Location 2 – N15 Tullyearl Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and roundabout island during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture. A temporary over-run area will require to be cleared and prepared for vehicle axle loads to pass within roundabout island.

Location 3 – N15 Erne Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape, and roadside vegetation during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture. A temporary over-run area will require to be cleared and prepared for vehicle axle loads to pass within roundabout centre road dividers.

Location 4 – N15 Drumacrin Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and roundabout island during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture. A temporary over-run area will be required to be cleared and prepared for vehicle axle loads to pass within roundabout island.

Location 5 – N15 Tullaghan Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and roundabout island during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture.

Location 6 – Bend on N15 (Near Grange)

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape during the delivery of the abnormally sized loads for blade oversail, including removal of street furniture.

Location 7 – Bend on N15 (Drumcliff)

The preliminary swept path analysis indicates blade oversail of the public road verge. No works are required.

Location 8 – Bend on N15 (Rathcormac)

The preliminary swept path analysis indicates blade oversail of the public road verge. No works are required.

Location 9 – N4 Summerhill Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and roundabout island during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture.

Location 10 – N4 to N59 Junction

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and road verge during the delivery of the abnormally sized loads for blade and truck body oversail, including removal of street furniture. A temporary over-run area will require to be cleared and prepared for vehicle axle loads to pass over the road verge. Vegetation will also require to be trimmed / removed.

Location 11 – N59 South Bend

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape and road verge during the delivery of the abnormally sized loads for blade and truck body oversail, including the removal of street furniture. Vegetation will also require to be trimmed.

Location 12 – N59 Ballysadare Roundabout

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape during the delivery of the abnormally sized loads during the delivery for blade and truck body oversail, including removal of street furniture. A temporary over-run area will require to be cleared and prepared for vehicle axle loads to pass over road verge/footpaths.

Location 13 – N59 Ballysadare Bridge

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape for blade and truck body oversail, including removal of street furniture. A temporary over-run area will require to be cleared and prepared for vehicle axle loads to pass over road verge/footpaths. Vegetation will also require to be trimmed.

Location 14 – N59 Abbeytown Bend

The preliminary swept path analysis indicates that temporary alterations will be required to the existing streetscape and adjacent private lands for blade and truck body oversail, including removal of street furniture and private wall. An area will be required to be cleared and prepared for vehicle axle load to pass over road verge. Vegetation will also require to be trimmed.

Location 15 – N59 Right Turn at Dromore West

The preliminary swept path analysis indicates that minor temporary alterations will be required to the existing streetscape for blade and truck body oversail, including the removal of street furniture. An area will be required to be cleared and prepared for vehicle axle load to pass over footpaths.

Location 16 – Dromore West

The preliminary swept path analysis indicates that temporary alterations will be required to the existing streetscape and adjacent private lands for blade and truck body oversail, including removal of private wall. This private wall will be reinstated 2 metres from the edge of the existing carriageway following the completion of the turbine delivery works.

Location 17 – Dromore West Turn South

The preliminary swept path analysis indicates that temporary alterations will be required to the existing streetscape and adjacent private lands for blade and truck body oversail, including removal of hedgerow vegetation. An existing over-run hardstand area will require to be cleared and prepared for vehicle axle loads to pass over.

The analyses indicates that a temporary run-over area will be required at this junction in order to accommodate the wind turbine vehicles. This utilises overrun area used for the delivery of components to the Existing Wind Farm. The temporary overrun area will only be used for the transportation of abnormally sized loads, which will be delivered with a Garda escort and transient traffic management vehicles operated by the haulage company. This road will not be available for any other traffic and will be closed off and opened only for the delivery of the abnormally sized loads.

Upon the completion of the construction phase, the temporary road will only be used again in the unlikely event that an oversized delivery was required for wind turbine maintenance purposes, appropriate planning would be secured prior to the use of this access track should they be required. The boundary of this field and the public road corridor, at either end of the temporary track will be reinstated to its current condition.

Location 18 – Right Bend in L2702

The preliminary swept path analysis indicates that temporary alterations will be required to the existing streetscape and adjacent private lands for blade and truck body oversail, including removal of a private wall and vegetation. A temporary run-over area will require to be cleared and prepared for vehicle axle loads to pass over private lands to the east of the L2702.

Location 19 – Left Bend in L2702

The preliminary swept path analysis indicates that temporary alterations will be required to the existing streetscape and adjacent private lands for blade and truck body oversail, including removal of vegetation.

Location 20 - L2702/L6309 Junction

The preliminary swept path analysis indicates that a temporary overrun area is required in the field east of the L2702/L6309 junction in order to accommodate wind turbine vehicles in the townland of Crowagh or Dunneill Mountain. The temporary overrun area will only be used for the transportation of abnormally sized loads, which will be delivered with a Garda escort and transient traffic management vehicles operated by the haulage company. This road will not be available for any other traffic and will be closed off and opened only for the delivery of the abnormally sized loads.

It is proposed that a temporary access road will be constructed linking the L2702 to the L6309 in order to bypass the existing junction to the southwest. The sole purpose of this temporary access road will be to facilitate the delivery of the turbine components only, which will be made during night-time hours accompanied by an escort provided by An Garda Síochána and the haulage company.

Once the construction of the Proposed Project is complete the temporary road will be closed by means of fencing and the land and existing boundary treatments re-instated. The proposed link will only be reopened for the replacement of turbine components. All other traffic generated by the Proposed Project, including standard HGVs, trucks and construction staff cars will use the existing L2702/L6309 junction. The area of land that is available for the proposed temporary access is shown in Appendix 4-1 with the Autotrack assessments undertaken for the blade extended artic included as Appendix 15-3. The figures show that the turning requirements of both vehicles will be accommodated within the confines of the land available. It is noted that there are no junction design or visibility splays required at this existing access.

15.1.11 Visibility Splay Requirements for Access Junctions

As part of the design process a review of relevant guidelines was undertaken in order to determine the appropriate visibility splays that should be provided for Site Accesses A and D on the L6309 and Site Accesses B, C and E on the L2702. The criteria considered are as follows;

Speed limits – A recently installed sign indicating a 60 kph speed limit is located on the L6309 Local Secondary road just to the east of the junction with the L2702 Local Primary Road. There were no speed limit signs observed on the L2702. For the purpose of this assessment it is assumed that a 60 kph speed limit also applies on the L2702.

Visibility requirements – Visibility splay requirements are set out in the Sligo County Development Plan 2024 – 2030 (Interim consolidated version – 11 November 2024), Volume 3, Chapter 33 Development Management Standards, for national primary and secondary roads only. For national roads with a 60 kph design speed visibility splays of 90m are required taken from a driver height of 1.05m to an object height of 1.15m. There are no specific requirements provided for local roads in the current Development Plan.

Visibility splay requirements are addressed in the publication Rural Road Link Design, DN-GEO-03031, TII, June 2017. These guidelines apply to roads with a minimum standard of a Type 2 Single Carriageway Road with a minimum width of 6m. The roads that L6309 and L2702 local roads are Local Primary and Local Secondary Roads with a carriageway width of 1 lane with places passing places. It is noted that based on these guidelines, for a 60 km/h speed limit, a design speed of 70 km/h applies, and for this a desirable minimum sight stopping distance (or visibility splay) of 120m is required, or 90m for one step below the desirable minimum.

Taking account of the rural single lane nature of the existing roads with a standard significantly less than the 6m wide Type 2 Single Carriageway, and the very low traffic volumes that exist at present, and will do again once the Proposed Project is constructed, it is proposed that the horizontal visibility requirements are based on the 90m “one step down” as discussed above. It is considered that this approach will provide the optimum balance between providing a safe environment for all general traffic and development generated traffic on the local road network, and at the same time, avoid unnecessary

impacts on the existing environment. The proposed visibility requirements for all Access Junctions A to E are therefore;

Horizontal Plane – 90m to the nearside carriageway edge taken from a 2.4m setback on the centreline of the access road.

Vertical plane - Taken from a driver height of 1.05m to an object height of 1.05m in both directions. The slightly more restrictive 1.05m object height, in accordance with TII guidelines.

On completion of the works it is proposed that traffic speeds are monitored at the site access junctions.

Site Entrance A on L6309 – general construction & maintenance for Turbine Nos 6 and 7

This junction is located approximately 95m to the west of the existing forestry access on the L6309 in order to avoid the existing crest on the local road.

It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic for Turbine Nos 6 and 7, including staff car trips, during the construction phase, and for maintenance trips once the Proposed Project is operational.

The proposed junction layout is shown in Figure 15-6. Junction radii of 13m with 1:10 tapers are proposed for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are proposed as per Figure 7.35 of the Traffic Signs Manual.

The proposed junction includes a run-over area on the southwest corner of the proposed junction that will be surfaced to accommodate the wheels of the abnormally sized loads. There is an additional area on the same corner that will require to be kept cleared to facilitate the overhang of the turbine blade transport vehicles. On completion of the delivery of the abnormally sized loads the temporary run-over and overhang areas will be closed off to traffic with the junction layout reduced in size to the standard junction layout described above.

As discussed above, the required visibility splays at the access junctions are 90m taken from a setback of 2.4m. These splays will be provided in both directions, as illustrated in Figure 15-7. The vertical section through the junction in the L6309 was checked, taken from a driver height of 1.05m to an object height of 1.05m. These are confirmed to be available in both directions as shown in Figure 15-25.25 (Note: The vertical visibility assessments for Site Accesses A to E are all shown in Figure 15-25. The alignment of the L6309 is straight at this location with forward visibility from 90m also clear, enabling general traffic approaching from both directions to observe a vehicle turning right into Access Junction A.

The autotrack assessment shown in Figure 15-8 demonstrates that the proposed access junction off the L6309 will accommodate the turning requirements of the critical blade transport vehicles. Similarly, the autotrack assessment set out in Figure 15-9 demonstrates that the reduced junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Site Entrance B on L2702 – general construction & maintenance for Turbine Nos 2 and 4

This junction is located approximately 60m to the north of the existing access off the west side of the L2702 in order to maximise visibility in the vertical plane in both directions.

It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic, including staff car trips, during the construction phase, and for maintenance and trips once the Proposed Project is operational for Turbine Nos 2 and 4.

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

It is proposed that when accessing this junction, the abnormally sized loads will drive south past the junction and then reverse in a northwest direction towards turbine locations 2 and 4. This manoeuvre will minimise the over-run area required.

The proposed junction includes a run-over area on the southern corner of the proposed junction that will be surfaced to accommodate the wheels of the abnormally sized loads. There are additional areas to the north and south of the junction that will be kept cleared to facilitate overhang of the turbine blade transport vehicles. On completion of the delivery of the abnormally sized loads the temporary run-over and overhang areas will be closed off to traffic with the junction layout reduced in size to the standard junction layout described above.

The required visibility splays of 90m taken from a setback of 2.4m are shown in Figure 15-11. The vertical section through the junction on the L2702 as shown in Figure 15-25 confirms that the visibility taken from a driver height of 1.05m to an object height of 1.05m is clear in both directions. The alignment of the L2702 is straight at this location with forward visibility through the junction clear.

The autotrack assessment shown in Figure 15-12 demonstrates that the proposed access junction off the L2702 will accommodate the turning requirements of the critical blade transport vehicles, while Figure 15-13 demonstrates that the reduced junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Site Entrance C on L2702 – general construction & maintenance for Turbine Nos 1, 3 and 5

This junction is located at existing access off the west side of the L2702.

It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic, including staff car trips, during the construction phase, and for maintenance and trips once the Proposed Project is operational for Turbine Nos 1, 3 and 5.

The proposed junction layout is shown in Figure 15-14. Junction radii of 13m with 1:10 tapers are proposed for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are proposed as per Figure 7.35 of the Traffic Signs Manual.

The proposed junction includes a run-over area on the northwestern corner of the proposed junction that will be surfaced to accommodate the wheels of the abnormally sized loads. There are additional areas either side of the run over area that will be kept cleared to facilitate overhang of the turbine blade and oversail of the blade tip. On completion of the delivery of the abnormally sized loads the temporary run-over and overhang areas will be closed off to traffic with the junction layout reduced in size to the standard junction layout described above.

The required visibility splays of 90m taken from a setback of 2.4m are shown in Figure 15-15 with the required visibility splays in the vertical plane shown in Figure 15-25. Again, the alignment of the L2702 is straight at this location with forward visibility through the junction clear.

The autotrack assessment shown in Figure 15-16 demonstrates that the proposed access junction off the L2702 will accommodate the turning requirements of the blade transport vehicles, while Figure 15-17 demonstrates that the reduced junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Site Entrance D on L6309 – general construction & maintenance for Turbine Nos 8 to 17 and for the removal of the 23 Existing Wind Farm turbines

This is the existing junction that provided access for the construction and operation of the Existing Wind Farm.

It is proposed that this junction will provide for the deliveries of the abnormally sized loads and general construction traffic, including staff car trips, during the construction phase, and for maintenance and trips once the Proposed Project is operational for Turbines Nos 8 to 17. It will also be used for the removal of the 23 Existing Wind Farm turbines.

The proposed junction layout is shown in Figure 15-18. It is proposed that the junction will be retained as existing with STOP road markings and signs proposed as per Figure 7.35 of the Traffic Signs Manual.

The required visibility splays of 90m taken from a setback of 2.4m are shown in Figure 15-19. The visibility splays in the vertical plane at this existing junction are available based on the relatively flat topography observed on site. While the alignment of the L6309 is on a gentle curve, the forward visibility to observe a vehicle turning right into the site is clear along the L6309.

The autotrack assessment shown in Figure 15-20 demonstrates that the proposed access junction off the L2702 will accommodate the turning requirements of the critical blade transport vehicles, while Figure 15-21 demonstrates that the junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Site Entrance E on east side of L2702 – Onsite 110kV substation access and maintenance

The purpose of this access is to provide for all deliveries during the construction of the proposed on-site 110kV substation, and for the low volumes of maintenance traffic once the Proposed Project is operational.

The proposed junction layout shown in Figure 15-22 and has a junction radius of 13m on the northern corner to provide for HGV access and egress. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual.

The required visibility splays of 90m taken from a setback of 2.4m are shown in Figure 15-23. The vertical section through the junction on the L2702 as shown in Figure 15-25 confirms that the visibility taken from a driver height of 1.05m to an object height of 1.05m is clear in both directions. The alignment of the L2702 is straight at this location with forward visibility through the junction clear.

The autotrack assessment set out in Figure 15-24 demonstrates that the proposed junction layout will accommodate a large articulated HGV.

Site Access A - L6309

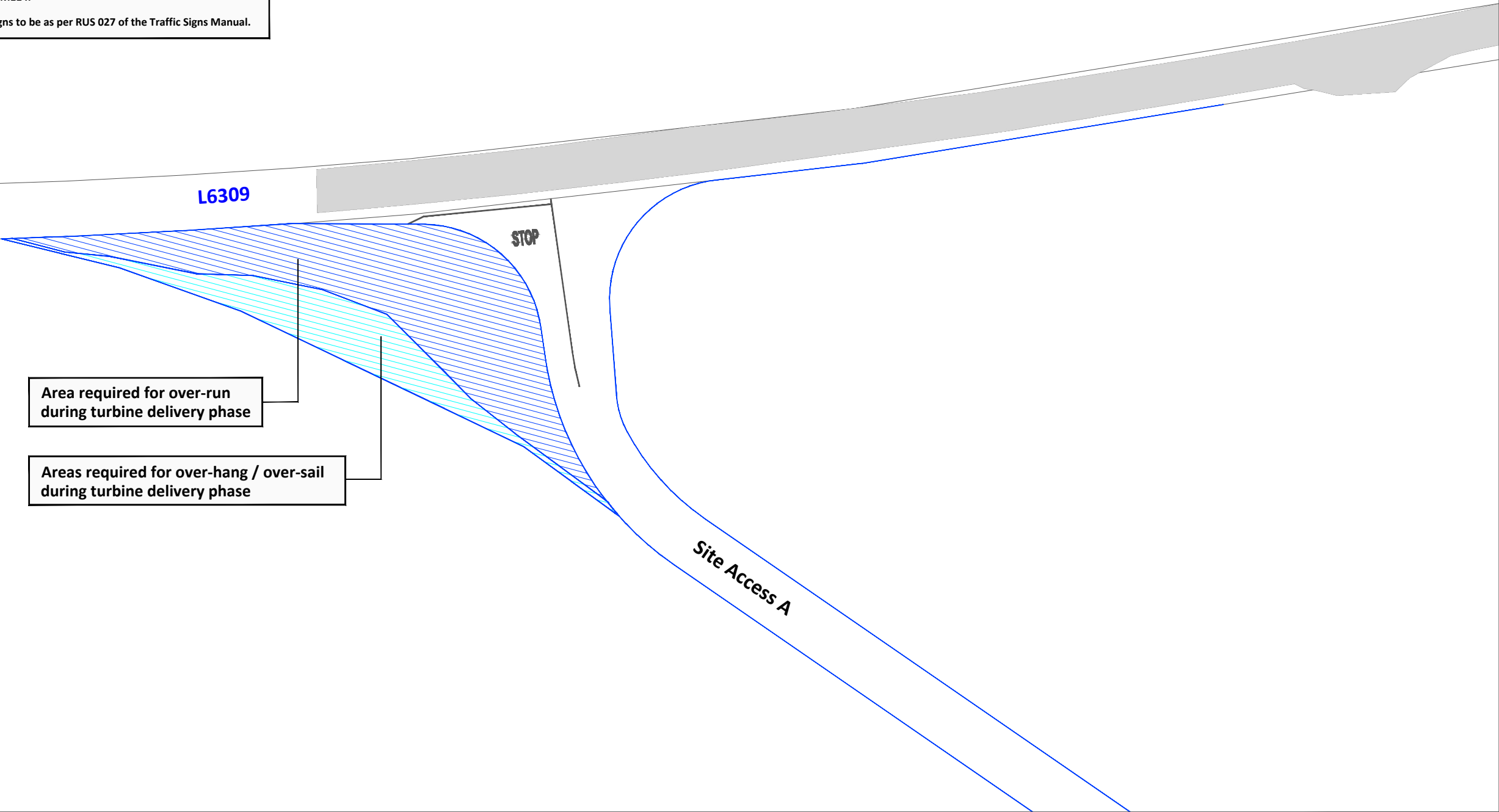
Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-6 Access Junction A - L6309 / wind farm access, junction layout

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 26.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access A - L6309

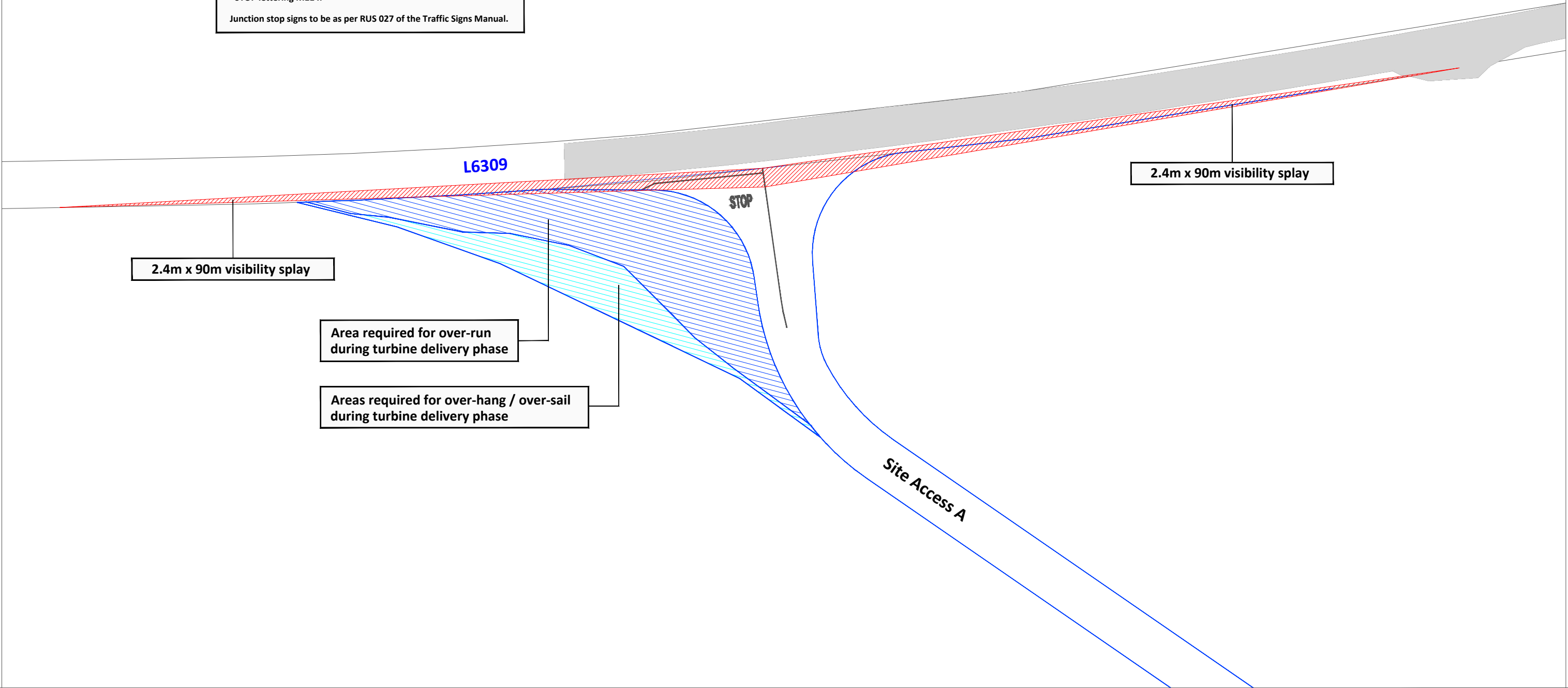
Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-7 Access Junction A - L6309 / wind farm access, junction layout with visibility splays

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access A - L6309

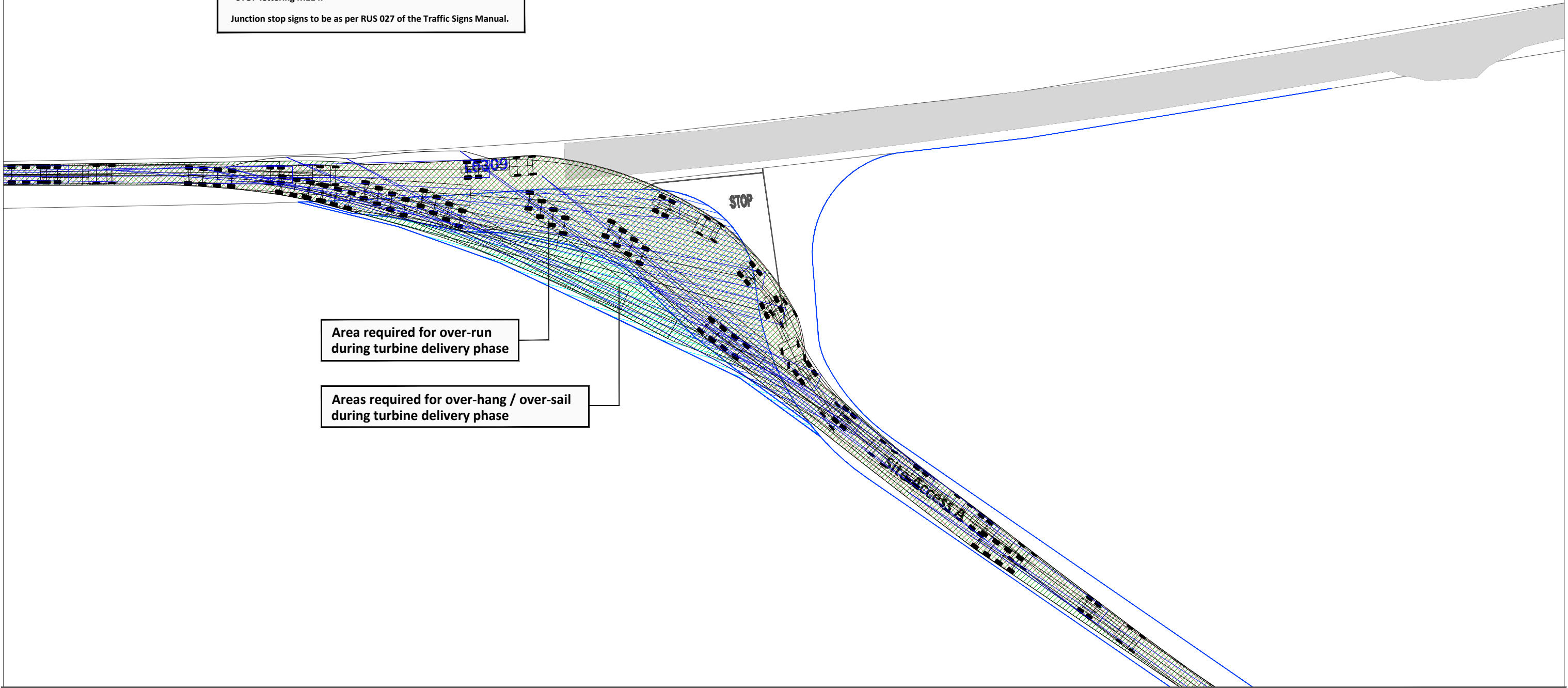
Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-8 Access Junction A - L6309 / wind farm access, junction layout, blade extended artic

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access A - L6309

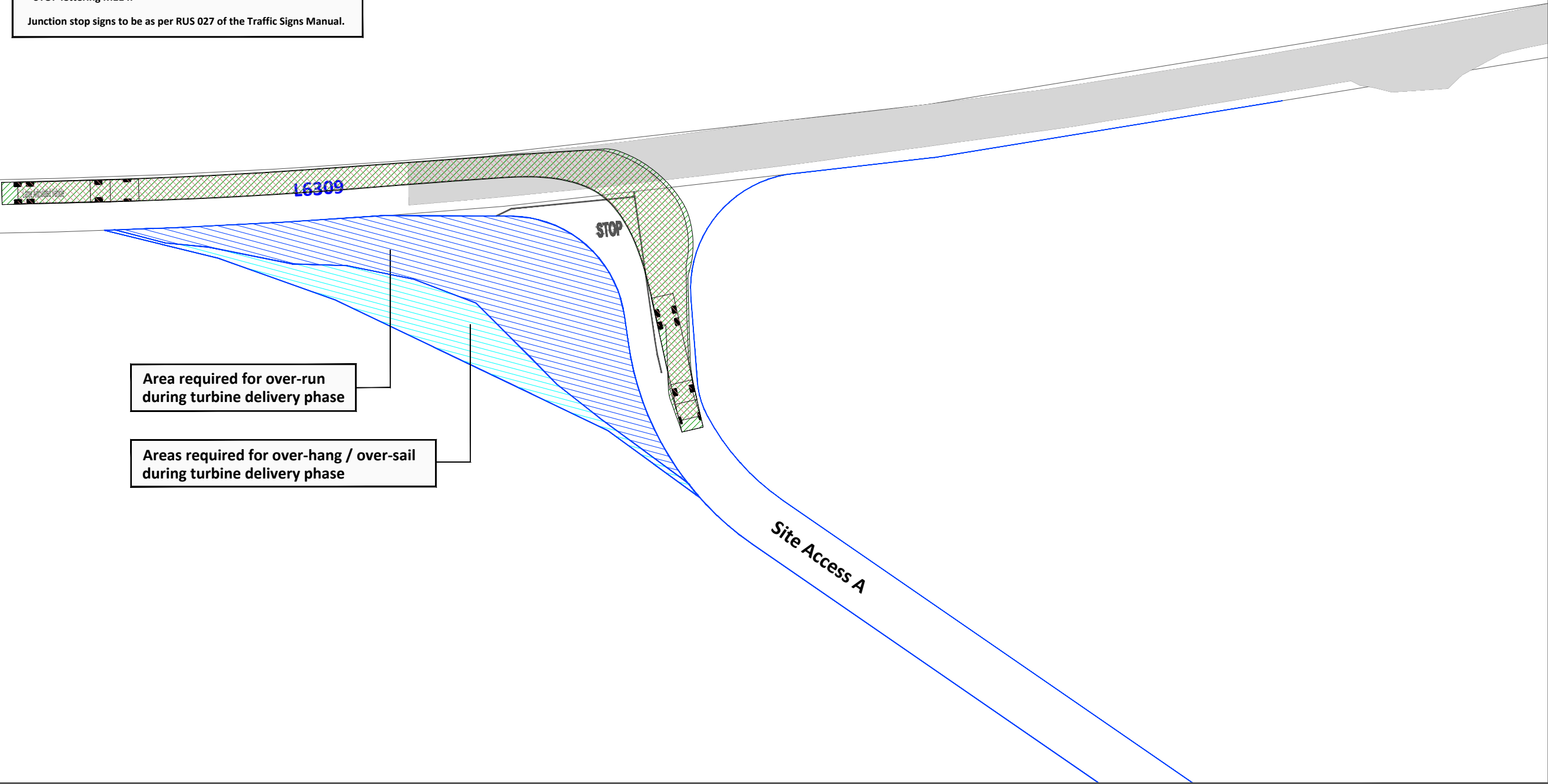
Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-9 Access Junction A - L6309 / wind farm access, junction layout, standard large HGV

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access B - L2702

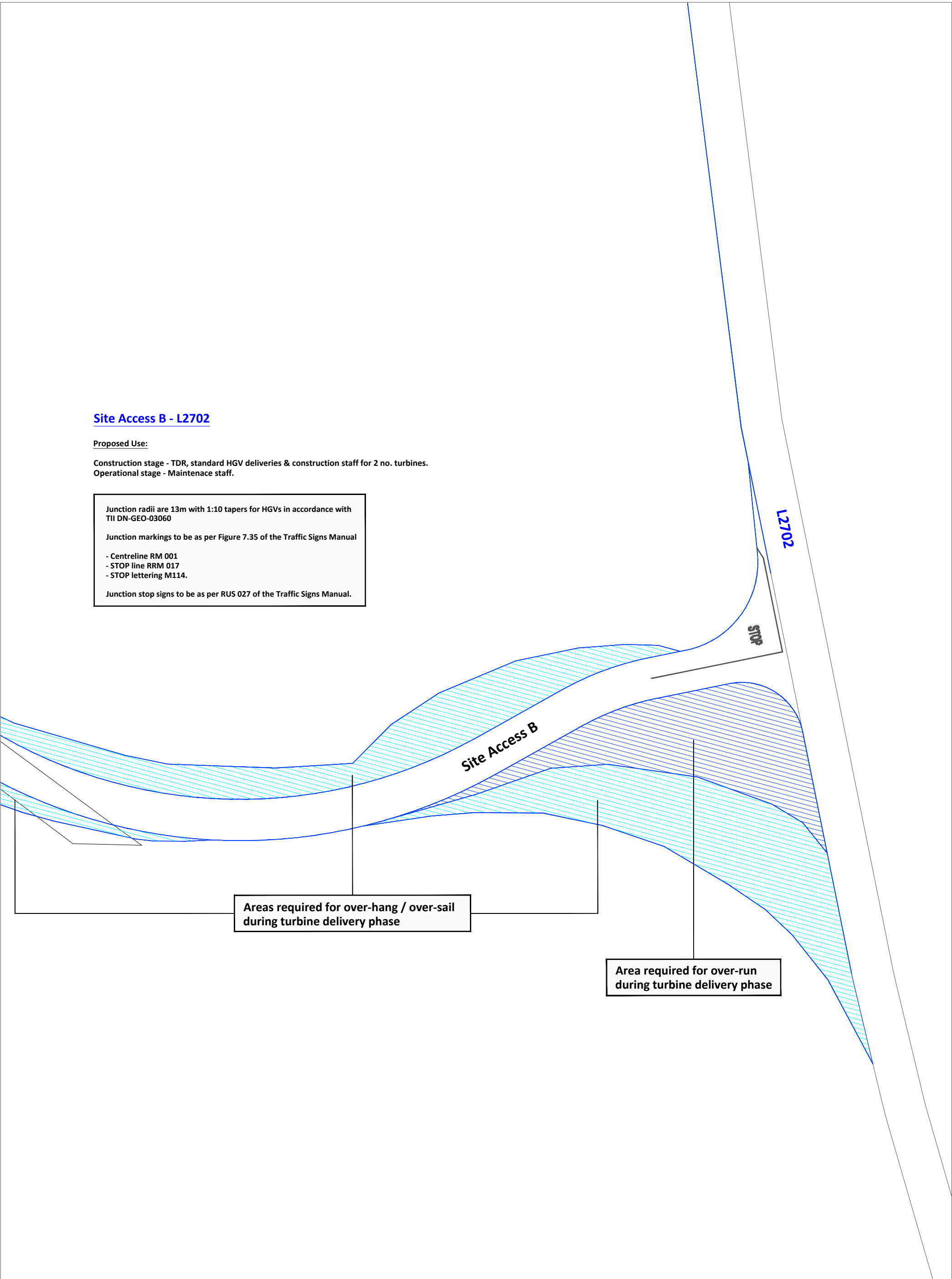
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

- 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

Base mapping provided by MKO

Figure 15-10 Access Junction B - L2702 / wind farm access, junction layout

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 26.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access B - L2702

Proposed Use:

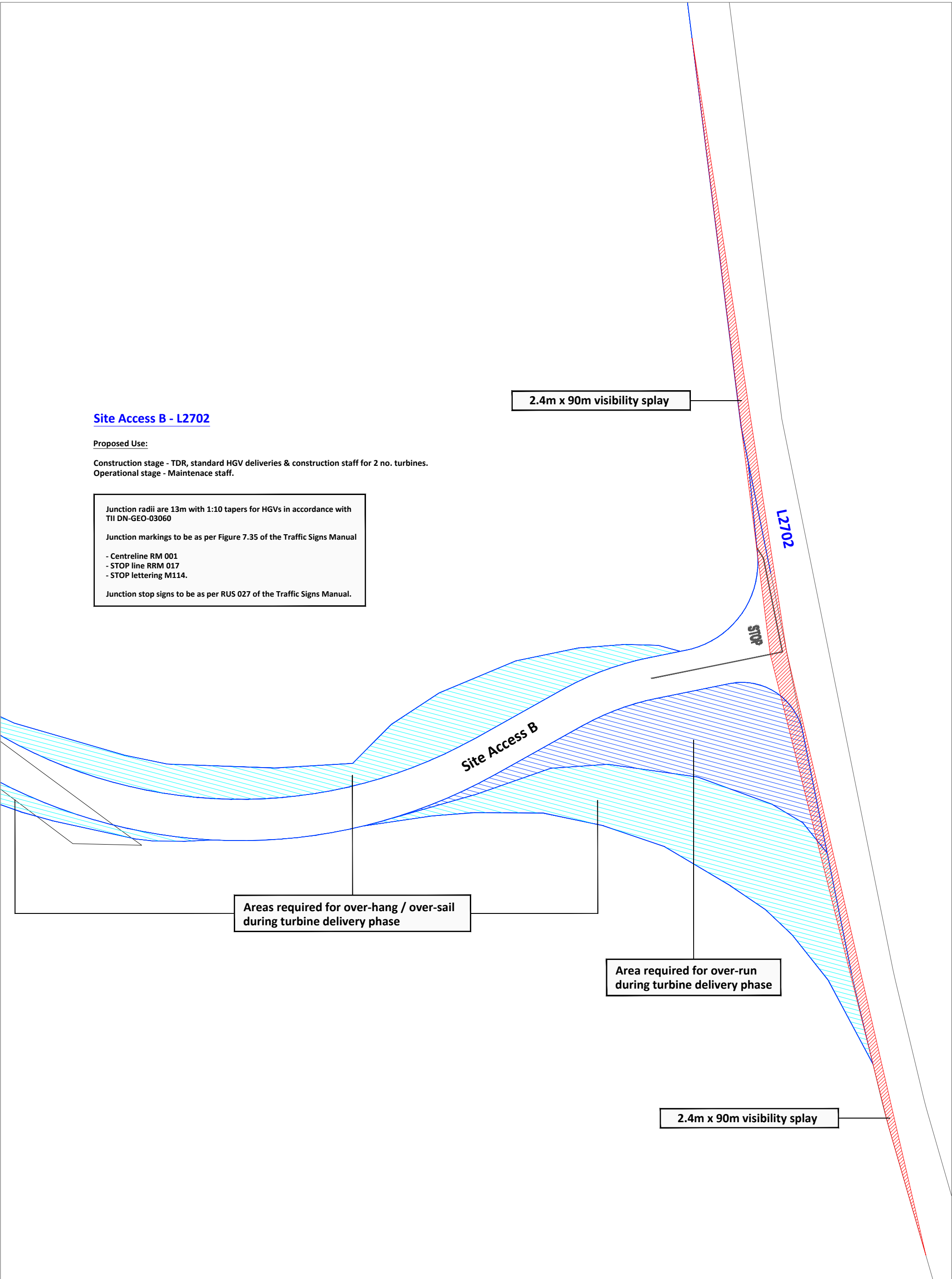
Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

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
Base mapping provided by MKO

Figure 15-11 Access Junction B - L2702 / wind farm access, junction layout with visibility splays

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access B - L2702

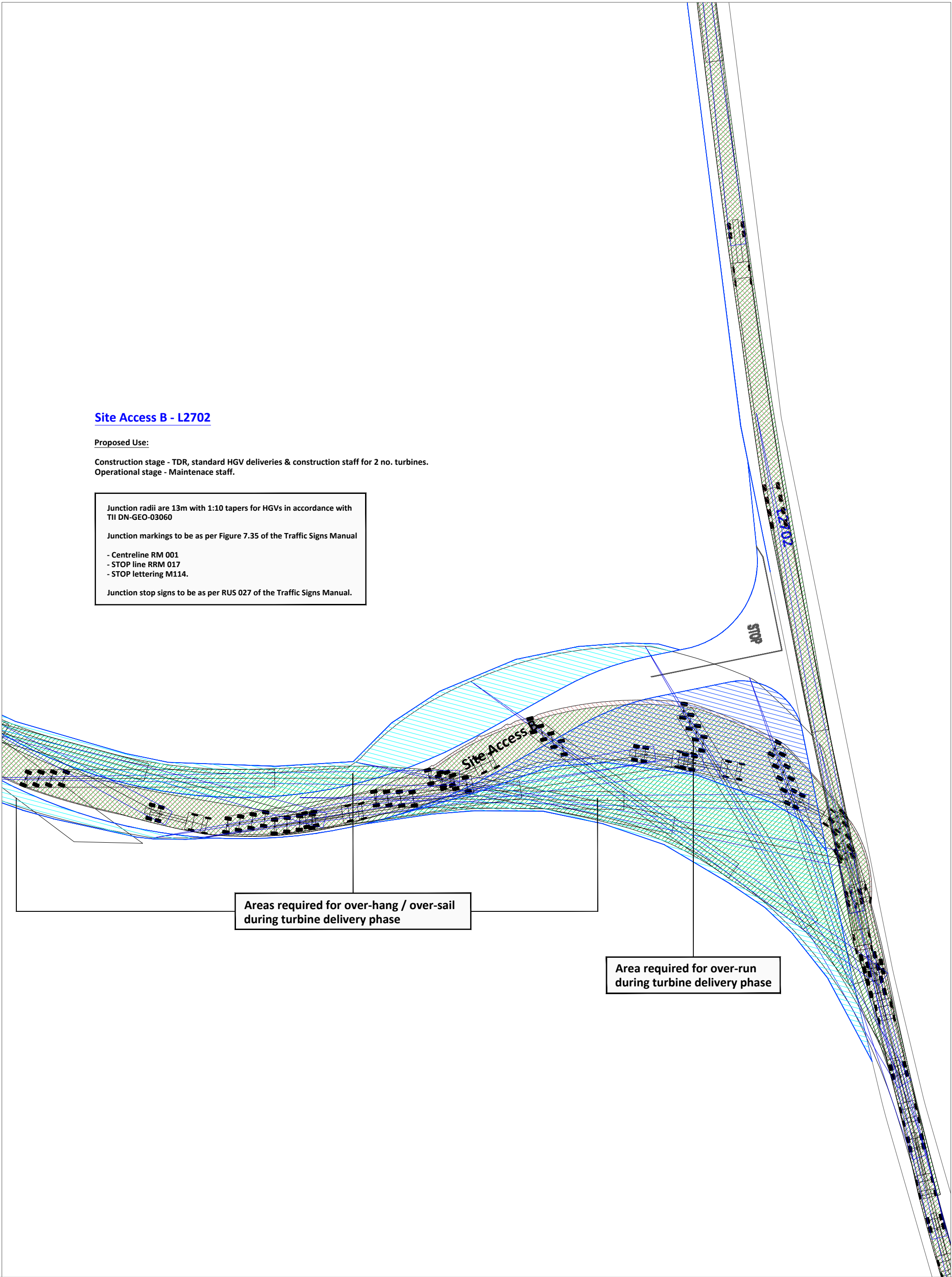
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

- 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

Base mapping provided by MKO

Figure 15-12 Access Junction B - L2702 / wind farm access, junction layout, blade extended artic

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Site Access B - L2702

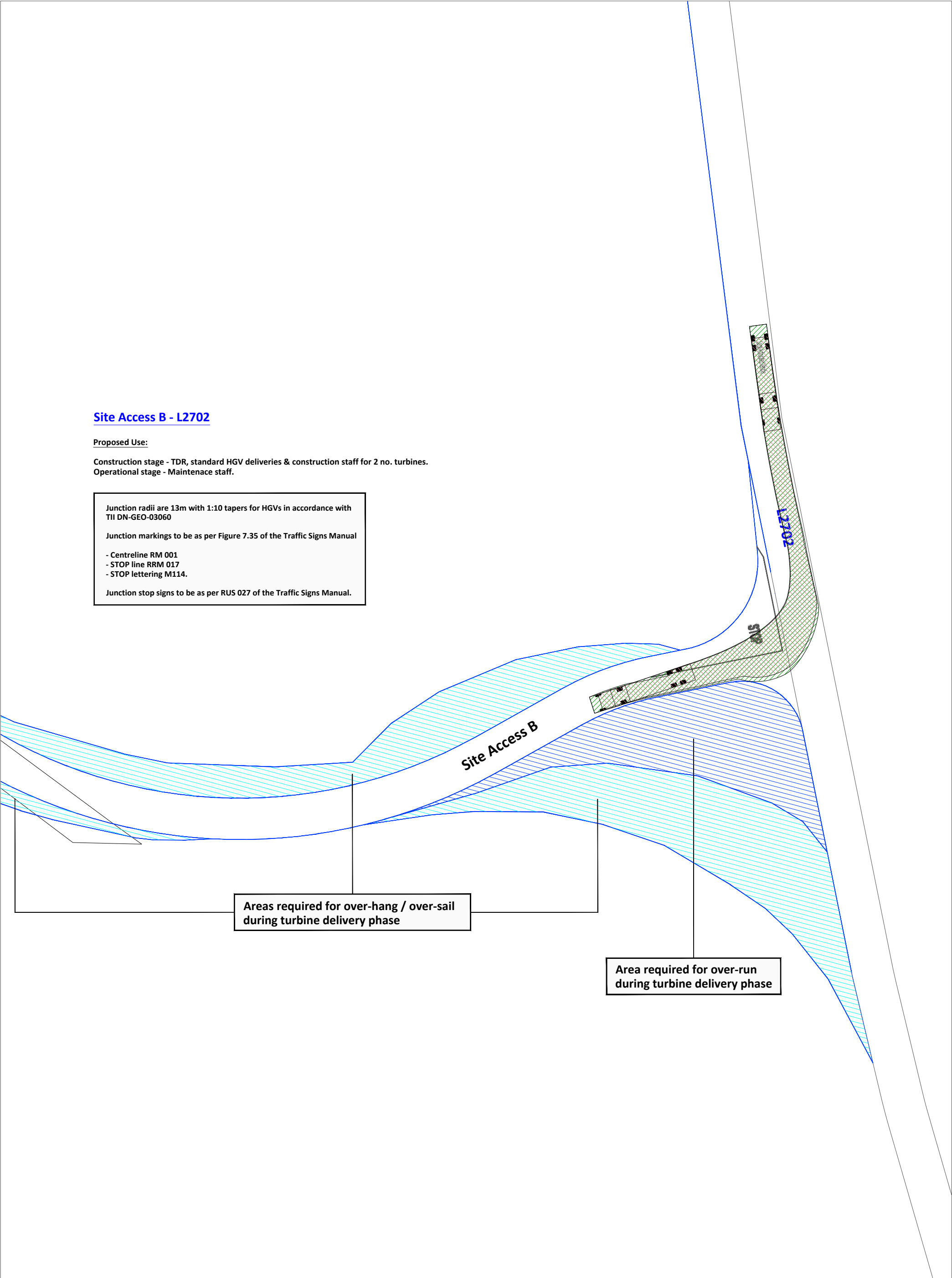
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 2 no. turbines.
Operational stage - Maintenance staff.

- 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:

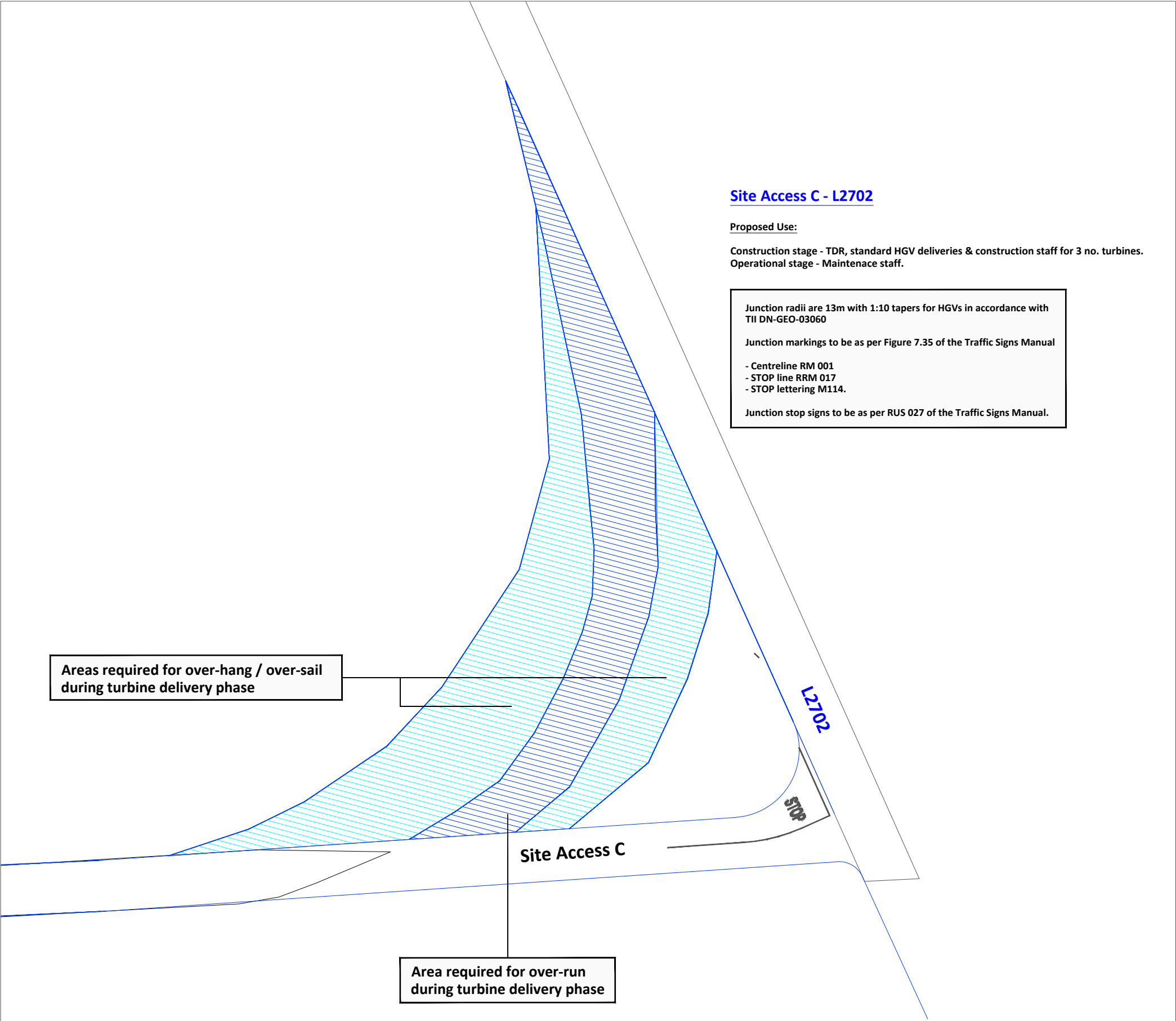
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

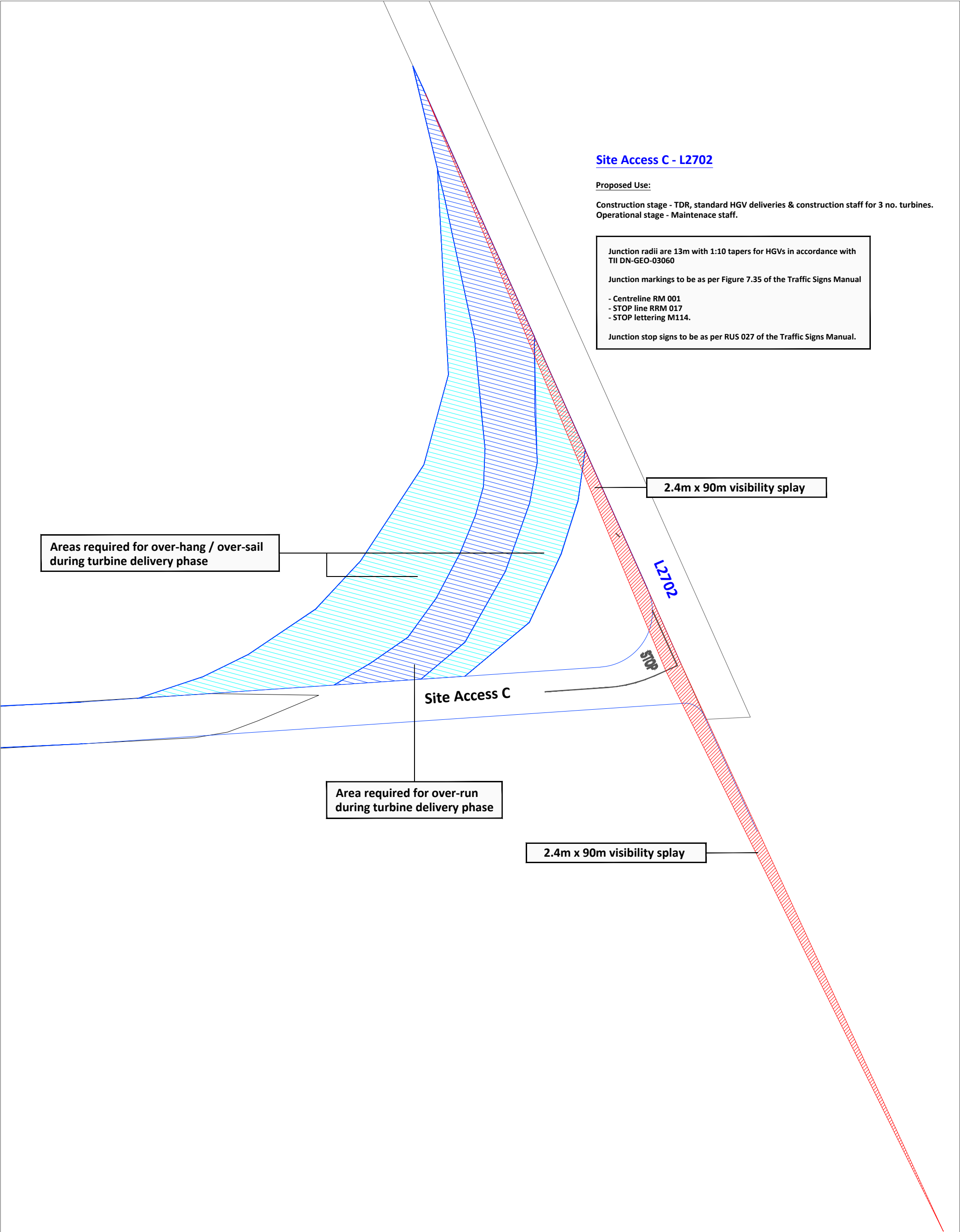
Base mapping provided by MKO

Figure 15-13 Access Junction B - L2702 / wind farm access, junction layout, standard large HGV

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

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Site Access C - L2702

Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 3 no. turbines.
Operational stage - Maintenance staff.

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.

Areas required for over-hang / over-sail during turbine delivery phase

2.4m x 90m visibility splay

Site Access C

Area required for over-run during turbine delivery phase

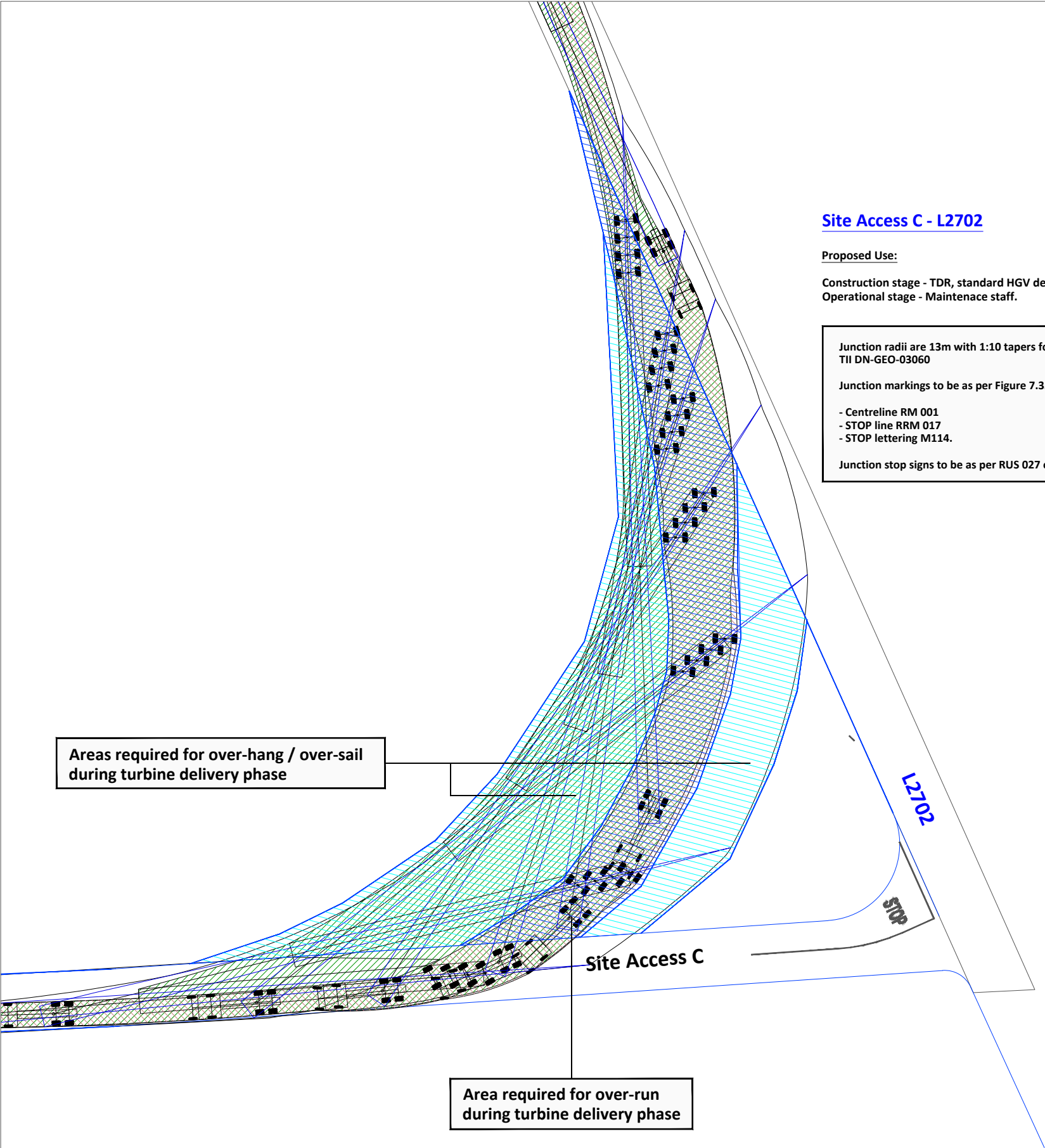
2.4m x 90m visibility splay

NOTES:
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES
Base mapping provided by MKO

Figure 15-15 Access Junction C - L2702 / wind farm access, junction layout with visibility splays

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

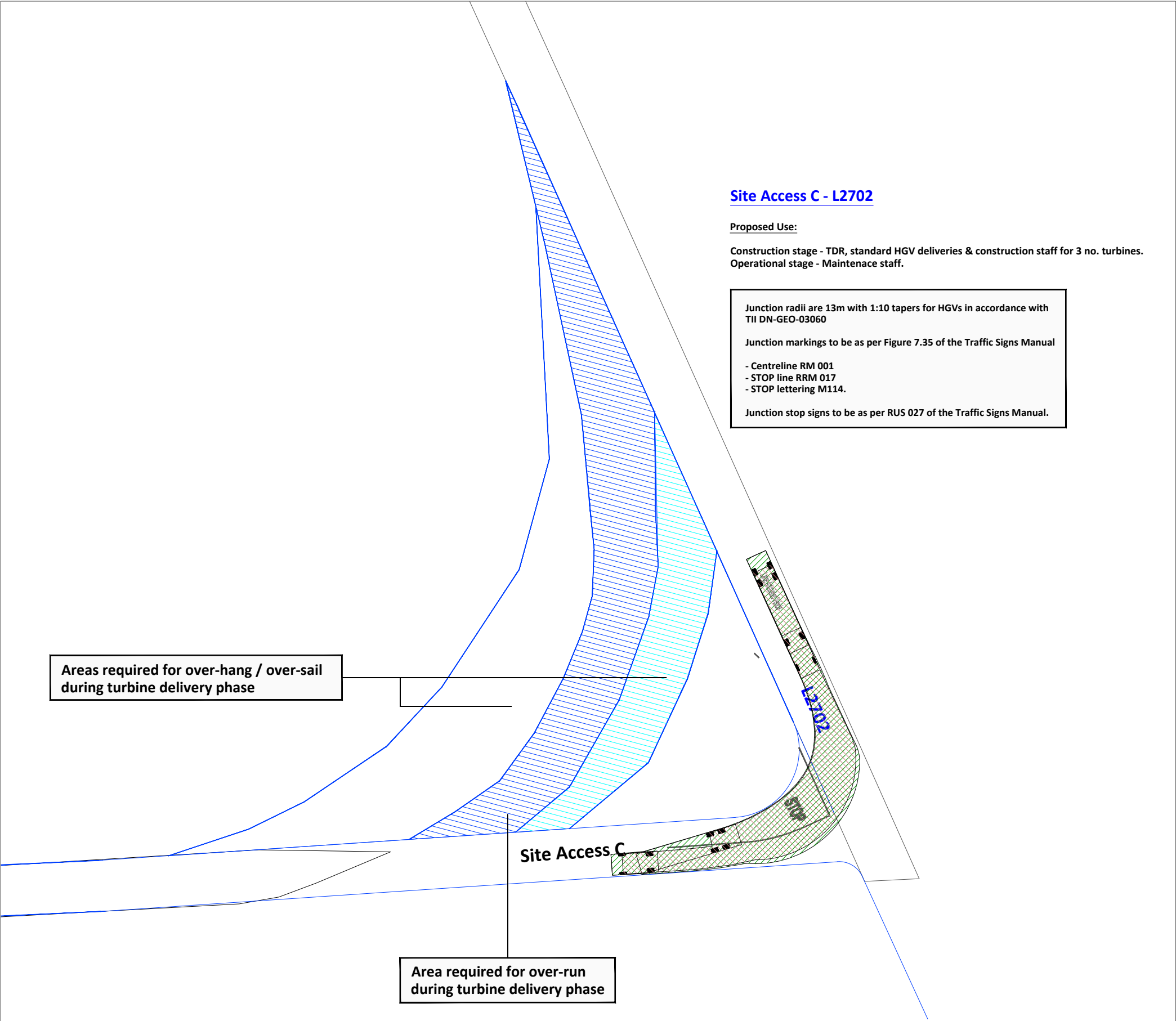
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Site Access C - L2702

Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for 3 no. turbines.
Operational stage - Maintenance staff.

- 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.



Existing Site Access D - L6309

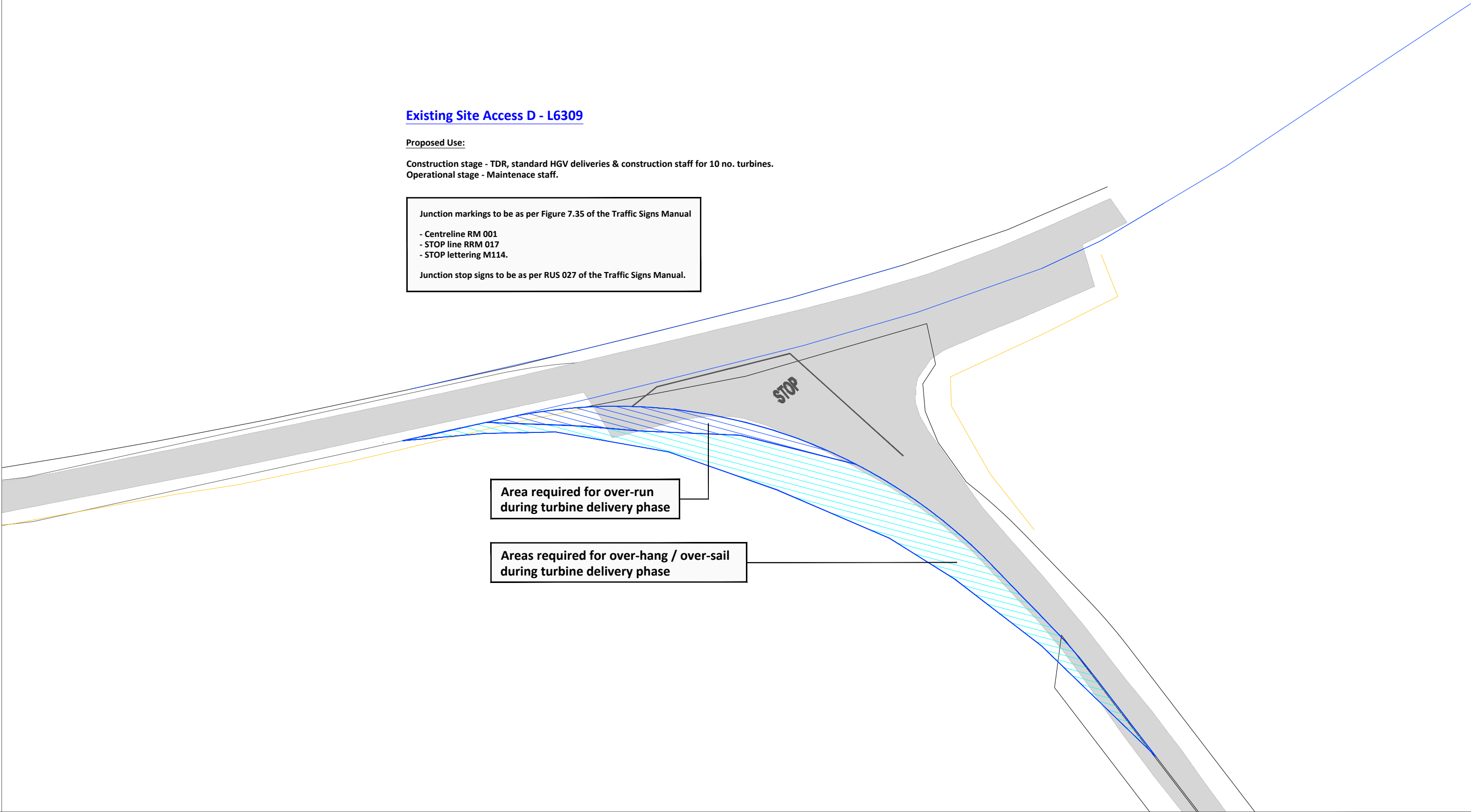
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 10 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-18 Access Junction D - Existing L6309 / wind farm access, junction layout

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 26.06.26	DRAWN BY: AL

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Existing Site Access D - L6309

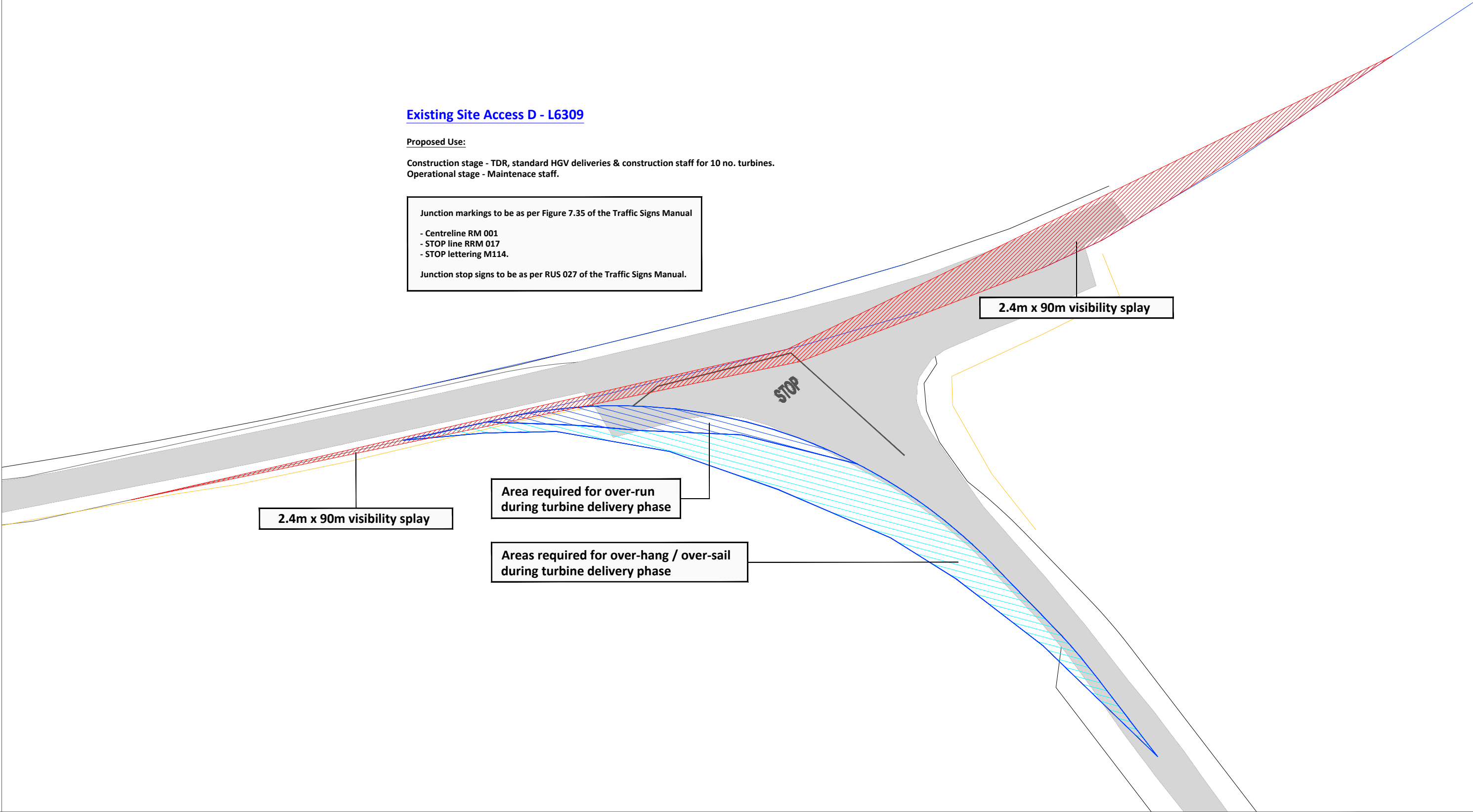
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 10 no. turbines.
Operational stage - Maintenance staff.

- 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

Base mapping provided by MKO

Figure 15-19 Access Junction D - Existing L6309 / wind farm access, junction layout with visibility splays

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

Existing Site Access D - L6309

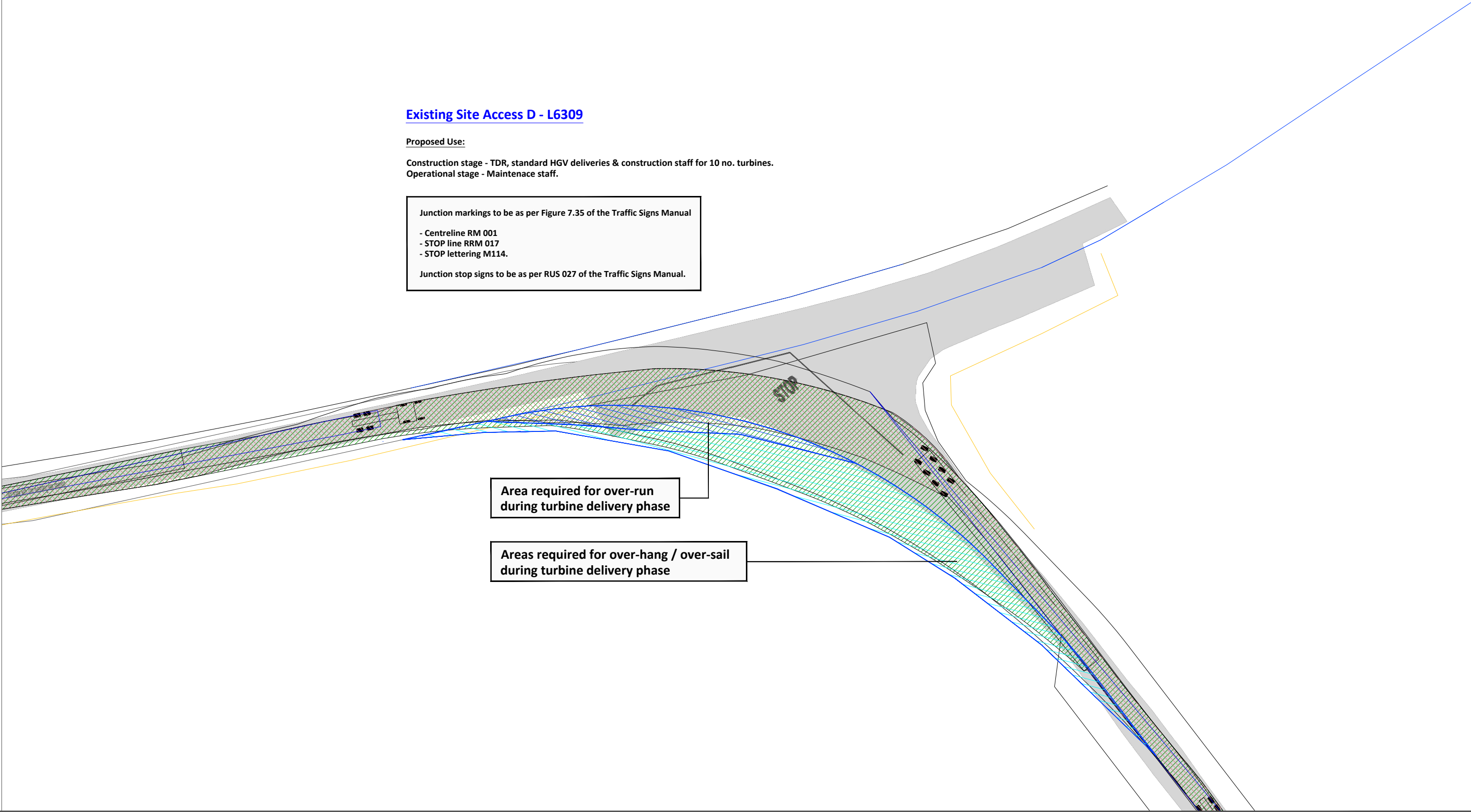
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 10 no. turbines.
Operational stage - Maintenance staff.

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

Base mapping provided by MKO

Figure 15-20Access Junction D - Existing L6309 / wind farm access, junction layout, blade extended artic

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE	SCALE: 1:500@A3	
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

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Existing Site Access D - L6309

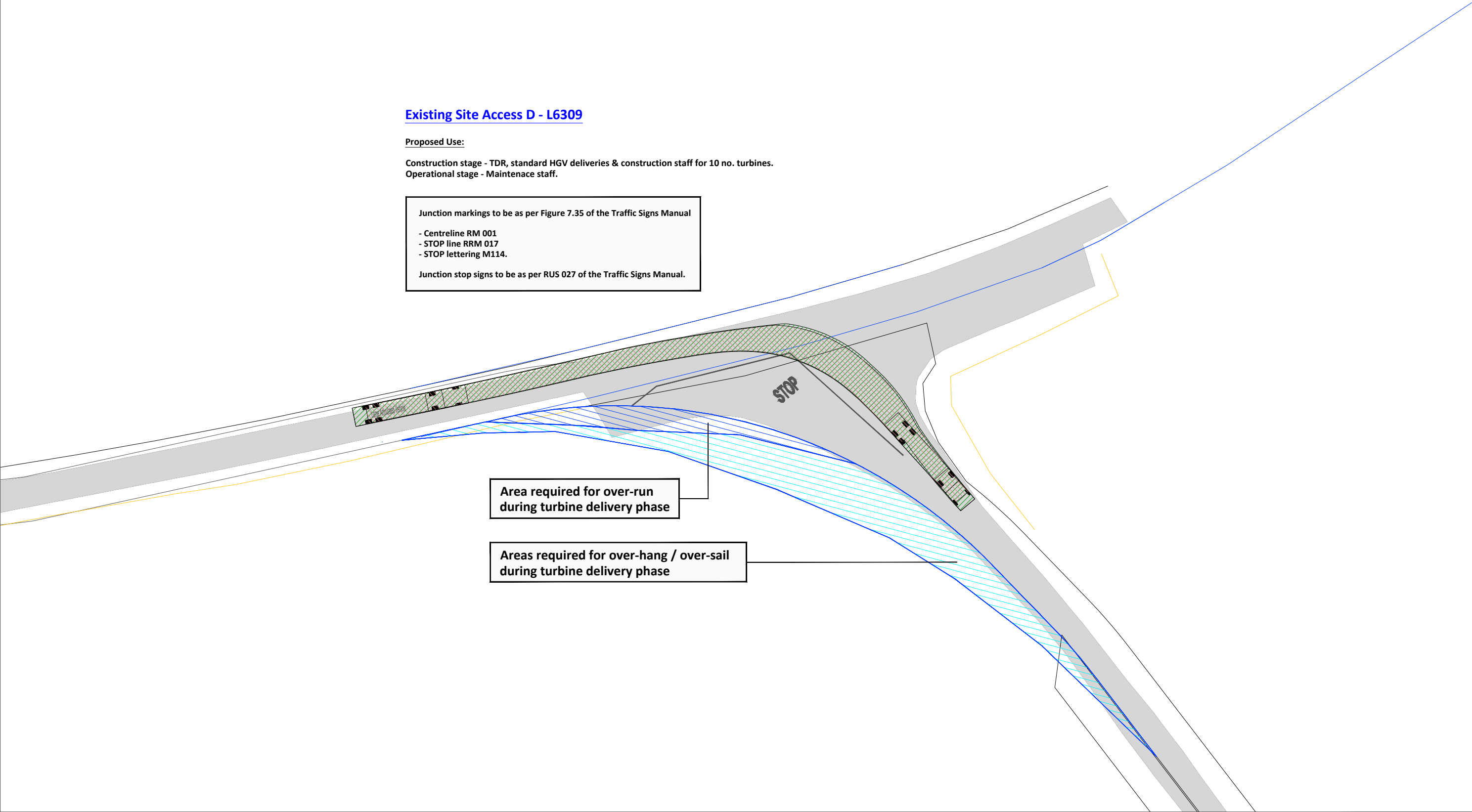
Proposed Use:

Construction stage - TDR, standard HGV deliveries & construction staff for 10 no. turbines.
Operational stage - Maintenance staff.

- 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:

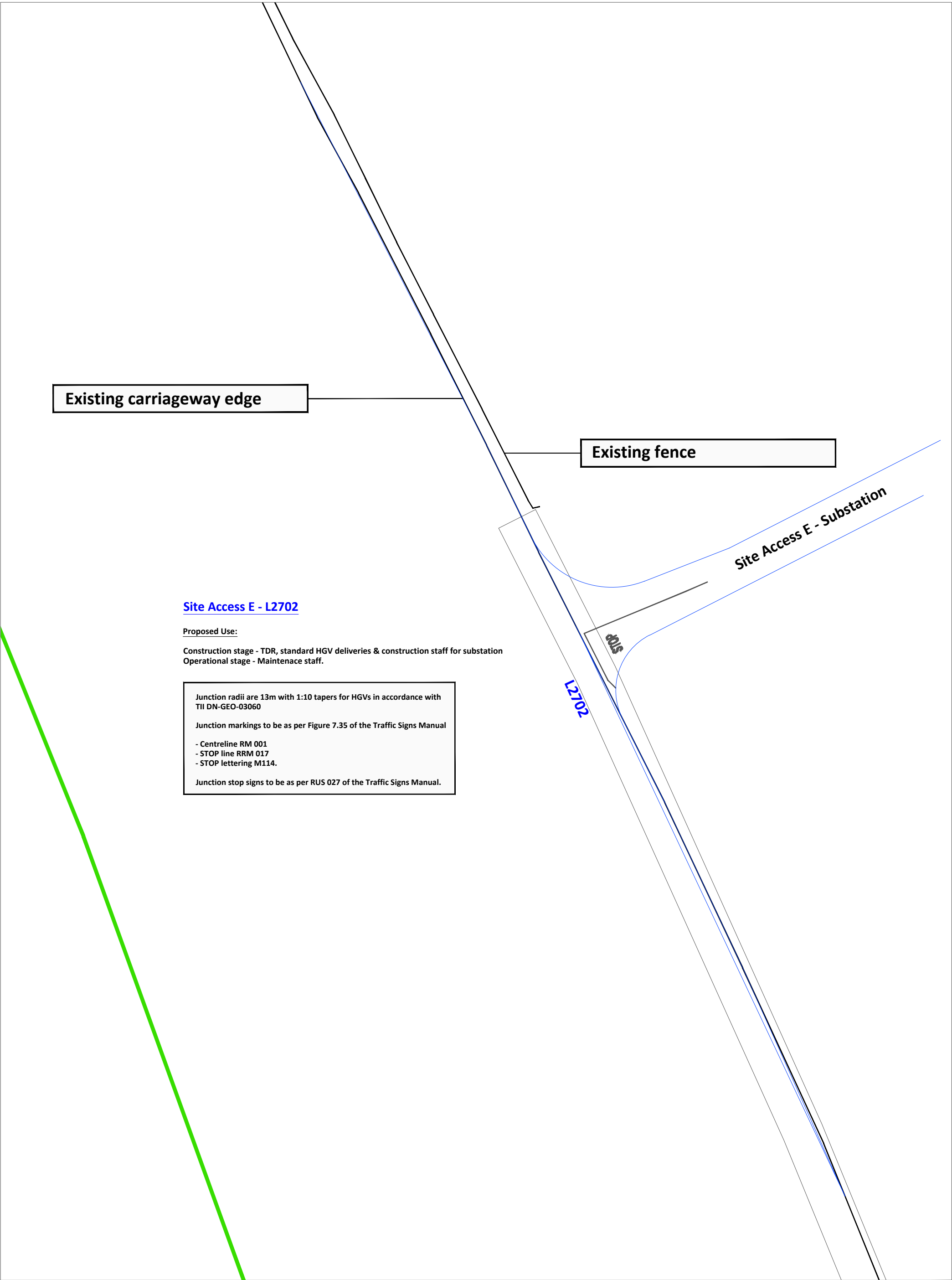
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Base mapping provided by MKO

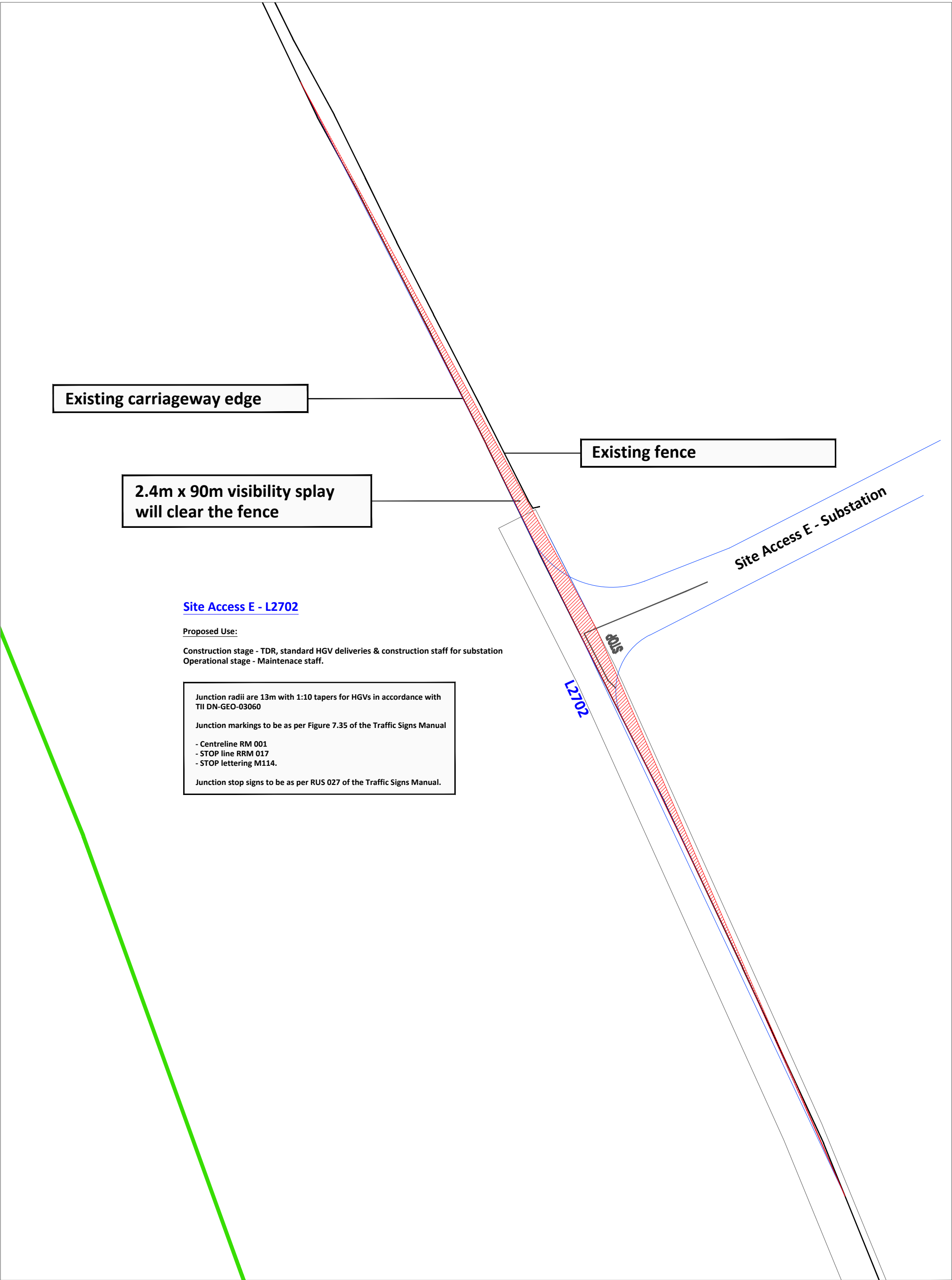
Figure 15-21 Access Junction D - Existing L6309 / wind farm access, junction layout, standard large HGV

PROJECT: Crumhach Wind Farm, Co Sligo		
CLIENT: SSE		SCALE: 1:500@A3
PROJECT NO: 11240	DATE: 29.06.26	DRAWN BY: AL

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NOTES: PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES Base mapping provided by MKO	Figure 15-22		Access Junction E - L2702 / substation access, junction layout	
	PROJECT: Crumhach Wind Farm, Co Sligo			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
	CLIENT: SSE		SCALE: 1:500@A3	
	PROJECT NO: 11240	DATE: 26.06.26	DRAWN BY: AL	



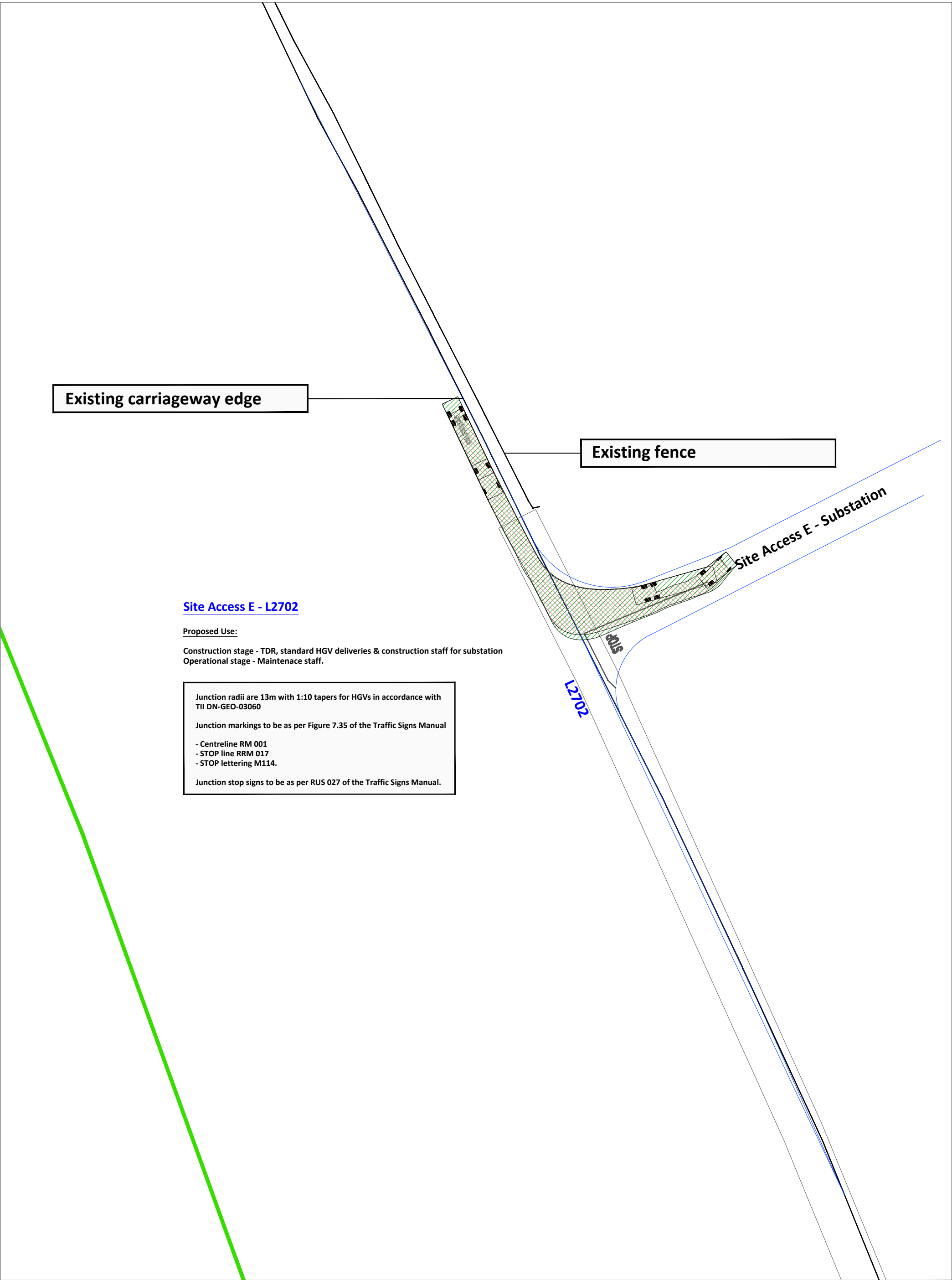
Site Access E - L2702

Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for substation
Operational stage - Maintenance staff.

- 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.



Site Access E - L2702

Proposed Use:
Construction stage - TDR, standard HGV deliveries & construction staff for substation
Operational stage - Maintenance staff.

- 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.

15.1.12 Road Safety Audit

Traffico Road Safety Engineering Consultants Ltd were commissioned to undertake a Stage 1 Road Safety Audit for the access arrangements for the Proposed Wind Farm, in accordance with GE-STY-01024 Road Safety Audit Guidelines, TII, December 2017. The Stage 1 Road Safety Audit Report is attached as Appendix 15-4 of this EIAR.

As documented in the Audit Report, the Audit Team identified 3 no. potential problems. For each Problem identified the Design Team are required to provide a response, as documented in Appendix A, Road Safety Audit Feedback Form of the Stage 1 Road Safety Audit Report. The 3 no. potential Problems identified (shown in Appendix 15-4), together with the Design Teams response and whether the response was accepted by the Audit Team, are set out below.

Problem 2.2

Drivers Confused by Redundant Access Track: Site Access B – Local Road L2702, Existing Access Track to South

The Audit Teams notes that the existing section of access track (made redundant by Site Access B) might create confusion for drivers who could enter it by mistake, leading to sudden braking, loss of control or conflicts with construction traffic.

The Audit Team recommends that the section of redundant access track should be removed.

The Design Team Response is as follows – It is proposed that the existing access will be retained for local access only and managed during the construction phase. It is proposed that both accesses are gated with the opening of each access managed on site during the construction phase. On the completion of construction, the over-run areas will be closed off permanently. Appropriate signage will be put in place at both the existing and proposed new access tracks to clearly distinguish the existing access for local landowners from construction and operational access to the Proposed Wind Farm.

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

Problem 2.3

Passing Motorists Accessing Vehicle Overrun Area, Location: Site Access C – Local Road L2702

The Audit Teams notes that temporary over-run area might create confusion for passing motorists, who could access it by mistake, leading to sudden braking, loss of control or conflicts with construction traffic.

The Audit Team recommends that the Designer should ensure that a suitable barrier is put in place to prevent passing motorists from accessing the abnormal load overrun area when it is not in use.

The Design Team Response is as follows – A suitable barrier will be put in place at all times during the construction stage and opened only on the nights that the abnormal loads are delivered. On these occasions the deliveries will be accompanied by a Garda escort and the opened junction will be attended by site staff. On the completion of construction the over-run areas will be closed off permanently.

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

Problem 2.5

Passing Motorists Accessing Vehicle Overrun Area - Location: Site Access E - Connection to Local Road L6309

The Auditors note that there is a noticeable level difference between the existing L6309 and the location of the proposed access road. A steep access road in this location could result in vehicles rolling backwards down the incline or stalling as they attempt to join the local road.

The Audit Team recommends that the Designer should include a gentle gradient on the access road approach with a suitable dwell area where it meets the local road.

The Design Team Response is as follows – The gradient for the substation access arm of the junction proposed on the L2702 will be raised to be in accordance with guidelines set out in Rural Road Link Design DN-GEO-03031, TII, June 2017, and will include a dwell area of a minimum of 15m which will have a gradient of a maximum of 2.5%.

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

Summary of Stage 1 Road Safety Audit

The Audit Team raised 3 potential road safety problems. The Design Team agreed with each problem and each recommendation suggested by the Audit Team and provided a detailed solution describing each mitigation measure proposed. It is confirmed that each solution was to the satisfaction of the RSA Team.

15.1.13 Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes (DN-GEO-03030, TII)

A report in accordance with DN-GEO-03030 Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes, TII, April 2021 was prepared for the section of the N59 on the Proposed Underground Grid Connection Route. The report is included as **Appendix 15-5** of this EIAR and will be uploaded onto the TIIs Departures Portal.

15.1.14 Provision for Sustainable Modes of Travel

15.1.14.1 Walking and Cycling

The Sligo Way Trail is a recreational walkway pertaining the Proposed Wind Farm. 7.2km of the trail passes through the Proposed Wind Farm, 3.3km via the L2702 local road, 1.6km along the L6309 local road 2.3km with the Existing Wind Farm and local access tracks. The Proposed Grid Connection Route passes under the Sligo Way for 2.3km along the L6309 local road. Diversion Routes for the construction phase of the Proposed Project along the Sligo Way are described in Chapter 4.

15.1.14.2 Public Transport

A review of the TFI's Regional Transport Map of August 2025 indicates that Bus Eireann service number which operates 9 times per day between Enniskillen and Ballina stops in Dromore West. The stop approximately 6kms from the nears site access and is therefore not a viable transport option for construction workers.

The nearest public transport access (public train station) is in Collooney, located approximately 19.2km east of the nearest Proposed Turbine (T16). With regards to the Proposed Grid Connection Route, the nearest public transport access (public train station) is also in Collooney, located approximately 900 metres north at its nearest point. Therefore, it can be considered that there will be no impacts on public transport services during the construction phase of the Proposed Project.

Based on the above Public transport is not an option for construction staff to access the Proposed Wind Farm. The provision of minibuses will be considered for transporting staff to and from the Proposed Wind Farm site in order to minimise traffic generation and parking demand.

15.1.15 Likely and Significant Effects and Associated Mitigation Measures

15.1.15.1 'Do-Nothing' Scenario

An alternative land use option to repowering the Existing Wind Farm as part of the Proposed Project would be to leave the Existing Wind Farm site as it is, with no changes made to the existing operating 23 no. wind turbines within the Existing Wind Farm. In doing so, environmental effects in terms of emissions are likely to be neutral for the short term, however 13 no. of the existing turbines (existing Dunneil Wind Farm) are due to be decommissioned in accordance with their planning permissions in 2039. Once the 13 no. turbines are decommissioned, there will be a negative effect on greenhouse gas emissions. The 10 no. turbines which were commissioned in 2003 will be left in situ (existing Kingsmountain Wind Farm). However, these machines are aging and are not as efficient as the newer machines. Although these turbines do not have a decommissioning date, they will eventually break down and have to be decommissioned. The opportunity to continue capturing the available renewable energy resource with the Existing Wind Farms would be lost.

An alternative land use option to developing a renewable energy project in the greenfield sections of the Proposed Wind Farm site (i.e areas of the Proposed Wind Farm site located outside the footprint of the Existing Wind Farm) would be to leave the area as it is with no changes made to the current land use practices of commercial forestry, turf cutting, and public road corridor.

In implementing the 'Do-Nothing' alternative, however, the opportunity to capture a significant part of Co. Sligo's renewable energy resource would be missed, as would the opportunity to contribute to meeting Government and EU 2030 targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. In addition, the opportunity to meet the obligations as laid out in the Climate Action and Low Carbon Development Act 2021 will be lost. The opportunity to generate local employment, development contributions, and rates would also be forgone. Furthermore, the opportunity to implement the measures outlined in the Biodiversity Management and Enhancement Plan (BMEP) as outlined in Appendix 6-4 would also be lost.

15.1.15.2 Construction Phase: Traffic and Transport

During Phase 1 – Wind Turbine Foundation Concrete Pouring

For 17 days when the concrete foundations are poured, an additional 430 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +3.3% to 4.2% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +1.5% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +9.2%, increasing to +46.0% as the route heads south onto the L2702 (Link 6) and background traffic volumes on the local road network reduce.

On the L6309 (Link 7) leading to the Site Access A and D, and on the L2702 (Link 8) leading to the proposed Site Accesses C, B and E, where background traffic volumes are very low (< 100 pcus per day) traffic flows on these days are forecast to increase by a factor of between 5 to 6.

For trips approaching from the west on the N59 (Link 9) is forecast that traffic volumes will increase by +8.2% on these 17 days).

It is forecast that this will have a **temporary, slight, negative effect, which is Not Significant**, on existing traffic on the delivery route and at the existing N59 / L2702 junction. As the existing traffic volumes on the L2702 and the L6309 from which the Proposed Wind Farm site is accessed are low, and the relative increase is high, the additional traffic generated on these days will be very noticeable to residents and for those that travel on the local network. However, as the traffic volumes on these roads are still low in terms of capacity, it is considered that the impacts on the local road network will also be **temporary, slight, negative effect, and Not Significant**.

During Phase 1 – Extraction of Decommissioned Turbines and Proposed Grid Connection Route Construction

On these 20 days when the decommissioned turbines will be extracted from the Proposed Wind Farm site at the same time as the construction of the grid connection continues, an additional 188 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.4% to 1.8% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.7% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +4.0%, increasing to +20.1% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Site Accesses A and D, and on the L2702 (Link 8) leading to Site Accesses B, C and E, traffic flows on these days are forecast to increase by a factor of between 2 to 3.

For trips approaching from the west on the N59 (Link 9) is forecast that traffic volumes will increase by +8.6% on these 20 days).

It is forecast that this will have a **temporary, slight, negative effect, which is Not Significant**, on existing traffic on the delivery route, the existing N59 / L2702 junction and on the local road network leading to the site.

During Phase 1 and 2 – General Construction and Proposed Grid Connection Route Construction

For 410 days when first phase general construction takes place on the Proposed Wind Farm site at the same time Proposed Grid Connection Route construction commences, an additional 446 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +3.4% to 4.4% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +1.6% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +9.5%, increasing to +47.7% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Site Accesses A and D, and on the L2702 (Link 8) leading to Site Accesses B, C and E, traffic flows on these days are forecast to increase by a factor of between 5 to 6.

For trips approaching from the west on the N59 (Link 9) is forecast that traffic volumes will increase by +8.5% on these 205 days).

It is forecast that this will have a **temporary, slight, negative effect, which is Not Significant**, on existing traffic on the delivery route, the existing N59 / L2702 junction and on the local road network leading to the Proposed Wind Farm site.

During Phase 2 – Delivery of Turbine Abnormally Sized Loads and Proposed Grid Connection Route Construction

On these 45 days when the abnormally sized loads will be delivered to the site at the same time as the construction of the grid connection continues, an additional 193 PCUs will travel to/from the Proposed Project site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.5% to 1.9% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.7% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +4.1%, increasing to +20.6% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Site Accesses A and D, and on the L2702 (Link 8) leading to Site Accesses B, C and E, traffic flows on these 45 days are forecast to increase by a factor of between 2 to 3.

It is forecast that this will have a **temporary, slight, negative effect, which is Not Significant**, on existing traffic on the delivery route, the existing N59 / L2702 junction and on the local road network leading to the site.

During Phase 2 – Delivery of Turbine Standard Sized Loads and Proposed Grid Connection Route Construction

On these 17 days when the smaller turbine components will be delivered to the Proposed Wind Farm site using standard sized HGVs at the same time as the construction of the grid connection continues, an additional 152 PCUs will travel to/from the Proposed Wind Farm site. For deliveries made on the TDR, it is forecast that the increase in traffic volumes on these days will range from between +1.2% to 1.5% on the N56 west of Donegal to the N15 south of Bundoran (Links 1 to 3), down to a +0.5% increase on the dual section of the N4 south of Sligo (Link 4).

Approaching the Proposed Wind Farm site from the east on the N59 (Link 5) it is forecast that traffic volumes will increase by +3.2%, increasing to +16.3% as the route heads south onto the L2702 (Link 6).

On the L6309 (Link 7) leading to Site Accesses A and D, and on the L2702 (Link 8) leading to Site Accesses B, C and E, traffic flows on these days are forecast to increase by a factor of approximately 2.

It is forecast that this will have a **temporary, slight, negative effect, which is Not Significant**, on existing traffic on the delivery route, the existing N59 / L2702 junction and on the local road network leading to the Proposed Wind Farm site.

Proposed Grid Connection Route Construction

With respect to the traffic volumes that will be generated during the construction of the Proposed Grid Connection Route, it is estimated that there will be approximately 15 daily return trips made by a trucks transporting materials, and 8 return trips made by a car to transport construction staff, to and from the site. The impacts of these trips are included in Section 15.1.5 and summarised above. In addition, temporary short term diversions are required for local traffic, as discussed in Section 15.1.7 of this EIAR. The traffic diverted off sections of the road network during the construction of the proposed grid route will, where possible, be diverted onto roads of a similar or higher standard, and in general the volumes of traffic on the roads impact are relatively low. Therefore, by its nature the effects of these additional trips and diversions on the network will be transient, will be temporary and will be slight.

15.1.15.3 Operational Phase: Traffic and Transport

The impacts on the surrounding local highway network will be negligible given that there will only be an average of approximately 1 to 2 trips made by site staff and approximately 20 amenity trips to the Proposed Wind Farm by car or light goods vehicle per day with no regular visits required for the Proposed Grid Connection. The effects of the maintenance traffic on the surrounding highway network will therefore be imperceptible, negative and long term, which is not significant.

15.1.15.4 Decommissioning Phase: Traffic and Transport

The Proposed Turbines are expected to have a lifespan of 35 years. Following the end of their useful life, the wind turbines may be replaced with new turbines, subject to planning permission being obtained, or the proposed turbines 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 will be rehabilitated, i.e. left in place, covered over with local soil/subsoil and peat and allowed to re-vegetate naturally, if required. The internal site access tracks may be left in place, as they will continue to serve as amenity tracks for the local community. 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 be required to remove materials from the Proposed Wind Farm 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. It is proposed that the decommissioning phase will have a temporary, imperceptible, negative effect on traffic which is not significant.

The Proposed Grid Connection will remain in place as it will remain under the management and operation of ESB/EirGrid. There are no Traffic and Transport 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.

15.1.15.5 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).

15.1.15.5.1 Mitigation by Design

Mitigation by design has been implemented by selecting the most appropriate delivery route to transport the wind turbine components, requiring the least amount of remedial works to accommodate the vehicles as set out in Section 15.1.15.5.1

15.1.15.5.2 Mitigation Measures During the Construction Phase

The successful completion of the Proposed Project will require significant coordination and planning, and it is therefore recommended that the following comprehensive set of mitigation measures will be

put in place before and during the construction phase in order to minimise the effects of the additional traffic generated by the Proposed Project.

Delivery of abnormal sized loads

The following are the main points to note for these deliveries which will take place after peak evening traffic:

- The delivery of turbine components is a specialist transport operation with the transportation of components carried out at night when traffic is at its lightest and the impact minimised.
- The deliveries will be made in consultation with the Local Authority and An Garda Síochána.
- It is estimated that 120 abnormal sized loads will be delivered to the site, comprising 45 convoys of 3 vehicles, undertaken over 45 separate nights.
- These nights will be spread out over an approximate period of 9 weeks and will be agreed in advance with the relevant authorities,
- In order to manage each of the travelling convoys, for each there will be two Garda escort vehicles that will stop traffic when required at the front and rear of the convoy of 3 vehicles.
- There will also be two escort vehicles provided by the haulage company for each convoy.

Other traffic management measures

A detailed **Traffic Management Plan (TMP)** (Appendix 15-2) will be provided specifying details relating to traffic management and included in the CEMP (Appendix 4-5) prior to the commencement of the construction phase of the Proposed Project. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing onsite. The detailed TMP will include the following:

- **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, 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 Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, Transport Infrastructure Ireland (TII) and Motorway Maintenance and Renewal Contractors (MMaRC) will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm.
- **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the 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** – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

- **Liaison with the relevant local authority** - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager.
- **Implementation of temporary alterations to road network at critical junctions** – at locations highlighted in Section 15.1.9.
- **Identification of delivery routes** – These routes will be agreed with Sligo County Council and adhered to by all contractors.
- **Delivery times of large turbine components** - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.
- **Travel plan for construction workers** – While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the Site and identification of an area for parking.
- **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. These are set out in the CEMP which is contained in Appendix 4-5.
- **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.
- **Diversion routes during grid construction** – The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.

15.1.15.5.3 **Mitigation Measures During Operational Phase**

Due to the very low volumes of traffic forecast to be generated during this stage no mitigation measures are required. Please note, as outlined in Section 15.1.2.1 above, and Section 3.2.5.2.4 of Chapter 3, the proposed site entrances for the Proposed Project have been assessed for functionality, and the most appropriate use for each entrance has been identified. All of the 5 access junctions A to E will be used for operational phase maintenance and monitoring activities, with Site Access D providing for the most traffic during the operational phase. It is forecast that a maximum of 2 car / lgv trip will be generated by maintenance staff, with no traffic mitigation measures required.

15.1.15.5.4 **Mitigation Measures During Decommissioning Phase**

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 preparation of a material recycling / disposal and traffic management plan 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).

15.1.15.6 **Residual Effects**

15.1.15.6.1 **Construction Phase**

During the 24-month construction stage of the Proposed Project, it is forecasted that the additional traffic that will appear on the public road network serving the Proposed Wind Farm and during the construction of the Proposed Grid Connection Route will have a temporary, slight, negative effect on

existing road users, which will be minimised with the implementation of the mitigation measures included in the proposed TMP included as Appendix 15-2. There will be no significant impacts following the implementation of the proposed mitigation.

15.1.15.6.2 **Operational Phase**

The traffic impact of the Proposed Project will be imperceptible, long term and negative during the operational phase. There will be no significant impacts.

15.1.15.6.3 **Decommissioning Phase**

As stated above, in the event that the Proposed Wind Farm 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 an imperceptible, negative, temporary effect. There will be no significant impacts.

The Proposed Grid Connection Route will remain in-situ and continue to operate as part of the national electricity grid network.

15.1.16 **Cumulative Effects**

The extent of the study area of the traffic and transport cumulative impact assessment is 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 have the potential for cumulative effects 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 existing, permitted, and proposed projects was completed for the potential for cumulative traffic and transport effects with the Proposed Project based on the following criteria:

- Project status (existing, permitted, or proposed);
- Degree of overlap on the highway network (low to high);
- Traffic volumes (low to high).

A detailed list of all developments at varying stages in the development process (from pre-planning to operational), is set out in Appendix 2-3 of this EIAR. 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 (ACP).

15.1.16.1.1 **Other Wind Farms**

The other permitted and proposed wind farm developments within a 25 km zone around the Proposed Project that were considered to have potential traffic related cumulative impacts are set out below in Table 15-23. Developments consisting of single domestic turbines have not been considered further in the cumulative assessment as the scale of construction traffic associated with these would be considered insignificant and therefore would not have a cumulative impact when associated with the Proposed Project.

As set out in Table 15-36 below, there is one wind farm within the cumulative study area that is permitted and one planning application that is live with An Coimisiún Pleánala (ACP).

It is noted that the port of entry for these wind farms may be the same as for the Proposed Project, Killybegs Harbour, and theoretically there is the potential that there could be cumulative impacts at the port and on the turbine delivery routes in on the along the N56, N15, N4 and N59 until Dromore West Co. Sligo, 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 storage capacity to provide for more than one of these developments at a time, typically 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 two wind farm developments listed in Table 15-36, based on the criteria set out above (project status, overlap of delivery routes and traffic volumes) it is estimated that there is one wind farm(Firlough Wind Farm) for which there is a high potential for cumulative impacts with the Proposed Project.

In the event that the construction of the Proposed Project coincides with the construction phase of either of the four wind farm developments listed in Table 15-36, the traffic related cumulative impacts would be negative, short-term and slight, based on the potential overlap of TDRs and associated traffic generation. It is therefore proposed that the construction phase of the Proposed Project will be scheduled, where possible, to avoid the overlap of the construction phases of these wind farm developments. This will ensure that the potential for cumulative effects is minimised.

Table 15-36 Summary of other wind farms considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
1 – Firlough Wind Farm (13 turbines) - ACP Reference PL16.241592, PA16.317560	Granted	High	Medium	High
2 - Clooncunny Wind Farm (7 no. turbines) – ACP Reference PC21.317477	Pre-Planning	N/A	N/A	N/A

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

There are 2 no. developments currently within the 10 km buffer zone from the Site progressing through the planning process with the potential for cumulative impacts with the Proposed Project, as set out in Tables 15-37 and 15-38.

In the event that either of these developments is constructed at the same time as the Proposed Project it is forecast that the cumulative impacts will be negative, short term and slight in terms of severity. There will be no significant impacts.

For all developments listed, in the event that they are constructed at the same time as the Proposed Project it is forecast that the cumulative impacts will be negative, short term and slight, and not significant.

Table 15-37 Summary of other developments with Local Planning Authorities considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
The alteration, renovation and extension to the existing hostel. 3 Lyons Terrace, Finsklin Road, Sligo SCC Planning Ref 2660178.	N/A	Low	Low	Low

Table 15-38 Summary of other developments with An Coimisiún Pleanála considered in cumulative assessment and potential for cumulative traffic effects with Proposed Project

Project	Status	Degree of overlap of highway network (low / medium / high)	Traffic volumes (low / medium / high)	Potential cumulative traffic effects*
Permission to erect 2300 metres of wire fencing to a height of 1.2 metres on land within The Lough Nabrickkeagh Bog, SAC. A Natura Impact Statement was lodged with the application. Gortersluin, Lough Talt, Tubbercurry, Co.Sligo. ACP Ref 246608	Granted	Low	Low	Low

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, during the construction, operational and decommissioning phases of the Proposed Project. This section should be read in conjunction with Appendix 15-6 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 Brandon Taylor with input from Edel Mulholland and reviewed by Ellen Costello and Sean Creedon, all of MKO.

Brandon Taylor is an Environmental Scientist with over three 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 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 of multiple large-scale onshore wind energy developments across Ireland, contributing to and managing the production of EIA reports.

Edel Mulholland is an Environmental Scientist with MKO with over 1 year experience. Edel holds BA (Hons) in Environmental Science from the University of Galway. Prior to taking up her position with MKO in September 2024, Edel worked as an Environmental Chemistry Analyst with Complete Laboratory Solutions, Co. Galway, where she assisted with water quality analysis. Since joining MKO, Edel has assisted in the submission of several renewable energy developments. Edel's key strengths and areas of expertise are in environmental policy, drafting EIAR chapters, field work and QGIS mapping.

Ellen Costello is a Senior Environmental Scientist with MKO with over 6 years' experience in private consultancy. Ellen holds a BSc (Hons) in Earth Science, and a MSc (Hons) in Climate Change: Integrated Environmental and Social Science Aspects where she focused her studies on renewable energy development in Europe and its implications on environment and society. Ellen's key strengths and expertise are Environmental Protection and Management, Environmental Impact Statements, Project Management, and GIS Mapping and Modelling. Since joining MKO, Ellen has been involved in a range of renewable energy infrastructure projects. In her role as a senior project manager, Ellen 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. This report has been reviewed by Sean Creedon (B.Sc., M.Sc.). Sean has 23 years' experience in planning and environmental impact elements within all stages of wind farm project delivery.

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

This section of the assessment focuses particularly on the scoping and consultation exercise conducted with telecommunications operators and aviation authorities. As part of an early-stage feasibility study for the Proposed Project, telecommunications operators and aviation authorities were contacted by MKO in January 2021 in order to determine the presence of telecommunications links either traversing or in close proximity to the Existing Wind Farm. Furthermore, telecommunications operators and aviation authorities were contacted in May 2024 to consider the revised layout within the Site to determine potential impacts on telecommunication links.

Scoping was carried out in line with EPA, 2022³, and the 'Best Practice Guidelines for the Irish Wind Energy Industry' (Irish Wind Energy Association, 2012)⁴, which provides a recommended list of telecommunications operators for consultation. Please see Section 2.7.2 of Chapter 2 Background of the Proposed Project of this EIAR for a full list of scoping consultees. In addition to this, consultation was also carried out with the Commission for Communications Regulation (ComReg) in order to identify any other additional licensed operators in the vicinity of the Site to be contacted, who may not have been on the list of main operators.

Following the scoping and consultation exercise undertaken, Ai Bridges were engaged to carry out a Telecommunications Impact Assessment for the Proposed Project in May 2021 as part of an early stage feasibility study, which was updated in June 2026, which is included as Appendix 15-6, to assess the possible impacts that the Proposed Project would have on telecommunications links. 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 (2D and 3D). Further detail on the methodology for the Telecommunications Impact Assessment is included in Section 15.2.5 below and Appendix 15-6.

A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 Background of the Proposed Project of this EIAR. Consultation with the telecommunications operators

³ 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

⁴ Irish Wind Energy Association, 2012. *Best Practice Guidelines for the Irish Wind Energy Industry*. Available at: <https://windenergyireland.com/images/files/9660bdfb5a4f1d276f41ae9ab54e991bb600b7.pdf>

and aviation bodies informed the constraints mapping process, which in turn informed the layout of the Proposed Wind Farm, as described in Chapter 3: Consideration of Reasonable Alternatives, Section 3.2.3 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 amended by Directive 2014/52/EU and having regard, where relevant, to guidance and policy documents listed below:

- Sligo County Development Plan 2024-2030⁵
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022)⁶
- Draft Air Corps Wind Farm/Tall Structures Position Paper (Air Corps, August 2014)⁷
- Best Practice Guidelines for the Irish Wind Energy Industry (Irish Wind Energy Association, 2012)⁸
- Wind Energy Development Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government, 2006), hereafter referred to as the DoEHLG 2006 Guidelines,⁹
- Draft Revised Wind Energy Development Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government, 2019), hereafter referred to as the Draft DoEHLG 2019 Guidelines,¹⁰
- Code of Practice for Avoiding Danger from Overhead Electricity Lines (ESB Networks, 2019),¹¹
- EMF & You: Information about Electric & Magnetic Fields and the Electricity Network in Ireland (ESB, 2017),¹²
- Irish Rail (2018) CCE Department Technical Guidance Document CCE-TMS-310 Guidance on Third Party Works,¹³
- Irish Rail (2009) CCE Departmental and Multidisciplinary Standard I-DEP-0121 Third Party Works: Additional Details of Railway Safety Requirements.¹⁴

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, affecting, for example, radio signals. The most significant potential effect occurs where there are proposed turbines directly in line with the transmitter radio path.

⁵ <https://www.sligococo.ie/cdp/>

⁶ https://www.epa.ie/publications/monitoring-assessment/assessment/EIAR_Guidelines_2022_Web.pdf

⁷ <https://www.pleanala.ie/publicaccess/EIAR-NIS/311565/4.%20EIAR%20Volume%20II/Annex%2013.2%20-%20Air%20Corps%20Position%20Paper.pdf>

⁸ <https://windenergyireland.com/images/files/9660bdfb5a4f1d276f41ae9ab54e991bb600b7.pdf>

⁹ <https://assets.gov.ie/static/documents/wind-energy-development-guidelines-2006.pdf>

¹⁰ <https://assets.gov.ie/static/documents/draft-revised-wind-energy-development-guidelines-december-2019-385c92c2-16f9-4511-80bf.pdf>

¹¹ <https://www.esbnetworks.ie/docs/default-source/publications/code-of-practice-for-avoiding-danger-from-overhead-electricity-lines.pdf>

¹² https://www.esbnetworks.ie/docs/default-source/publications/esb-networks-electrical-and-magnetic-fields.pdf?sfvrsn=43304888_13

¹³ <https://www.irishrail.ie/en-ie>

¹⁴ <https://www.irishrail.ie/en-ie>

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 rotating blades, 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 telecommunication 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. These effects can be avoided through design or dealt with by appropriate micro-siting of turbines in order to avoid alignment with signal paths or by the use of repeater relay links out of line with the wind farm. The nearest operational airport is Sligo Airport located approx. 15.4km northeast of the Proposed Wind Farm at its closest point (T13) and the nearest operational airfield is Sligo Model Flying Club in Annaghmore which is located approx. 15.6km east of the Proposed Wind Farm at its closest point (T16). The closest large international airport is Knock Airport which is located approx. 30km south of the Proposed Wind Farm at its closest point (T5). Other airports/airfields in the vicinity of the Proposed Wind Farm include Tibohine airfield, located approx. 40km southeast of the Proposed Wind Farm and Belmullet Aerodrome, located over 75km west of the Proposed Wind Farm.

All airports listed above are outside the range at which such issues would be expected, and as detailed in Table 15-1 below, the Irish Aviation Authority noted no issues with the Proposed Project however they issued observations in their scoping response as discussed in Section 15.2.4.2.

15.2.3.4 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 'Guidelines' (DoEHLG, 2006)) and the *Draft Wind Energy Development Guidelines* (December 2019) (hereafter referred to as 'Draft 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 (with further consultation carried out by Ai Bridges in the context of previous consultation by MKO) as part of the assessment of the Proposed Project as summarised below in Table 15-1; full details are provided in Section 2.7 in Chapter 2 of this EIAR.

As detailed in Section 3.2.3 in Chapter 3 of this EIAR, as part of the iterative constraints-led design process, the layout and design of the Proposed Project have taken into account nearby telecommunications links to ensure there is no overlap with the Proposed Turbines.

15.2.3.4.1 **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 15-25 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 4 μ T to 0.5 μ T at 10m away from the cable, reducing to almost 0 μ T at 20m.

Figure 15-25 Illustration of the magnetic field from overhead AC lines operating in Ireland

THE EFFECT OF DISTANCE ON MAGNETIC FIELDS

Both AC and DC technologies produce magnetic fields and both decrease with distance as you move away from the line or cable. See graph below:

AC LINES AND CABLES

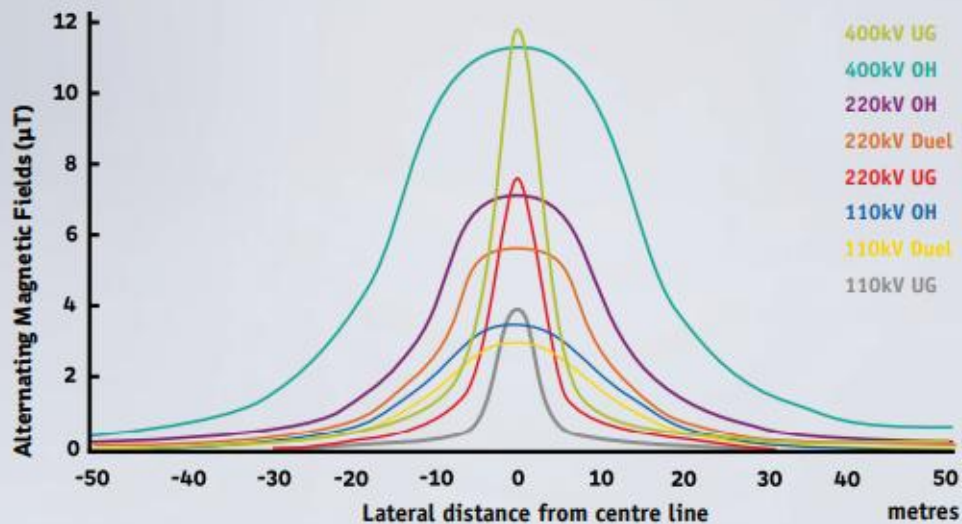


Figure C illustrates the magnetic field from overhead AC lines operating in Ireland. The field strength decreases with distance. The fields from these AC lines are far below the 1998 ICNIRP Guidelines for exposure to AC magnetic fields (100μT). In 2010 ICNIRP updated its ELF-EMF guidelines, which included the recommendation for a 200μT reference level for exposure for the general public, but these have not yet been adopted by the European Union.

15.2.3.5 Aviation

The Draft Guidelines (DoHPLG, 2019) 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 15-1; full details are provided in Section 2.7 in Chapter 2 of this EIAR.

15.2.4 Scoping and Consultation

As part of the EIAR scoping and consultation exercise, MKO contacted the relevant national and regional broadcasters, fixed and mobile telephone operators, aviation authorities and other relevant consultees in January 2021, May 2024 and April 2026. Consultation was also carried out with ComReg in order to identify any other additional licensed operators in the vicinity of the Proposed Wind Farm to be contacted.

The responses received from the telecommunications and aviation consultees are summarised below in Table 15-39.

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

As detailed in Section 15.2.2 above, a Telecommunications Impact Assessment was undertaken by Ai Bridges, which included for continued telecommunication consultation with relevant operators in February 2025, which is clarified in Table 15-39 below and further detailed in Section 15.2.5 and Appendix 15-6.

Table 15-39 Telecommunications and Aviation Scoping Responses

Consultee	Response	Potential for Interference Following Consultation Exercise
2m/Eir	Received 10 th May 2024.	Yes, 2 no. links in the area. Please see Section 15.2.4.1 for further detail.
Broadcasting Authority of Ireland	Received 10 th May 2024.	No
Cellnex	Followed up on 30 th May 2024. No response received.	N/A
ComReg (Commission for Communications Regulation)	Received 9 th May 2024.	N/A – Provided list of Telecommunications Operators in vicinity of the Proposed Wind Farm site.
Dense air	Followed up on 30 th May 2024. No response received.	N/A
Eircom Ltd/Meteor Mobile Communications Ltd	Received 10 th May 2024.	Yes, 2 no. links in area. Please see Section 15.2.4.1 for further detail.
Electricity Supply Board (ESB)	Followed up on 30 th May 2024. No response received.	N/A
ENET	Received 10 th May 2024.	Yes, 3 no. links in area. Please see Section 15.2.4.1 for further detail.
EOBO Ltd	Followed up on 30 th May 2024. No response received.	N/A
FastCom Broadband Limited	Followed up on 30 th May 2024. No response received	N/A
Hibernian Towers	Followed up on 30 th May 2024. No response received.	N/A
Imagine Network Services	Received 17 th May 2024.	Yes, 1 no. link in the area. Please see Section 15.2.4.1 below for further detail.
Irish Aviation Authority (IAA)	Received 5 th September 2024.	Yes – outlined general observations to be followed. Please see Section 15.2.4.2 below for further detail.

Consultee	Response	Potential for Interference Following Consultation Exercise
Irish Rail	Received 13 th May 2024.	Yes, the Proposed Project lies within the GSM-R (Mobile Network for Railways) coordination zone. Please see Section 15.2.4.1 below for further detail.
Uisce Eireann	Received 15 th April 2026.	No
Ivertec Ltd	Received 10 th May 2024.	No
JFK Communications Ltd	Followed up on 30 th May 2024. No response received.	N/A
JS Whizzy Internet Limited	Received 10 th May 2024.	No
Lackabeha Services Ltd T/A Airwaves Internet	Followed up on 30 th May 2024. No response received.	N/A
Sligo Airport	Received 6 th September 2024	No
TETRA Ireland	Followed up on 30 th May 2024. No response received	N/A
Three Ireland Ltd	Received 10 th May 2024.	Yes, 2 no. links in area. Please see Section 15.2.4.1 below for further detail.
Towercom	Received 10 th May 2024.	No
Viatel	Followed up on 30 th May 2024. No response received.	N/A
Virgin Media	Received 28 th May 2024.	No
Vodafone Ireland	Received 10 th May 2024.	Yes, 2 no. links in area. Please see Section 15.2.4.1 below for further detail.
Western Broadband Network	Followed up on 30 th May 2024. No response received.	N/A

The scoping responses from the telecommunications and aviation consultees are described below. Relevant copies of scoping responses are provided in Appendix 2-1. The locations of identified telecoms links and setbacks requested by providers is shown in Figure 15-26 below.

15.2.4.1 Telecommunications Operators with Potential for Impacts

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

RTE/2rn

RTÉ Transmission Network, replied on the 10th of May 2024 to a scoping request from MKO. 2RN identified 2 no. off-air link for DTT services in the area. In their response they stated that *‘Ideally no part of the turbine would enter these areas. There is also a risk of interference to broadcast coverage in the area and we would ask that a protocol be signed between the developer and 2rn should the site go ahead’*. Therefore, these links were further considered in the Telecommunications Impact Assessment conducted by Ai Bridges, no potential impacts were identified as further detailed in Section 15.2.5 below.

A standard Protocol Document has been prepared by 2RN for the Proposed Project. It is standard practice of 2RN to produce a Protocol Document for wind farm developments, which will be signed by the developer prior to construction. 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 developer 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.

Eir Network

Eircom responded to a scoping request from MKO on the 10th May 2024, noting that they had 2 links in the area. A buffer of 100 m was requested between turbines and the transmission path. However, there was no overlap with Proposed Turbine locations.

These links were further considered in the Telecommunications Impact Assessment conducted by Ai Bridges; no potential impacts were identified as further detailed in Section 15.2.5 below.

Three Ireland

Three Ireland responded to a scoping request from MKO on the 10th May 2024, noting that they had two links in the area and requested a 50m setback. However, there was no overlap with Proposed Turbine locations.

These links were further considered in the Telecommunications Impact Assessment conducted by Ai Bridges, no potential impacts were identified as further detailed in Section 15.2.5 below.

Vodafone

Vodafone responded to a scoping request from MKO on the 10th May 2024. This response identified two links in the area and requested a clearance of 30m from the first Fresnel Zone of Link MOBLAINSO037_S0, which runs across the site. However, there was no overlap with Proposed Turbine locations.

These links were further considered in the Telecommunications Impact Assessment conducted by Ai Bridges, no potential impacts were identified as further detailed in Section 15.2.5 below.

Enet

Enet Ireland responded to a scoping request from MKO on the 10th May 2024, noting three links running through the Proposed Wind Farm and requested setbacks of 50m for each link. The Proposed Turbine T04 encroaches on this requested setback.

These links were further considered in the Telecommunications Impact Assessment conducted by Ai Bridges, no potential impacts were identified as further detailed in Section 15.2.5 below.

Imagine

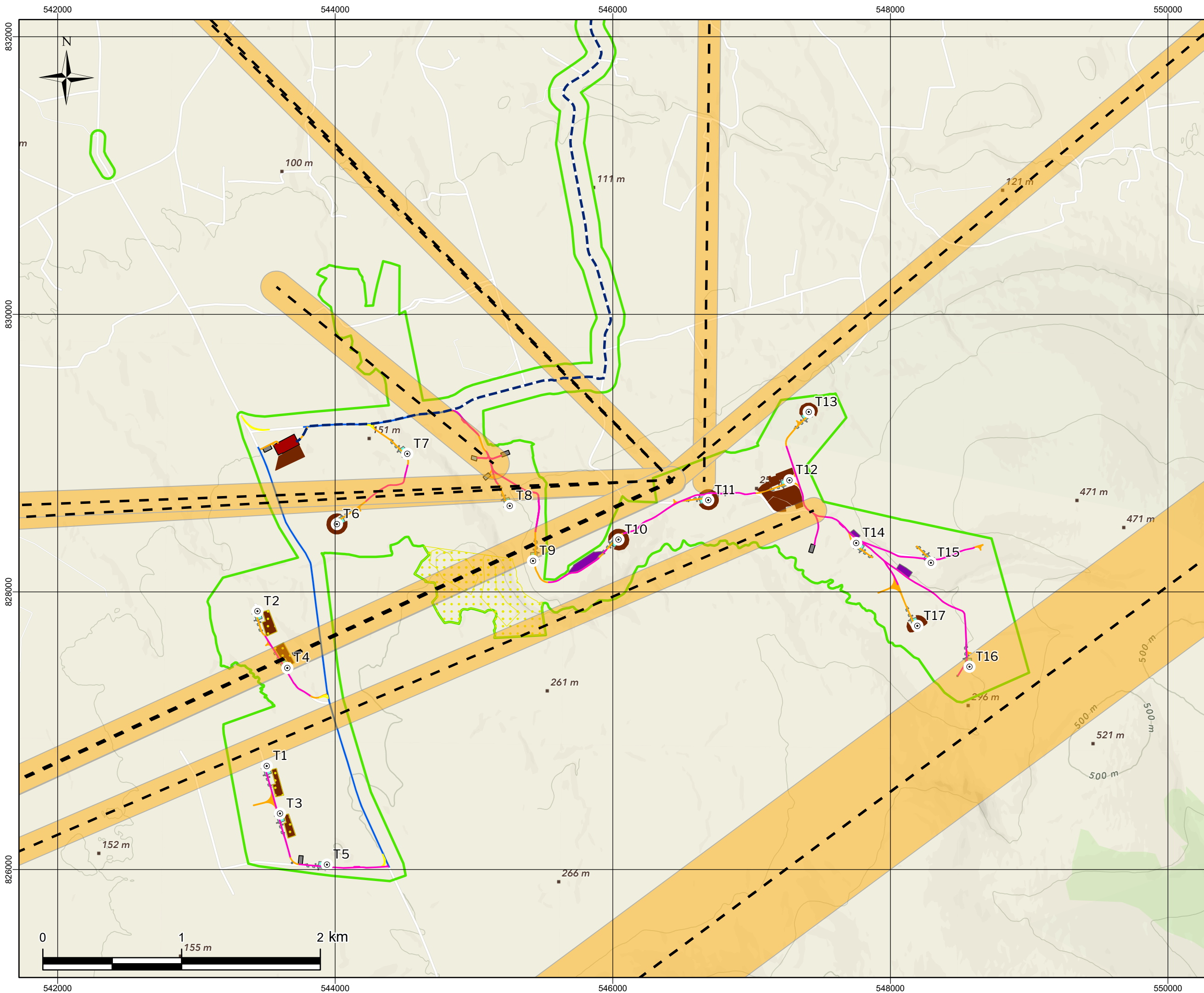
Imagine responded to a scoping request from MKO on the 17th May 2024, noting that they had one link running through the Proposed Wind Farm and requested a 50m setback from the centre path of the telecommunications link. The Proposed Turbine T04 encroaches on this requested setback. They also noted the location of Imagine equipment on a mast located within the Site. The Imagine link was further considered in the Telecommunications Impact Assessment conducted by Ai Bridges, no potential impacts were identified as further detailed in Section 15.2.5 below.

Irish Rail

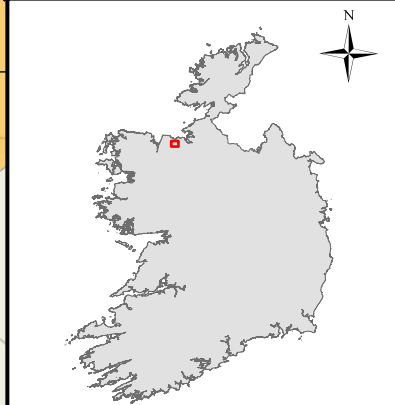
Irish Rail responded to a scoping request from MKO on the 13th May 2024, noting that the Proposed Project lies within the GSM-R (Mobile Network for Railways) coordination zone and noted the following recommendation:

1. **Exclusion zone:** wind farm not less than 5km from antenna
2. **Coordination zone:** 5km < wind farm <30km; this area, between operators is required to fix any issue and impact on the signal propagation

MKO sent a follow up response on the 15th May 2024 querying what links/ masts are in the exclusion zone and what set back distances are required. Irish Rail responded to MKO on the 15th May outlining the railway sections that are within 30km of the Proposed Project, however, there was no overlap with Proposed Turbine locations which are over 20km away from the nearest coordination zone located in Collooney and therefore no interference with their links is anticipated.



- Map Legend
- EIAR Site Boundary
 - Proposed Turbines
 - Proposed Turbine Foundations
 - Proposed Turbine Hardstands
 - Proposed Blade Storage Set Down Area
 - Proposed Decommissioned Turbine Laydown Area
 - Proposed New Roads
 - Proposed Upgrades to Existing Roads
 - Proposed Upgrades to Public Road
 - Proposed Permanent LiDAR Locations
 - Proposed Peat and Spoil Management Areas
 - Proposed Borrow Pits
 - Proposed Temporary Construction Compound
 - Proposed Onsite 110kV Substation
 - Proposed Temporary Turbine Delivery Overrun Areas
 - Proposed Grid Connection Route Access Track
 - Proposed Enhancement Area
 - Proposed Grid Connection Route
 - Telecoms Links
 - Telecoms Link Buffer



SITE LOCATION - NOT TO SCALE

Telecommunications Links

Project Title		
Crumhach Wind Farm, Co. Sligo		
Project No.	Drawing No.	Scale
230841	15-26	1:25,000
Drawn By	Checked By	Date
MVN	BT	01/07/2026



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15.2.4.2 Aviation

As noted in Section 15.2.4 above, scoping responses were received from the following aviation consultees:

- > Sligo Airport
- > 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:

Sligo Airport

Sligo Airport responded to the Scoping Document on 6th September 2024 and noted the Proposed Project would not have any effect on the operations at Sligo Airport, however requested that the Irish Aviation Authority are contacted for confirmation and observation.

Irish Aviation Authority

As part of MKO consultation process as shown in Section 2.7 of Chapter 2 of the EIAR, a Scoping Document was prepared and circulated to relevant consultees in September 2024, which included the IAA.

The IAA responded to the Scoping Document on 6th September 2024, 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.”*

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 5th September 2024, a scoping response was received from the DoD on 7th October 2024 which provided the following observation:

“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. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near InfraRed (IR) range of the electromagnetic spectrum, specifically at or near

850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light”

In response to the lighting requirements requested by the DoD, the Proposed Turbines will be included on mapping, fitted with obstruction lighting where appropriate and entered into aircraft navigation databases to ensure they will be avoided during flights.

15.2.5 Telecommunications Impact Assessment

Following the scoping and consultation exercises undertaken by MKO in 2021 and in 2024, Ai Bridges were engaged to carry out a Telecommunications Impact Assessment (TIA) for the Proposed Wind Farm during its design stage, which is included as Appendix 15-6.

As identified in Appendix 15-6 and in Section 3.2.3 in Chapter 3 of this EIAR, Ai Bridges have been engaged on the Proposed Project and has informed the iterative design process to ensure there is no potential for the Proposed Turbines to interfere with telecommunications links. The TIA details the field and desktop surveys undertaken to determine if telecommunications network infrastructure, notably those highlighted in the MKO scoping exercise, would be impacted by the Proposed Wind Farm.

From the findings of the field surveys and consultation with telecommunications operators, a desktop impact analysis has been conducted for the Proposed Project. This impact analysis utilised radio planning / modelling software to identify if any links had the potential to be impacted by the Proposed Turbines. The results from the telecommunications operator consultations and desktop survey analysis indicate that there are twelve radio links that cross near the Proposed Wind Farm, however there is no overlap at any link with Proposed Turbines. The results of the 2D and 3D network analysis indicate that that none of 12 links will be impacted by the Proposed Wind Farm and therefore no mitigation is required.

The TIA was updated in June 2026 following a review of the final Proposed Wind Farm layout which confirmed two radio links would be impacted by the previous proposed turbine T04 location as outlined in Section 3.2.3 of Chapter 3 of this EIAR. The proposed turbine T04 was re-sited to avoid interacting any telecommunications links. Please see Appendix 15-6 for full details.

15.2.6 Likely Significant Effects and Associated Mitigation Measures

The below assessment evaluates the impact (where there is the potential for an impact to occur) on telecommunications and aviation during the construction, operation and decommissioning phases of the Proposed Project.

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.

An alternative land use option to repowering the Existing Wind Farm as part of the Proposed Project would be to leave the Existing Wind Farm site as it is, with no changes made to the existing operating 23 no. wind turbines within the Existing Wind Farm. In doing so, environmental effects in terms of emissions are likely to be neutral for the short term, however 13 no. of the existing turbines (existing Dunneill Wind Farm) are due to be decommissioned in accordance with their planning permissions in 2039. Once the 13 no. turbines are decommissioned, there will be a negative effect on greenhouse gas emissions. The 10 no. turbines which were commissioned in 2003 will be left in situ (existing Kingsmountain Wind Farm). However, these machines are aging and are not as efficient as the newer

machines. Although these turbines do not have a decommissioning date, they will eventually break down and have to be decommissioned. The opportunity to continue capturing the available renewable energy resource with the Existing Wind Farm would be lost.

An alternative land use option to developing a renewable energy project in the greenfield sections of the Proposed Wind Farm (i.e areas of the Proposed Wind Farm located outside the footprint of the Existing Wind Farm) would be to leave the area as it is with no changes made to the current land use practices of commercial forestry, turf cutting, and public road corridor.

In implementing the 'Do-Nothing' alternative, however, the opportunity to capture a significant part of Co. Sligo's renewable energy resource would be missed, as would the opportunity to contribute to meeting Government and EU 2030 targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. In addition, the opportunity to meet the obligations as laid out in the Climate Action and Low Carbon Development Act 2021 will be lost. The opportunity to generate local employment, development contributions, and rates would also be forgone. Furthermore, the opportunity to implement the measures outlined in the Biodiversity Management and Enhancement Plan (BMEP) as outlined in Appendix 6-4 would also be lost.

15.2.6.2 Construction Phase

The potential for electromagnetic interference from the Proposed Turbines may only occur during the operational phase of the Proposed Project. 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 Route and therefore no mitigation required.

Potential impacts during Existing Wind Farm turbine removal, and erection and commissioning of the Proposed Wind Farm are assessed in the operational phase impact assessment (Section 15.2.5.3 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 Wind Farm was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators. The Ai Bridges assessment confirmed that the Proposed Turbine (T04) that's within the requested setback area by Enet and Imagine will have no impacts on their telecommunications links. The remaining Proposed Turbines are clear from all other requested setbacks. Therefore, no impacts were identified to telecommunications from the operational phase of the Proposed Wind Farm.

Proposed Grid Connection Route

None identified.

Mitigation Measures

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

A standard Protocol Document has been prepared by 2RN for the Proposed Project. It is standard practice of 2RN to produce a protocol document for wind farm developments, which will be signed by the developer prior to construction. The Protocol Document is further detailed in Section 15.2.4 above.

Residual Effect

The Proposed Project will not have a residual effect on telecommunications, due to distance from, or absence, of any links in the area.

Significance of Effect

The effect on telecommunications from the Proposed Project during the operational phase is considered Not Significant.

15.2.6.3.2 **Aviation**

Pre-Mitigation Impact

Proposed Wind Farm

There are no IAA or DoD assets within the Proposed Wind Farm or surrounds that may be impacted by the Proposed Turbines. Therefore, there are no potential impacts. The closest Department of Defence facility to the Proposed Wind Farm is Sligo Civil Defence located 22.7km from the Proposed Turbine (T15). The closest major permanent military base is Finner Camp in Ballyshannon, Co. Donegal located 48.6km northeast of the Proposed Turbine (T13). The nearest IAA facility is Sligo Airport located approx. 15.4km northeast of the Proposed Turbine (T13).

Proposed Grid Connection Route

None identified.

Mitigation Measures

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. In particular, the lighting arrangement for the Proposed Turbines will be agreed in consultation with both the IAA and DoD.

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

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

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

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

The effect on aviation assets from the Proposed Project during the operational phase is considered Not Significant.

15.2.6.4 Decommissioning Phase

As stated in Section 15.2.6.2 above, the potential for electromagnetic interference from the Proposed Turbines may only occur during the operational phase of the Proposed Project (i.e., the Proposed Wind Farm and Proposed Grid Connection Route). There are no electromagnetic interference impacts associated with the construction or decommissioning phases of the Proposed Project, and therefore no mitigation is required.

15.2.6.5 Cumulative Effect

Section 2.9 of Chapter 2 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. 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, railways 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, 2022¹⁵ 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 sent to EirGrid, Uisce Éireann, Irish Rail and numerous sections of Sligo 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.

No scoping response was received from EirGrid or Irish Rail apart from the telecommunications response from Irish Rail detailed in Section 15.2.4.1 above. A scoping response was received from Uisce Éireann identifying relevant infrastructure within the Site. A scoping and consultation exercise was conducted with utilities operators, as outlined below in Section 15.3.2.1. A full description of the scoping and consultation exercise is provided in Section 2.7 of Chapter 2 of this EIAR.

15.3.2.1 Utilities

Uisce Éireann

A scoping request was sent to Uisce Eireann on the 6th of September 2024. A follow up request was sent on the 3rd of October 2024. A response was received on the 12th of November 2024 stating that they operate an abstraction point approx. 0.6km north of the Proposed Wind Farm. They stated that *“Care must be taken to avoid interaction with and any impact to, this body of water and its catchment, particularly at the South easterly extent of the proposed boundary, where there is a potential risk of catchment interaction is greatest”*.

As detailed in Section 9.5.2.17 in Chapter 9 of the EIAR, a 100m buffer has been applied to the Easky River catchment and its associated tributaries as part of the Proposed Wind Farm design to consider the catchments sensitivities. Therefore, with the implementation of appropriate mitigation measures, the residual effect will be negative, temporary, direct and imperceptible, which is Not Significant.

They also stated that *“the proposed cabling route to the Srananagh 220KV substation will potentially have interactions with Uisce Éireann’s infrastructure within the public roads.”* It should be noted that the Proposed Project does not intend to connect into Uisce Eireann assets, such as the Easky Wastewater Treatment Plant. The Uisce Éireann ‘Building-over or Near an Irish Water Asset Application Form’ will be completed by the client prior to the commencement of construction. Furthermore, detailed mapping and specific crossing information for each asset along the Grid Connection Route will be finalised as part of the planning application process for the Grid Connection Route. As detailed in Appendix 4-7 of this EIAR, the TLI Group outlines appropriate construction methodology for the Proposed Grid Connection Route to avoid potential effects on any identified services and utilities located along the public road corridor.

Waterways Ireland

A scoping request was sent to Waterways Ireland on the 6th September 2024 and a response was received on the 6th September 2024 stating that the Proposed Project is not located within a zone of influence of any waterways and therefore they have no comment to make on the proposal.

¹⁵ 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

Department of the Environment, Climate and Communications

A scoping request was sent to the Department of the Environment, Climate and Communications (DECC) the 5th September 2024. A response was received on the 9th October 2024 from the Geological Survey Ireland, a division of the DECC, which recommended the use of various data sets when conducting the EIAR, including those for Lands and Soils, Water, Climate Change, Cultural Heritage, Material Assets and Landscape. No information in relation to Material Assets was provided within the received response.

Irish Rail

A scoping document was issued to Irish Rail on the 5th September 2024. A follow up scoping request was sent on the 3rd of October 2024. No response was received regarding built services. Considering no responses were received, no impacts are identified through the scoping assessment. Therefore, no actions were required in response to the scoping exercise. On the 10th May 2024 a scoping document was issued to Irish Rail regarding communications. A response was received on the 13th May 2024 stating that the Proposed Project lies within the GSM-R (Mobile Network for Railways) coordination zone.

Gas Networks Ireland

GNI supply MKO their latest infrastructure data quarterly, with the most recent data being shared in April 2026. The data indicates that there is no GNI infrastructure is located within or adjacent to the Proposed Wind Farm with the nearest infrastructure being approx. 33.4km to the southwest of the Site.

The Proposed Grid Connection Route does not interact with the GNI network at any locations.

15.3.3 Baseline Environment**15.3.3.1 Existing Built Services and Utilities**

The Proposed Project has been designed to avoid identified services and utilities where insofar as possible. Prior to commencement of construction detailed site investigations will be carried out to confirm design assumptions and undertake additional surveys to identify any new services and utilities and ensure they will not be impacted by the Proposed Project. The construction of the Proposed Grid Connection Route would also be subject to a Road Opening Licence (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 no 110kV or 38kV overhead lines (OHL) within or adjacent to the Proposed Wind Farm. The Proposed Grid Connection Route passes under 4 no. 110kV OHLs in the townlands of Ballysadare, Collooney and Ballysumaghan, Co. Sligo and 1 no. 220kV OHL in the townland of Ballysumaghan, Co. Sligo. The Proposed Project will have no interactions with any OHL.

There is an existing 20kV underground cable within the Proposed Wind Farm and Proposed Grid Connection Route, however this is a component of the Existing Wind Farm that will be removed as part during the construction phase of the Proposed Project, as detailed in the methodology outlined in Section 4.7.1.2 of Chapter 4. The Existing Grid Connection to Cunnihill 110kV substation will remain in place. As detailed in Section 4.3.1.4 of Chapter 4, no upgrade works are required or proposed along the Existing Grid Connection underground cable connection. The Proposed Grid Connection Route will cross underneath an existing 38kV underground electricity cable on the R290 regional road in the townlands of Collooney and Rathripon, Co. Sligo. The Proposed Grid Connection Route has been designed to avoid existing underground electricity cables.

The proposed crossing methodology at this location is outlined in Section 4.7.3.3 of Chapter 4 and the location of these crossing locations are shown in Figure 15-27 below.

15.3.3.1.2 Gas

There are no underground gas lines within or adjacent to the Proposed Wind Farm or Proposed Grid Connection Route, the nearest infrastructure being approx. 33.4km to the southwest of the Site. Therefore, there is no potential to give rise to impacts on underground gas lines.

15.3.3.1.3 Water

As detailed in Section 15.3.2.1 above, there is 1 no. GWS abstraction point within the Proposed Wind Farm. The Uisce Éireann Easky Wastewater Treatment Plant is located adjacent to the EIAR Site boundary approximately 95m from the nearest proposed infrastructure, the proposed onsite 110kV substation. Ongoing improvement works have been underway at the wastewater treatment plant with the works proposed to finish at the end of 2026. The Proposed Project design has had due consideration of the treatment plant and supporting infrastructure in the public road network. The substation and Proposed Grid Connection Route have been designed to avoid the plant and its supporting infrastructure.

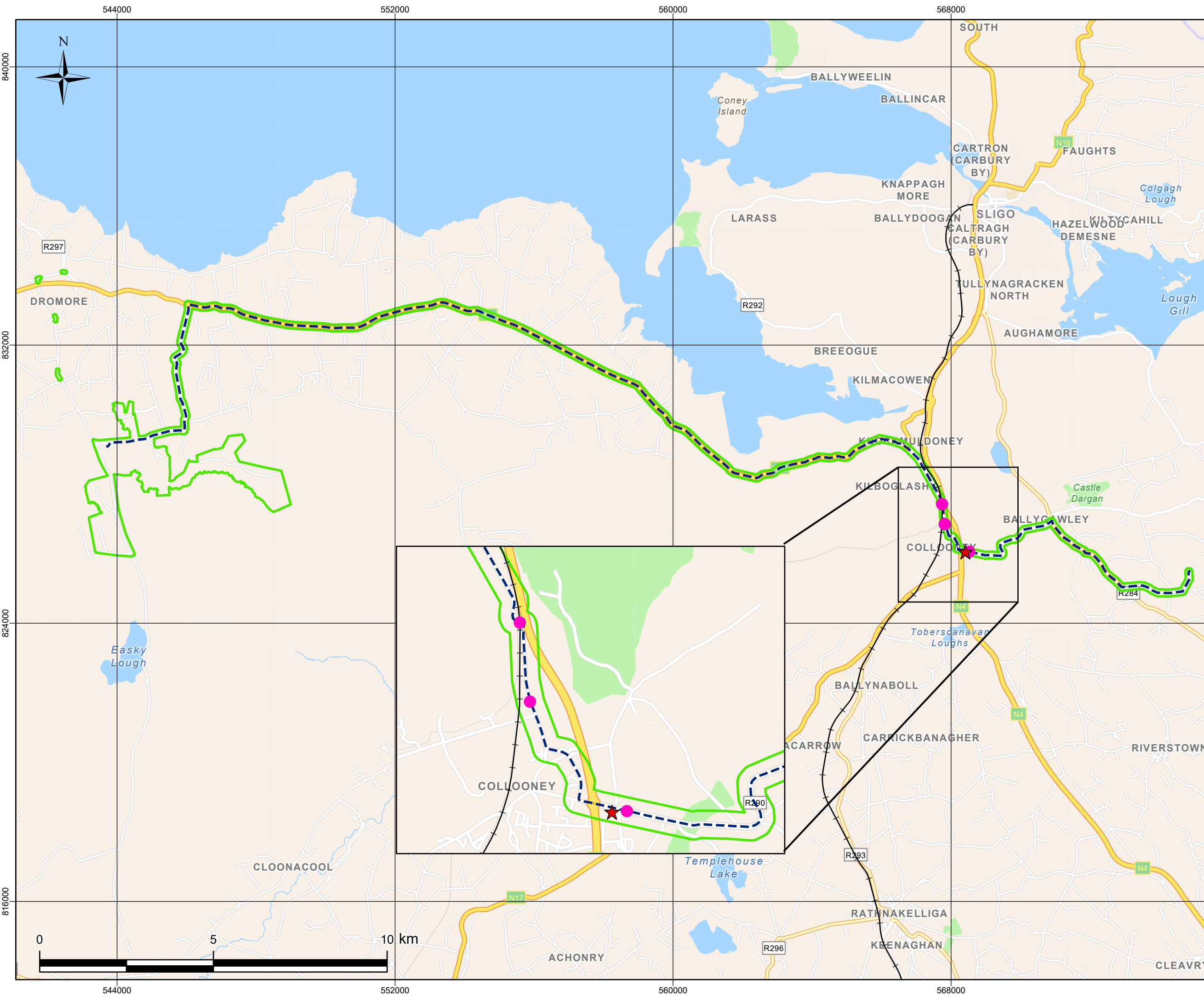
There is also existing Uisce Éireann infrastructure elements within the public road corridor along the Proposed Grid Connection Route. The Proposed Project infrastructure has been designed to avoid any underground water mains and impacts on water or sewage plant and networks and is considered further in the assessment in Section 15.3.4.2 below.

15.3.3.1.4 Motorways

There are no motorways close to the Proposed Wind Farm. The nearest motorway is the M4 located approx. 130km southeast at its closest point (i.e., T16). 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 15.1.15 of Chapter 15: Material Assets.

15.3.3.1.5 Railways

The Proposed Grid Connection Route will cross under the Irish Rail Sligo-Dublin rail line at 1 no. location approx. 900 metres north of Collooney Train Station, Co. Sligo. The location of this underpass crossing is shown in Figure 15-27 below. The Proposed Grid Connection Route will be entirely in the public road corridor so therefore there will be no interaction with the Irish Rail network.



Map Legend

- EIAR Site Boundary
- Proposed Grid Connection Route
- Irish Rail Network
- 38kV Collooney Substation
- Built Services

SITE LOCATION - NOT TO SCALE

Built Services Crossings Along Proposed Grid Connection Route

Crumhach Wind Farm, Co. Sligo

Project No.	Drawing No.	Scale
230841	15-27	1:100,000
Drawn By	Checked By	Date
MVN	BT	01/07/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie

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15.3.4 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, Panda Sligo, is located approx. 21.3km northeast of the Proposed Wind Farm at its closest point (i.e., T17) in the townland of Finisklin, Co. Sligo.

A Resource and Waste Management Plan (RWMP) has been prepared and forms part of the Construction and Environmental Management Plan (CEMP) in Appendix 4-5 of the EIAR. The RWMP 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.

Prior to decommissioning of the Existing Wind Farm, all availability options for blade management will be assessed in terms of circularity. Assessed options will include blade reuse, blade repurposing, blade recycling and energy from waste (EfW). Blades will be dismantled and removed from the site following the methodology as outlined in Chapter 4 Section 4.8.1.1 of this EIAR. The tower sections will also be removed from site following the methodology as outlined in Chapter 4. Decommissioning of the Proposed Wind Farm will follow a similar sequence to the decommissioning of the Existing Wind Farm, see section 4.10 of Chapter 4 and Appendix 4-6 Decommissioning plan for further details.

All waste generated on site during the construction phase will be source segregated at the Site and contained in covered waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor to be recycled, recovered or disposed of appropriately.

Site personnel will be instructed at induction that under no circumstances can waste be brought on site for disposal in the on-site waste skips. 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 within the Proposed Wind Farm at 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 proposed onsite 110kV 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.

It is not proposed to treat wastewater onsite. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed underground storage tank, with all wastewaters being tankered off site by permitted waste collector to a licenced wastewater treatment plant.

Such a proposal for managing the wastewater arising onsite has become almost standard practice on wind farm sites, which are often proposed in areas where finding the necessary percolation requirements for onsite treatment would be challenging and has been accepted by numerous Planning Authorities and ACP as an acceptable proposal.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing onsite. The wastewater storage tank alarm will be part of a continuous stream of data from the sites' turbines, wind measurement devices and electricity substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management

(Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the substation underground storage tank.

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.

An alternative land use option to repowering the Existing Wind Farm as part of the Proposed Project would be to leave the Existing Wind Farm site as it is, with no changes made to the existing operating 23 no. wind turbines within the Existing Wind Farm. In doing so, environmental effects in terms of emissions are likely to be neutral for the short term, however 13 no. of the existing turbines (existing Dunneill Wind Farm) are due to be decommissioned in accordance with their planning permissions in 2039. Once the 13 no. turbines are decommissioned, there will be a negative effect on greenhouse gas emissions. The 10 no. turbines which were commissioned in 2003 will be left in situ (existing Kingsmountain Wind Farm). However, these machines are aging and are not as efficient as the newer machines. Although these turbines do not have a decommissioning date, they will eventually break down and have to be decommissioned. The opportunity to continue capturing the available renewable energy resource with the Existing Wind Farms would be lost.

An alternative land use option to developing a renewable energy project in the greenfield sections of the Proposed Wind Farm (i.e areas of the Proposed Wind Farm located outside the footprint of the Existing Wind Farm) would be to leave the area as it is with no changes made to the current land use practices of commercial forestry, turf cutting, and public road corridor.

In implementing the 'Do-Nothing' alternative, however, the opportunity to capture a significant part of Co. Sligo's renewable energy resource would be missed, as would the opportunity to contribute to meeting Government and EU 2030 targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment, development contributions, and rates would also be forgone. Furthermore, the opportunity to implement the measures outlined in the Biodiversity Management and Enhancement Plan (BMEP) as outlined in Appendix 6-4 would also be lost.

15.3.4.2 Construction Phase

15.3.4.2.1 Existing Built Services

Pre-Mitigation Impact

Proposed Wind Farm

Electricity

There are no 110kV or 38kV overhead electricity lines within or adjacent to the Proposed Wind Farm. There are no 38kV or higher known existing underground electricity cables present within the Proposed Wind Farm, therefore there is no potential to give rise to effects on electrical services.

Gas

There are no underground gas lines within or adjacent to the Proposed Wind Farm, therefore there is no potential to give rise to impacts on underground gas lines.

Water

The Proposed Wind Farm infrastructure and Proposed Grid Connection Route has been designed to avoid any wastewater treatment facilities and underground water mains and can be described as mitigation by design, therefore there is no potential to give rise to impacts on water and wastewater services. Refer to Section 9.5.2.14 of Chapter 9: Hydrology and Hydrogeology for further details on the abstraction point.

Motorways

There are no motorways close to the Proposed Wind Farm. The nearest motorway is the M4 located approximately 130km south of the Proposed Wind Farm at its closest point (i.e., T16). The Proposed Wind Farm will not therefore there is no potential to give rise to impacts on the motorway.

Railways

The Proposed Grid Connection Route will cross the Irish Rail Sligo-Dublin rail line at 1 no. location approx. 900 metres north of Collooney Train Station. The Sligo-Dublin rail line is approx. 19.3km away from the Proposed Wind Farm at its closest point (T16). Therefore, there is no potential for the construction phase of the Proposed Wind Farm to impact on railway services.

Potential impacts from telecommunications is assessed in Section 15.2.6.2 above. The Proposed Project will not have a residual effect on telecommunications, due to distance from, or absence, of any links in the area.]

Proposed Grid Connection Route

Electricity

The Proposed Grid Connection Route passes under 5 no. OHL in the townlands of Ballysadare, Collooney and Ballysumaghan Co. Sligo. Under a precautionary approach a short-term, slight negative impact, which is Not Significant, on local electricity supply has been identified due to potential interference or breakage of OHL during the construction phase. Working in the vicinity of overhead electricity lines, in the absence of the correct safety measures and procedures has the potential to have a short-term significant, negative impact on health and safety.

There is 1 no. existing 38kV underground electricity cable present along the Proposed Grid Connection Route. The Proposed Grid Connection Route has been designed to avoid existing underground electricity cables and can be described as mitigation by design, therefore there is no potential to give rise to impacts on underground electrical services.

Gas

There are no underground gas lines within or adjacent to the Proposed Grid Connection Route, therefore there is no potential to give rise to impacts on underground gas lines.

Water

The Proposed Grid Connection Route has been designed to avoid any potential effects on underground water mains and can be described as mitigation by design. The Proposed Grid Connection Route consists of 34 no. watercourse crossings. As detailed in Appendix 4-7, appropriate cable duct construction methodology has been provided to reduce negative effects insofar as possible. In the absence of mitigation measures, there is a potential for a negative, slight, indirect, temporary, likely effect on downstream surface waters.

Motorways

There are no motorways close to the Proposed Grid Connection Route, therefore there is no potential to give rise to impacts on the motorway.

Railways

The Proposed Grid Connection Route will cross underneath the Irish Rail Sligo-Dublin rail line at 1 no. location approx. 900 metres north of Collooney Train Station, Co. Sligo entirely within the public road corridor and does not interact with the railway line. Therefore, there is no potential to give rise to impacts on the Irish Rail network.

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 Wind Farm will not affect underground electrical cables and built services within the Site. The mitigation measures include the following:

- Goal posts will be established under overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks¹⁶
 - Prior to construction, the Applicant will engage with ESB via the 'Dial Before You Dig' procedure online. ESB will be contacted via dig@esb.ie **before** excavating near any overhead lines.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on the routes and operating voltages of overhead electricity lines running above the Proposed Grid Connection Route. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to site.
- Barriers will run parallel to overhead lines at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- Prior to the delivery of turbines to the Proposed Wind Farm, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.8 above for details.
- When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site.
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.
- All health and safety measures as detailed in Section 5 of the CEMP and Chapter 5: Population and Human Health will be adhered to during the construction, operation and decommissioning phases.

¹⁶ <https://www.esbnetworks.ie/docs/default-source/publications/code-of-practice-for-avoiding-danger-from-overhead-electricity-lines.pdf>

- 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 Uisce Éireann 'Building-over or Near an Irish Water Asset Application Form' will be completed by the client prior to the commencement of construction.
- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.
- In advance of any construction activity, the contractor will undertake pre-commencement surveys to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works.
 - In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider.

Residual Effect

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 (Proposed Wind Farm and Proposed Grid Connection Route) on existing built services.

Significance of Effects

The effect on existing built services from the Proposed Project during the construction phase is considered Not Significant.

15.3.4.2.2 **Waste Management**

Pre-Mitigation Impact

Proposed Project

Construction waste will arise as a result of the Proposed Project (Proposed Wind Farm and Proposed Grid Connection Route) mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste as well as from the decommissioning of the existing Wind Farm. The existing 23 no. turbines onsite will be removed from site in accordance with SSE Renewables (Ireland) Ltd standards, whereby all availability options for blade management will be assessed in terms of circularity. Assessed options will include blade reuse, blade repurposing, blade recycling and energy from waste (EfW).

Full details of wastes expected to be generated are detailed with the Resource and Waste Management Plan (WRMP) of the CEMP (Appendix 4-5 of this EIAR). In the absence of measures outlined in the RWMP, impacts to the waste management services during the construction phase is considered to have a negative, moderate, short-term impact, which is Not Significant.

Mitigation Measures

All waste generated on site during the construction phase will be contained in waste skips at waste storage areas on site. These waste storage areas will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. 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 personal waste be brought on site for disposal in the onsite waste skip. It will also be made clear that the burning of waste material on site is forbidden.

Further details on resource and waste management are presented in Section 3.8 of the CEMP, which is included as Appendix 4-5.

Residual Effects

With the implementation of the above measures, the residual effect is considered to be a negative, short-term, slight effect on waste management services during the construction phase.

Significance of Effects

The effect on waste management from the Proposed Project during the construction phase is considered Not Significant.

15.3.4.3 Operational Phase

15.3.4.3.1 Built Services

Pre-Mitigation Impacts

Proposed Project

Electricity

In the unlikely event that a replacement of turbines components is required during this phase, the impacts described in Section 15.3.4.2.1 will be the same.

There will be no operational phase impacts or associated effects on built services associated with the Proposed Project. The Proposed Project will have an installed capacity of 102MW which has potential to produce 312,732 MWh of electricity. This would be sufficient to supply approximately 74,460 Irish households with electricity per year during its operational phase. The Proposed Project will therefore have a positive, moderate, long-term effect on built services.

Water

During operational phase, the potential health effects are associated with negative impacts (i.e. contamination) on public and private water supplies and potential flooding is much reduced compared to the construction phase. During the operational phase, in the absence of mitigation, the Proposed Project will have a slight negative long-term impact on water, which is Not Significant.

Gas

There are no underground gas lines within or adjacent to the Proposed Project, therefore there is no potential to give rise to impacts on underground gas lines during the operational phase.

Motorways

The Proposed Project will not interact with any motorways, therefore there is no potential to give rise to impacts on during the operational phase.

Railways

The Proposed Project will not interact with any railways, therefore there is no potential to give rise to impacts on during the operational phase.

Mitigation Measures

Chapter 9: Hydrology and Hydrogeology assesses the potential for impact on public water supply and private wells during the construction, operation and decommissioning phases. The chapter includes mitigation measures to minimise impacts on groundwater during the construction stage from the potential release of hydrocarbons, wastewater and cement-based products.

Residual Effects

With the implementation of the proposed mitigation measures outlined in Chapter 9 combined with the separation distances from wells, and prevailing geology, topography and groundwater flow directions, the residual effect is negative, imperceptible, and long term in terms of quality or quantity on water.

Significance of Effects

The effect on built services due to the operation of the Proposed Project is considered Not Significant.

15.3.4.3.2 **Waste Management**

Pre-Mitigation Impacts

Proposed Project

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 volume of operational and maintenance personnel and users of the site for amenity will be present within the Proposed Wind Farm.

The proposed onsite 110kV substation, Existing Wind Farm offices and control buildings will include welfare facilities for use by EirGrid operational and maintenance staff. The wastewater holding tank will be emptied when required by a licenced contractor. In the absence of mitigation, impacts to waste management services is considered to have a negative, slight, long-term impact, which is Not Significant.

Mitigation Measures

During the operational phase, the Proposed Project will include appropriate signage encouraging members of the public to leave the area waste free and bring waste materials home for proper disposal.

Any waste generated due to the operation and maintenance of the Proposed Project will be source segregated at the Site before it is disposed of in covered skips, located within the proposed onsite 110kV substation compound and the existing offices. The waste material will be transferred to a

Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be recycled, recovered or disposed of appropriately.

The wastewater holding tanks will be emptied when required by a licenced contractor.

Residual Effects

With the implementation of the above measures, the residual effect is considered to be a negative, imperceptible and long-term effect on waste management services during the operational phase, which is Not Significant.

Significance of Effects

The effect on waste management services during the operation of the Proposed Project is considered Not Significant.

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 Proposed 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 Section 4.10 of 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.

15.3.5 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 Route 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 2.9 of Chapter 2 for cumulative assessment methodology.

Included within proposed projects, the potential for cumulative impacts with other wind farms is considered. Excluding the Existing Wind Farm which will be removed as part of the Proposed Project as detailed in Chapter 4, there are 8 no. operational wind farms within 25 kilometres of the Proposed Turbines, the nearest being approx. 4.2km west of the Proposed Turbines (T03) at its closest point. There are also 2 no. permitted projects within 25km of the Proposed Turbines (Firlough Wind Farm and Stoke Single Turbine), and the proposed Clooncunna Wind Farm. There will be a Significant Positive cumulative effect on electrical supply, meeting Carbon emission targets and meeting CAP's 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 Srananagh 220kV substation:

- Permitted battery energy storage system compound (PI Ref: 2360214)

- Upgrade works along access track to Srananagh 220kV substation overlaps with the Proposed Grid Connection Route for approx. 400m
- Permitted battery energy storage system compound (PI Ref: 2011)
- Permitted synchronous condenser facility (PI Ref: 22351)

The potential for cumulative effects with these nearby energy developments are not significant from the perspective of built services and waste management. The construction of the Proposed Grid Connection Route 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 cumulative 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 2.9 in Chapter 2 of this EIAR.

15.4

EIA Classification Summary

Please see the below table for a summary of all identified impacts for the Proposed Project relating to traffic and transport, telecommunications and aviation, and other material assets.

Table 15-37 Impact Assessment Classification Summary

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
Traffic and Transport	Temporary, Slight, Negative	Section 15.1.15.2	Temporary, Slight Negative	Not Significant
Telecoms and Aviation	N/A	N/A	N/A	N/A
Other Material Assets	Electricity: Temporary, Moderate, Negative	Section 15.3.4.2.1	Electricity: Temporary, Imperceptible Negative	Not Significant
	Gas: No impacts identified		Gas: No impacts identified	
	Water: Temporary, Slight, Negative		Water: Long-Term, Imperceptible, and Negative	
	Motorways: No impacts identified		Motorways: No impacts identified	
	Railways: No impacts identified		Railways: No impacts identified	
	Waste Management: Short-Term, Moderate Negative	Section 15.3.4.2.2	Waste Management: Short-Term, Slight Negative	
Operational Phase				
Traffic and Transport	Long-Term, Imperceptible, and Negative	Section 15.1.15.3	Long-Term, Imperceptible, and Negative	Not Significant
Telecoms and Aviation	Telecoms: No identified impacts	Section 15.2.6.3.1	Telecoms: Long-Term, Imperceptible, and Negative	Not Significant
	Aviation: No identified impacts	Section 15.2.6.3.2		

			Aviation: Imperceptible, Long-Term and Negative	
Other Material Assets	Electricity: No identified impacts Gas: No identified impacts Water: Long-Term, Slight, Negative Motorways: No identified impacts Railways: No identified impacts Waste Management: Long-Term, Slight, Negative	Section 15.3.4.3.1 Section 15.3.4.3.2	Electricity: Long-Term, Moderate, Positive Gas: No identified impacts Water: Long-Term, Imperceptible, Negative Motorways: No identified impacts Railways: No identified impacts Waste Management: Long-Term, Imperceptible, Negative	Not Significant
Decommissioning Phase				
Traffic and Transport	Temporary, Imperceptible, and Negative.	Section 15.1.15.4	Imperceptible, Temporary, and Negative	Not Significant
Telecoms and Aviation	N/A	N/A	N/A	N/A
Other Material Assets	Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during part of the construction phase.	N/A	N/A	Not Significant