Planning and Environmental Consultants

Environmental Impact Assessment Report

Lemanaghan Wind Farm, Co. Offaly

Chapter 15 Material Assets

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GLOSSARY OF TERMS

Terms	Definition
Material Assets	*Built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure*
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
ComReg	Commission for Communications Regulation
DoD	Department of Defence
DoD	Department of Defence
DoT now DoTT&S	Department of Transport
DTT	Digital Terrestrial Television
DTT	Digital Terrestrial Television
EMF	Electric and Magnetic Fiels
HGV	heavy goods vehicles
IAA	Irish Aviation Authority
IAA	Irish Aviation Authority
IAC	Irish Air Corp
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
SNH	Scottish Natural Heritage
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 13 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: Water, 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 4.5.7 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.

For the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Project', 'Proposed Wind Farm', 'Proposed Grid Connection', 'Proposed Project site' and the 'site'. Please see Chapter 1 Introduction, 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 abnormal loads generated during the construction phase have been assessed for the external highway network that will provide access to the Proposed Project site.

[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*

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 TDR route was identified and surveyed by Pell Frischmann Consulting Engineers. Pell Frischmann is a multidisciplinary and international consultant engineering company working across infrastructure, buildings, and regeneration. The commission was led by Gordon Buchan BEng (Hons), MSc, FCIHT, CMCILT, Divisional Director for Pell Frischmann and Timothy Lockett BSc, MCILT. Gordon has over 15 years' experience in undertaking abnormal load assessments across the UK, Republic of Ireland and northern Europe and has worked on over 500 wind farm sites. Timothy has over 10 years' experience and has worked on over 300 wind farm sites in the UK and Ireland.

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 1.2.1.1 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

An EIAR scoping document, providing details of the Proposed Project, was prepared by MKO and circulated in May 2021 to determine the content, depth and extent of topics to be covered in the environmental information to be submitted to the competent authority. Further scoping was conducted in October 2024 due to time elapsed from when previous scoping was carried out, updates in local and national policy and legislation, updates in relevant EIAR guidance, changes in the environmental

baseline and refinement of the Proposed Project design. Please see Section 2.8 of Chapter 2 for further detail on scoping and consultation.

Transport Infrastructure Ireland

Transport Infrastructure Ireland (TII) responded to scoping via emails dated 17th May 2021 and 14th of November 2024. In both responses, 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	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.	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, while an assessment of the capacity of the N62 / Site Entrance 1 junction is set out in Section 15.1.6.4 An assessment of the impacts during the construction of the Proposed Grid Connection is set out in Section 15.1.7 while a swept path analysis undertaken for the abnormally large loads on the Turbine Delivery Route is set out in Section 15.1.9 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.
2	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 Offaly County Council (OCC) as set out in Section 15.1.1.5 below. Offaly County Council (OCC) were contacted in relation to scoping in 2021 (response received on 25th June 2021) and 2024 (response received on 22nd November

ID	Comment/Recommendation	Response
		2024). OCC did not provide a written response.
3	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 Offaly County Council will be adhered to, and the cumulative traffic related impacts are assessed in Section 15.1.15
4	The EIAR should have regard to the provisions of Chapter 3 of the DoECLG Spatial Planning and National Roads Guidelines in the assessment.	The EIAR takes cognisance of these guidelines. It is addressed in relation to the upgrade of the existing access on the N62 in Section 15.1.2.2.
	TII Publications	
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. 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	The designers and assessors are asked to consult TII Publications to determine whether a Road Safety Audit is required.	A Road Safety Audit has been undertaken for the Proposed Project and is summarised in Section 15.1.11 with the report included as Appendix 15-4. In addition, a DN-GEO-03030 TII Design Report has been undertaken for the proposed Site Entrance 1 on the N62, which is summarised in Section 15.1.12 and is included as Appendix 15-5. The report was uploaded onto TII's departures portal as of 06/03/26.
	TII Environmental Assessment Guidance	

ID	Comment/Recommendation	Response
7	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 potential impacts of the Proposed Project with regards noise set out in Chapter 12 of this EIAR.
8	The EIAR should consider the (European Noise) Regulations, 2018, (S.I. no. 549 of 2018), and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March 2014).	The potential impacts of the Proposed Project with regards noise set out in Chapter 12 of this EIAR.
	Haul Routes Utilising the National Road Network	
9	Elements of the national road network are operated and managed by a combination Public-Private Partnerships (PPP) concessions, Motorway Maintenance and Renewal Contractors (MMaRC) and local road authorities in association with TII. In relation to haul route identification should clearly identify haul routes proposed and fully assess the network to be traversed to ascertain any operational requirements, including delivery timetabling, etc. to ensure that the strategic function of the national road network is safeguarded.	Consultation will be undertaken with these bodies prior to the delivery of abnormally large loads.
10	Separate structure approvals/permits and other licences and works-specific deeds of indemnity may be required in connection with the proposed haul route, including where temporary modification to the road network may be required. Consultation with relevant local authorities, PPP and MMaRC may also be required.	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.
11	All structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed, including abnormal weight load. Additionally, any damage caused to the pavement on the existing national road arising from any temporary works due to the turning movement of abnormal loads (e.g. tearing of the surface course, etc.) shall be rectified in accordance with TII Pavement Standards and	The Applicant agrees with this condition, as set out in Section 15.1.12 of this EIAR.

ID	Comment/Recommendation	Response
	details in this regard shall be agreed with the Road Authority prior to the commencement of any development on site.	
	National Road Crossings	
12	In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing / in proximity to the national road network.	The existing construction access on the N62 will be widened to the south and an extension of the existing underpass will be constructed. In addition to this minor temporary works, including temporary overruns and the temporary removal of street furniture, are proposed on the national road network during the abnormal load delivery phase. All construction works on the local road network will be undertaken in accordance with current guidelines including the "*Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (Department of Transport (DoT),and "*Guidance for the Control and Management of Traffic at Roadworks*" (DoT).
13	The preferred method of necessary national road network crossings is horizontal directional drilling (HDD). It is appropriate for the designers to contact thirdpartyworks@tii.ie in in order to coordinate and process approvals for this type of crossing that may include requirements for Section 53 consent and specific indemnities for the works.	This point is not applicable to this EIAR as there will be no horizontal directional drilling required to cross a National Road.
	Potential Cable Routing	
14	Any grid connection and cable routing proposals should be developed to safeguard existing national roads and/or proposed road schemes as TII will not be responsible for costs associated with future relocation of cable routing where proposals are catered for in an area of a proposed national road scheme. In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc.	There is no Proposed Grid Connection works proposed within the public road network. Internal underground 33kV cabling connecting the proposed turbines to the proposed onsite 220kV substation will cross the L7002 local road at 1 no. location. Please see Section 4.11.1.8 for detailed construction methodology. The Applicant agrees with this condition.
15	TII has identified a number of significant implications for TII and road authorities in the management and maintenance of the strategic	There is no Proposed Grid Connection works proposed within the public road

ID	Comment/Recommendation	Response
	national road network resulting from the laying of high voltage electricity cabling in the national road reservation, including: › Impacts on embankments, bridges, drainage, road furniture, and infrastructure leading to future maintenance liabilities; › Impediments to future maintenance and operations activities, such as safety barrier repair and French drain renewal; › Impediments to future routine network improvements such as pavement overlay and strengthening, installation of new verge-side signs and other road furniture; › Impediment to future online upgrades of national roads because of the implications to road authority/TII in having to incur the additional costs of moving underground cables in order to accommodate the road improvements.	network. Internal underground cabling connecting the proposed turbines to the proposed onsite 220kV substation will cross the L7002 local road at 1 no. location. Please see Section 4.11.1.8 for detailed construction methodology. The Applicant agrees with this condition.
16	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 Proposed Grid Connection will consist of an overhead line connection into the existing Shannonbridge-Maynooth 220kV Overhead Line (OHL). There are no Proposed Grid Connection works proposed within the public road network. Internal underground cabling connecting the proposed turbines to the proposed onsite 220kV substation will cross the L7002 local road at 1 no. location. Please see Section 4.11.1.8 for detailed construction methodology. The Applicant agrees with this condition.

Department of Transport

An initial scoping document was issued to the Department of Transport (DoT) on the 4th May 2021 with a response received on the 18th May 2021. The response refers to issues relating to the Proposed Grid Connection and works within the public road network, which are set out together with the Applicants responses in Table 15-1b.

A further scoping enquiry was issued to the DoT on 21st November 2024, with a response received on 26th November 2024 stating that they had no comment to make at this time and requested to be kept informed of further updates.

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.	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 [grid connection cables] installation within the lands associated with the public road may affect the stability of the road. In particular where the road is a "legacy road" (where there is no designed road structure and the subgrade may be poor or poorly drained) the design needs to take account of all the variable ground conditions and not be based on a sample of the general conditions.	As set out in Section 15.1.12, all roads will be re-instated in line with the specification of the Road Section of Offaly 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 no significant areas of peat along the Proposed Grid Connection; the majority of the lands surrounding the Proposed Grid Connection are comprised of agricultural lands, with only the proposed onsite 220kV substation and 2 no. new steel masts located on peat.
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).	There are no Proposed Grid Connection works proposed within the public road network; therefore, there is no possible effect on the public road corridor. The underground internal 33kV cabling will interact with the public road at 1 no. location. Underground cabling will be designed with sufficient clearance to ensure no impacts on the road. Therefore, there will be sufficient space for other utilities within the public road corridor.

ID	Comment/Recommendation	Response
4	*The proposals should include consideration of the following:*	
5	Examination of options other than the routing of cables along the public road.	Refer to Section 3.2.5.2.3 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 3.2.5.3.2 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 underground cabling within the public road corridor is shown on the detailed site layout drawings in Appendix 4-1 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.
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 Grid Connection in this instance comprises an OHL Underground cabling associated with the Proposed Project will be from the proposed turbines and met mast to the proposed onsite 220kV substation. The underground internal 33kV cabling will interact with the public road at 1 no. location. Underground cabling will be designed with sufficient clearance to ensure no impacts on the road.
12	*The proposal should take account of and liaise with Offaly County Council regarding the following:*	
13	The design should comply with all appropriate standards and, inter alia the Guidelines for Managing Openings in Public Roads, 2017.	The Applicant agrees with this condition.

ID	Comment/Recommendation	Response
14	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 Proposed Grid Connection in this instance comprises an OHL Underground cabling associated with the Proposed Project will be from the proposed turbines and met mast to the proposed onsite 220kV substation. The underground internal 33kV cabling will interact with the public road at 1 no. location. Underground cabling will be designed with sufficient clearance to ensure no impacts on the road.
15	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 Proposed Grid Connection in this instance comprises an OHL Underground cabling associated with the Proposed Project will be from the proposed turbines and met mast to the proposed onsite 220kV substation. The underground internal 33kV cabling will interact with the public road at 1 no. location. Underground cabling will be designed with sufficient clearance to ensure no impacts on the road.

Offaly County Council

Offaly County Council (OCC) were contacted in relation to scoping in 2021 (response received on 25th June 2021) and 2024 (response received on 22nd November 2024). There has been no response by OCC at the time of writing.

15.1.1.5 Pre-planning Meetings

Offaly County Council

Two on-line pre-planning meetings were held with Offaly County Council (OCC) with traffic and transport relate issues raised as follows;

Meeting 30th June 2021 (1st meeting)

- OCC requested that information relating to amenity proposals should be included in the EIAR.
- OCC requested that the grid connection should not unnecessarily impact on the road network, and,
- MKO confirmed that at the early stage a number of route options for the delivery of the turbine components were being considered.

Meeting 12th June 2025 (2nd meeting)

- MKO summarised the site entrances that were being considered and requested feedback from OCC.

- MKO confirmed that a detailed traffic assessment, including an assessment of the proposed haul route, would be included in Chapter 15 of the EIAR.

An Coimisiún Pleanála

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

SID Meeting 23rd September 2021 (1st meeting)

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

SID Meeting 23rd January 2025 (2nd meeting)

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

SID Meeting 10th December 2025 (3rd meeting)

- MKO presented a summary of the traffic and transport assessment that would be included in the EIAR, including a detailed assessment of the haul route.
- The locations of quarries were discussed as was potential implications of the turbine haul route on Kennedys Cross junction. MKO confirmed both issues would be addressed in the EIAR.

15.1.1.6 Methodology and Section Structure

The report adopts the guidance for such assessments set out by Transport Infrastructure Ireland, or TII, in the document number PE-PDV-02045 *'Traffic and Transport Assessment Guidelines, May 2014'*. The geometric requirements of the transporter vehicles were assessed using AutoCAD and Autotrack.

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

- A review of the existing and future transport infrastructure in the vicinity of the Proposed Project, including the proposed 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 description of the abnormally large loads and vehicles that will require access to the site (Section 15.1.5 Construction Traffic Vehicles);
- 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 15.1.6 –Traffic Effects During Construction and Operation and Decommissioning of the Proposed Project);
- An assessment of the effects during the construction of the Proposed Grid Connection works (Section 15.1.7 – Effect on Network of the Proposed Grid Connection);
- 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 15.1.8 – Traffic Management of Large Deliveries and Section 15.1.9 – Abnormal Load Route Assessment);
- A review of the Proposed Wind Farm access junctions (Section 15.1.10 –Proposed Wind Farm Access Junctions);
- Summary of Road Safety Audit – (Section 15.1.11 – Road Safety Audit);

- Summary of DN-GEO-03030 TII Design Report – (Section 15.1.12 – 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 15.1.13 – Provision for Sustainable Modes of Travel);
- A description of potential effects of the Proposed Project on Roads and Traffic (Section 15.1.14 – 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 Offaly 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 located approximately 3km northeast of Ferbane and approximately 2.5km southwest of the village of Ballycumber in Co. Offaly.

The N62 National Secondary Road connecting Athlone to Ferbane runs in a north to south orientation and is located immediately west of the Proposed Wind Farm. To the south of the site the R436 heads in a northeast direction between Ferbane and Ballycumber, while the northern portion of the site is split via the L7002 local road, with a short section of the site for the OHL bordered by the L7001 local road. While the junctions that will provide access to the site are discussed in detail in Section 15.1.10 of this EIAR, it is proposed that the site will be accessed via the following locations, as indicated in Figure 15-2 and outlined in Table 15-2 below. Please see Section 4.7.1 of Chapter 4 for further detail on all Proposed Project site entrances.

It is proposed to upgrade 3 no. existing entrances and facilitate 2 no. new site entrances. These site entrances will be used throughout the construction, operation, and decommissioning phases of the Proposed Project to enable delivery of materials and turbine components (construction phase), amenity access and maintenance and monitoring use (operational phase), and removal of Proposed Project infrastructure (decommissioning phase).

Due to the nature of the Proposed Project, all proposed works will be local to the Proposed Project site and as such, the construction phase will utilise 4 no. site entrance locations. Of the 4 no. site entrance locations, 3 no. are existing site entrances that will be upgraded, and 1 no. is a proposed new entrance on the northern side of the L7002 local road. An existing agricultural site entrance off the L7001 local road network will also be upgraded to facilitate construction phase access to the Proposed Grid Connection infrastructure located under the existing Shannonbridge-Maynooth 220kV OHL. Use of existing road (which will be upgraded) and temporary construction track will be established from the existing entrance off the L7001 local road to the Proposed Grid Connection infrastructure located under the existing OHL. Following the construction of this infrastructure, this temporary track will be covered with a layer of topsoil and reseeded and the existing road and entrance will continue to facilitate agricultural activities. Please see Table 15-2 below for further detail.

The operational phase will utilise 4 no. site entrance locations to facilitate maintenance and monitoring activity and amenity access. Of the 4 no. locations, 3 no. are the same as the identified construction phase entrances and 1 no. is a new site entrance that will facilitate amenity access only. Please see Table 15-2 below for further detail.

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

Table 15-2 Proposed Construction and Operational Phase Site Entrances

Site Entrance No.	Description	Used for Turbine Delivery	Used during Construction Phase	Used During Operational Phase (maintenance and monitoring)	Used During Operational Phase (amenity)	Existing Entrance	New Entrance	Security Compound and Gate
1	Located along the N62 national road on the western boundary of the Proposed Wind Farm. This is the main site entrance of the Proposed Project.	✓	✓	✓	✓	✓		✓
2	Located along the R436 regional road running south of the Proposed Wind Farm and is located approximately 3.6km northeast of the Lemanaghan Works.[2]		✓	✓	✓	✓		✓
3	Located along the L7002 local road running through the northern portion of the Proposed Project site (on northern side of the junction).		✓	✓			✓	✓
4	Located along the L7002 local road running through the northern portion of the Proposed Project site (on southern side of the junction).				✓		✓	✓
5	Located along the L7001 local road running north of the Proposed Grid Connection.		✓			✓		

[2] *The Lemanaghan Works comprises the former peat processing plant, storage facilities, canteen and welfare facilities, tippler, bulk loading facility and former workshop is located adjacent to the Proposed Project site boundary.*

15.1.2.2 Proposed Site Entrance 1 on the N62 in the context of the Spatial Planning and National Roads, Guidelines for Planning Authorities

As previously set out in Section 4.7.1 of Chapter 4, the Proposed Project site is currently served by a number of existing tracks, rail, and access roads due to its previous use as an industrial bog, and, as part of the Proposed Project, it is proposed to upgrade 3 no. existing entrances and construct 2 no. new site entrances.

Site Entrance 1 is located on the N62 and is an existing site access that is proposed to be upgraded for the Proposed Project. As this site entrance is located on the N62 National Road, the Spatial Planning and National Roads Guidelines for Planning Authorities (NRA, now TII, January 2012), apply to this proposed site entrance. The site entrance is situated in the 100 km/h zone and therefore the following policies of the guidelines must be considered:

> *'2.5 Required Development Plan Policy on Access to National Roads Lands adjoining National Roads to which speed limits greater than 60 km/h apply: - The policy of the planning authority will be to avoid the creation of any additional access point from new development or the generation of increased traffic from existing accesses to national roads to which speed limits greater than 60 km/h apply. This provision applies to all categories of development, including individual houses in rural areas, regardless of the housing circumstances of the applicant.'*

It is also, however, noted that Policy 2.6 of the guidelines sets out exceptional circumstances where a less restrictive approach may be applied:

> *'in the case of developments of national and regional strategic importance which by their nature are most appropriately located outside urban areas, and where the locations concerned have specific characteristics that make them particularly suitable for the developments proposed.'*

The guidelines provide a list of matters to be accounted for when considering whether exceptional circumstances apply, of which it is considered the following apply to the proposed Site Entrance 1 on the N62:

> (3) The nature of proposed development and the volume of traffic to be generated by it ;– It is established that the traffic volumes that will be generated during the construction stage of the Proposed Project will be relatively low and that the junction will operate with significant spare capacity during the busiest construction days (as set out in Section 15.1.4 and 15.1.6) of this EIAR. Furthermore, it is forecast that very low numbers of trips will be generated through the junction when operational (as set out in Section 15.1.4).
>
> (4) Any implications for the safety, capacity and efficient operation of national Roads: – It is demonstrated in Section 15.1.9 of this report that the proposed junction is deigned in accordance with TII Guidelines with the availability of visibility splays and forward visibility appropriate for the 100 km/h speed limit. It is also noted that all potential issues raised in the Road Safety Audit (Appendix 15-4) are addressed to the satisfaction of the Audit Team, as summarised in Section 15.1.11.
>
> (6) The suitability of the location compared to alternative locations; - It is considered that this location is the optimum access point off the N62 to gain access to the site.
>
> (10) The precedent that could be created for cumulative development in the area and the potential implications for the national road network: - It is noted that an upgrade to an existing

N62 site entrance was granted as part of the Derrinlough Wind Farm planning application; this development has since been successfully constructed. As identified in Section 15.1.10 below, it is expected that the Proposed Project will generate low levels of traffic with similar minor and manageable effects on the national road network as was seen with the Derrinlough Wind Farm.

15.1.2.3 Proposed Turbine Delivery Route

For the purposes of this EIAR, the Port of Galway has been selected and assessed to facilitate turbine delivery to the site.

A detailed assessment of the transport route was made from a point at which the route turns off the M6 Motorway at Kilbeggan. The route is shown in Figure 15-1 and is discussed in detail in Section 15.1.8.

The route assessment is confined to the access route comprising of the following:

- The route exits south off the M6 at junction 5 onto the N52 at Kilbeggan;
- The route then heads south on the N52 towards Tullamore for approximately 8km to join the N52 eastern bypass of Tullamore at the Ardan Roundabout located to the northeast of the town;
- The route then heads south on the N52 bypassing Tullamore to the east and south for a further 8km, passing through a further 5 roundabouts (Cappancur Roundabout, Clonlollog Roundabout, Clonminch Roundabout, Distillery Roundabout and Ballard Roundabout) to the N52 / R421 Charleville Roundabout located to the southwest of Tullamore;
- From this point the route continues southwest for a further approximately 30 km on the N52, passing through the Mucklagh Roundabout just to the west of Tullamore and the village of Kilcormac, to the junction with the N62 located approximately 2km north of the town of Birr;
- The route then turns right onto the N62, using a temporary bypass of the existing junction (known as Kennedy's Cross);
- From here the TDR travels north of the N62 for approximately 22km passing through the towns of Cloghan and Ferbane to the location of the proposed access to the site located on the eastern side of the N62.

The total length of the turbine delivery route from the exit off the M6 is approximately 68km.

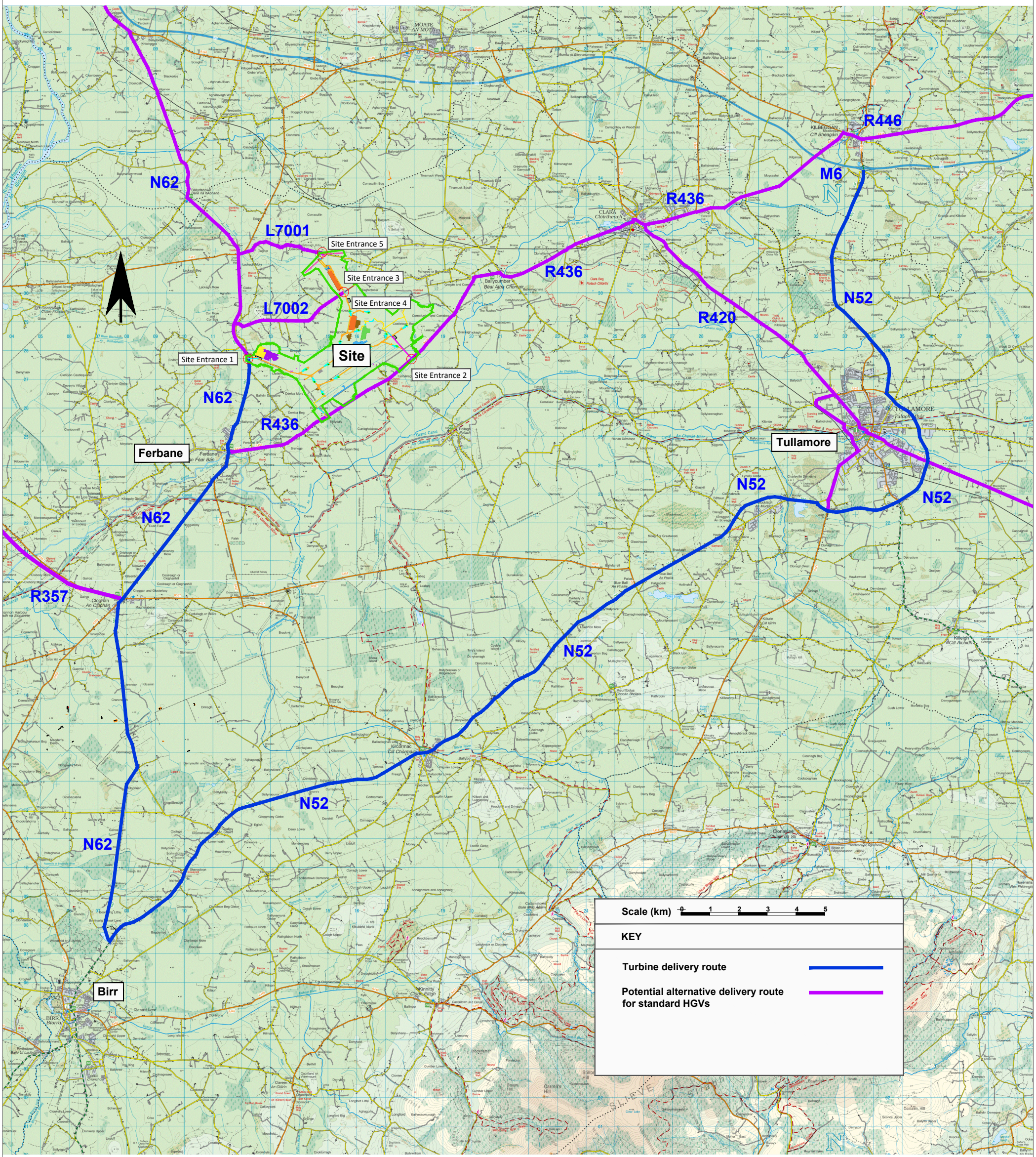
An assessment of the turning requirements of the abnormally large loads transporting the turbine components was undertaken by Pell Frischmann at the various pinch points identified along the turbine delivery route from the M6 to the Proposed Wind Farm via Site Entrance 1, as indicated in Figure 15-3 and discussed in Sections 15.1.8 and 15.1.9 of this chapter; the report compiled by Pell Frischmann is provided as Appendix 4-7 to the EIAR. The swept path assessment undertaken for the locations identified in Figure 15-3 are discussed in Section 15.1.10. In addition, an autotrack assessment was undertaken demonstrating that the largest abnormally large loads transporting the turbine components may be accommodated from the Port in Galway through Galway City to the National Road network, This assessment is included as Appendix 15-3.

Please note, the turbine delivery route follows a similar route to that of the existing Derrinlough Wind Farm (Pl Ref. PA19.306706), which has had a successful delivery of abnormal loads for a similar blade length (73.7m delivered while 76m blade length tested as part of this EIAR). A separate and detailed assessment has been included as part of this EIAR (i.e., Appendix 4-7) for the delivery of abnormal loads associated with the Proposed Project.

15.1.2.4 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 15 days. The concrete and some crushed stone required for the turbine foundations will be sourced from local, appropriately authorised quarries as shown in Figure 4-40 in Chapter 4 of this EIAR. All concrete deliveries provided by local quarries will access the Proposed Wind Farm via Site Entrance 1 off the N62 or Site Entrance 2 off the R436 with the potential routes to the Proposed Wind Farm shown in Figures 15-1 and 15-2.

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 additional routes (the R357 from the direction of Shannonbridge in the west, and the R466 from the direction of Kilbeggan and Tyrrellspass in the east) 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:

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Figure 15-1 Site location and turbine delivery route

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	NTS
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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15.1.2.5 Proposed Grid Connection

The Proposed Grid Connection will connect the Proposed Wind Farm into the national grid via the existing Shannonbridge-Maynooth 220kV OHL in the townland of Cooldorragh, Co. Offaly measuring approximately 0.8km in total length (comprising 0.4km of OHL double loop-in/loop-out from the proposed onsite 220kV substation to the existing OHL).

The Proposed Grid Connection will be accessed from the southern side of the L7001 at Site Entrance 5 and the northern side of the junction along the L7002 at Site Entrance 3.

The townlands in which the Proposed Grid Connection will pass through are detailed in Table 1-1 of Chapter 1. Refer to Section 4.4.2 of Chapter 4 for further detail on the Proposed Grid Connection.

The Proposed Grid Connection and associated traffic-related impacts are discussed in Section 15.1.7.

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 six locations included in the link flow assessment and for which base year 2024 traffic count data was collated are set out in Table 15-2 and shown in Figure 15-4. The locations included in the assessment are as follows,

- Link 1 – N52 between Tullamore and Kilbeggan;
- Link 2 – N52 southwest of Tullamore;
- Link 3 – N52 between Birr and Kilcormac;
- Link 4 – N62 south of Ferbane;
- Link 5 – R436 east of Ferbane;
- Link 6 – N62 north of Ferbane.

The traffic counts were obtained from 2 sources. Base year traffic flows were sourced from the Automatic Traffic Count data supplied by TII and utilised at 3 no. locations on the N52 between the M6 in the northeast of the TDR to the junction with the N62 in the southwest. A further 2 no. locations were surveyed with traffic flows counts for the N62 and the R436 obtained via a 24 hour classified turning count undertaken at the junction on Tuesday 26th November 2024 by Traffinomics Ltd. See table 15-3 below. An assessment of the seasonal variation in traffic volumes by month was undertaken using the Automatic Traffic Count site maintained by TII on the N62 between Athlone and Ferbane. Based on this data it was established that traffic volumes during the month of November were higher than the average month, 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 15-3 Link count locations, data source and year

Link	Data source	Year
1 – N52 between Tullamore and Kilbeggan	Automatic traffic counter - TII	2024

Link	Data source	Year
2 – N52 southwest of Tullamore	Automatic traffic counter - TII	2024
3 – N52 between Birr and Kilcormac	Automatic traffic counter - TII	2024
4 – N62 south of Ferbane	Classified turning count - Traffinomics	2024
5 – R436 east of Ferbane	Classified turning count - Traffinomics	2024
6 – N62 north of Ferbane	Classified turning count - Traffinomics	2024

The all-day traffic flows observed for the base year 2024 for all links are shown in terms of vehicle numbers in Table 15-4. 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 15,252 vehicles per day on the N52 south of the M6 between Tullamore and Kilbeggan (Link 1), to 4,179 vehicles per day on the N52 further south between Birr and Kilcormac (Link 3). On the N62 traffic volumes were observed to be 7,550 vehicles south (Link 4) and 7,770 north (Link 6) of Ferbane, with the R436 to the east of Ferbane (Link 5) observed to provide for 3,647 vehicles.

Table 15-4 Observed all day traffic flows by location, year 2024 (2-way vehicles)

Link	2024
1 – N52 between Tullamore and Kilbeggan	15,252
2 – N52 southwest of Tullamore	8,092
3 – N52 between Birr and Kilcormac	4,179
4 – N62 south of Ferbane	7,550
5 – R436 east of Ferbane	3,647
6 – N62 north of Ferbane	7,770

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 Offaly and factors for the years relevant to this

study are shown in Tables 15-5 and 15-6. Based on TII growth rates it is estimated that traffic volumes will increase by 7.3% from 2024 to the year 2030, when the construction of the Proposed Project is forecast to take place. Traffic flows for the base year 2024 and the construction year of 2030 are compared in Table 15-7.

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 0.42% by the year 2030 (as shown in Table 15-5 as 1.0042) 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 15-8 and range from a minimum of 3.1% observed on the R436 east of Ferbane (Link 5), to a maximum of 6.7% observed on the N52 between Tullamore and Kilbeggan (Link 1).

Table 15-5 TII traffic growth forecasts, growth per annum and cumulative, County Offaly

Year	Lights – Annual Factor			Lights – Cumulative Factor		
	Low	Medium	High	Low	Medium	High
2024	1.0103	1.0118	1.0152	1.000	1.000	1.000
2025	1.0103	1.0118	1.0152	1.010	1.012	1.015
2026	1.0103	1.0118	1.0152	1.021	1.024	1.031
2027	1.0103	1.0118	1.0152	1.031	1.036	1.046
2028	1.0103	1.0118	1.0152	1.042	1.048	1.062
2029	1.0103	1.0118	1.0152	1.053	1.060	1.078
2030	1.0103	1.0118	1.0152	1.063	1.073	1.095
2031	1.0021	1.0042	1.0081	1.066	1.077	1.104
2032	1.0021	1.0042	1.0081	1.068	1.082	1.113

Table 15-6 TII traffic growth rates by growth scenario

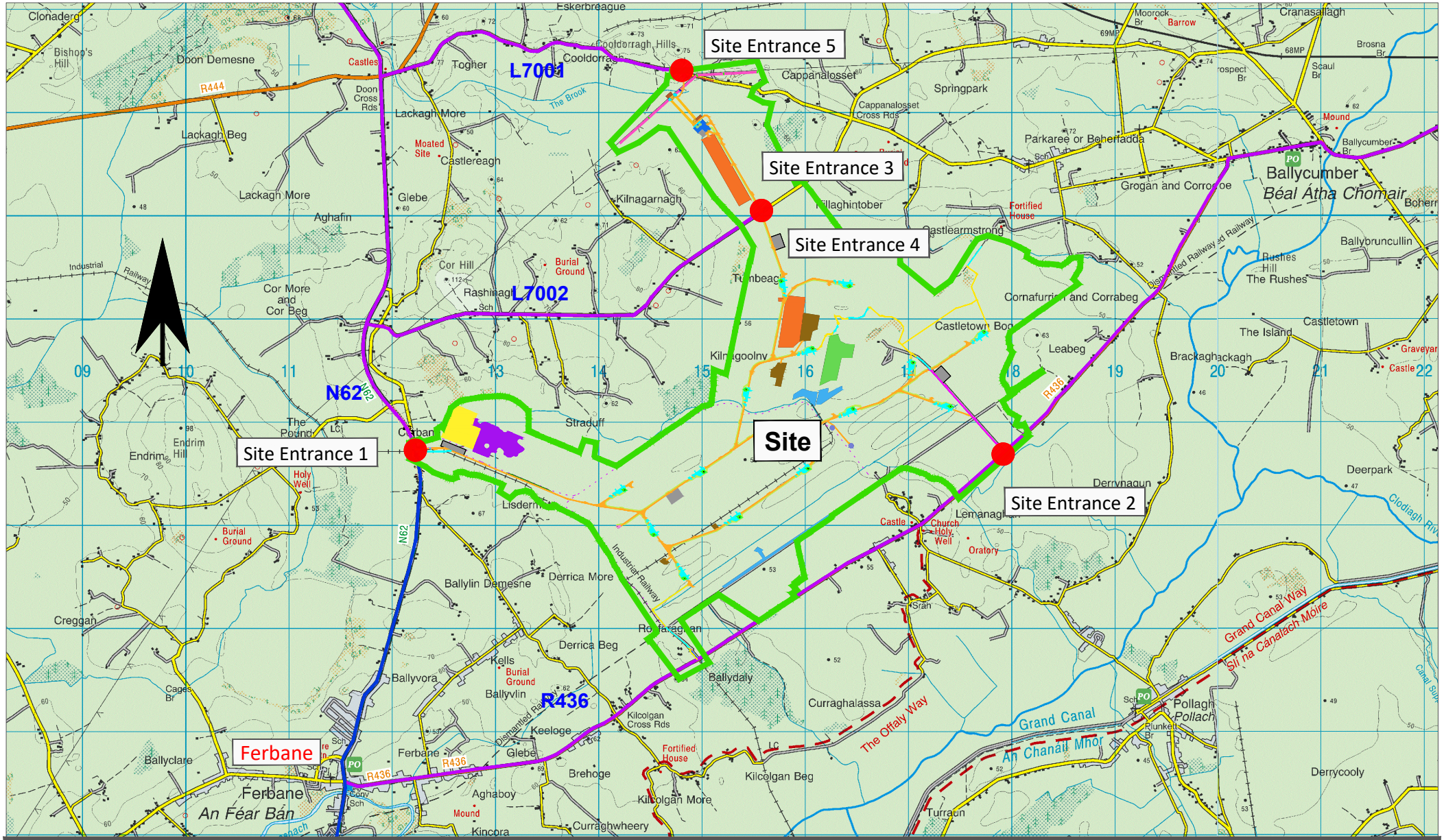
Period	New Factors		
	Low	Medium	High
2024 - 2030	1.063	1.073	1.095

Table 15-7 All day traffic flows by location, and year (2-way vehicles)

Link	2024	2030
1 – N52 between Tullamore and Kilbeggan	15,252	16,365
2 – N52 southwest of Tullamore	8,092	8,683
3 – N52 between Birr and Kilcormac	4,179	4,484
4 – N62 south of Ferbane	7,550	8,101
5 – R436 east of Ferbane	3,647	3,913
6 – N62 north of Ferbane	7,770	8,337

Table 15-8 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 – N52 between Tullamore and Kilbeggan	16,365	6.7%	1,096	15,269	2,632	15,269	17,901
2 – N52 southwest of Tullamore	8,683	5.2%	452	8,231	1,084	8,231	9,315
3 – N52 between Birr and Kilcormac	4,484	6.9%	309	4,175	743	4,175	4,918
4 – N62 south of Ferbane	8,101	6.4%	518	7,583	1,244	7,583	8,827
5 – R436 east of Ferbane	3,913	3.1%	121	3,792	291	3,792	4,083
6 – N62 north of Ferbane	8,337	5.9%	492	7,845	1,181	7,845	9,026



NOTES:

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Figure 15-2 Location of proposed access junctions

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	NTS
AL PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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15.1.4 Proposed Project Traffic Generation

15.1.4.1 Development Trip Generation – During Construction

The assessment of the effects of traffic generated during the construction of the Proposed Project is considered in two stages.

- Stage 1 – Proposed Project construction: groundworks, construction of temporary construction compounds, turbine foundations, met mast foundations, onsite 220kV substation, internal electrical cabling and construction of the Proposed Grid Connection,
- Stage 2 – Turbine component delivery.

For the purpose of the traffic impact assessment, projections based on trip generation data collected from other wind farm construction projects regarding the numbers of trips per quantum of material, the number of turbine component parts based on 15 no. turbines, the length of the construction phase and work periods etc. were made to inform the assessment. These projections allow for an assessment using the precautionary principle but should not be inferred as prescriptive limitations to the construction phase. There are numerous variables which can affect a construction project programme such as weather. The construction phase of the Proposed Project will be carried out in accordance with the Construction and Environmental Management Plan (CEMP), which is submitted as Appendix 4-4 of this EIAR. The CEMP will be agreed with the Local Authority prior to construction commencing.

The shortest potential construction phase duration of 24 months was assumed for the construction of the Proposed Project in order to test a precautionary scenario. For assessment purposes a standard 255 working days per annum was adopted, equating to 510 working days over a 24-month construction period. Of these 510 days, the assessment presented below is based on the following number of delivery days for each stage of construction:

Stage 1 – Site preparation and groundwork – Concrete foundation pouring	= 15 days
Stage 1 – Site preparation and groundwork – All other days	= 440 days
Stage 2 – Turbine construction – Delivery of abnormally sized loads	= 40 days
Stage 2 – Turbine construction – Delivery of other turbine components	= 15 days

15.1.4.1.1 *Stage 1 – Site Preparation and Ground Works*

The construction phase of the Proposed Project is expected to last approximately 24 months (2 years). For assessment purposes a standard 255 working days per annum was adopted, with 510 working days assumed for the site preparation and ground works stage with the total numbers of deliveries made to the site during that period shown in Table 15-9.

During this construction phase, there will be two distinct types of days with respect to trip generation. A total of 15 days will be used to pour the 15 concrete wind turbine foundations. Foundations will likely be poured one per day, with an estimated 80 concrete loads required for each turbine foundation delivered to the site over a 12-hour period. This will result in just 7 HGV trips to and from the site per hour. On the remaining 440 working days for this stage, other general materials will be delivered to the site.

During all of Stage 1, based on trip rates typical of wind farm projects, it is estimated that 54,201 two-way trips will be made to the site by trucks and large articulated HGVs, as set out in Table 15-9, with the daily effect on the local road network shown in Table 15-10 and 15-11. The figures show that on the 15 days that concrete will be delivered to the site an additional 384 two-way PCUs will be added to the network (comprising 80 two-way HGV trips or 160 movements, with 2.4 PCUs per movement), as

shown in Table 15-10 Similarly, on the 440 days when other materials will be delivered to the site, traffic volumes on the local network are forecast to increase by an average of 576 PCUs, as set out in Table 15-11.

Table 15-9 Trip generation - Stage 1 - Site preparation and general construction works – total loads

Material	Total no. Truck Loads	Truck type
Concrete	1,200	Trucks
Delivery of plant	66	Large artic
Fencing & gates	6	Large artic
Compound setup	60	Large artic
Steel	41	Large artic
Sand / binding / stone / pile foundation	328	Trucks
Ducting and cabling (internal)	441	Large artic
Crane (to lift steel)	2	Large artic
Crane (for turbines)	23	Large artic
Refuelling for plant	354	Large artic
Stone to Proposed Project site	49,799	Truck
Materials for Proposed Grid Connection	120	Large artic
Proposed Onsite 220kV Substation	1000	Truck
Stone for temporary construction compounds	333	Truck
Site maintenance	257	Large artic
Miscellaneous	41	Large artic
Total	54,239	

Table 15-10 Trip generation - Stage 1 – Concrete foundation pouring – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day (1 way) *	PCU Movements /day (2-Way) *
Concrete	1,200	Concrete mixers	2.4	2,880	192.0	384.0
* Estimation based on 15 concrete pouring days						

Table 15-11 Trip generation - Stage 1 – Site preparation and general construction works – total movements and volumes per delivery day

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day (1 way) *	PCU Movements /day (2-Way) *
Delivery of plant	66	Large artic	2.4	158.4	0.36	0.72
Fencing & gates	6	Large artic	2.4	14.4	0.03	0.06
Compound setup	60	Large artic	2.4	144.0	0.33	0.66
Steel	41	Large artic	2.4	98.4	0.22	0.44
Sand / binding / stone / pile foundation	328	Trucks	2.4	787.2	1.79	3.58
Ducting and cabling (internal)	441	Large artic	2.4	1058.4	2.41	4.82
Crane (to lift steel)	2	Large artic	2.4	4.8	0.01	0.02
Crane (for turbines)	23	Large artic	2.4	55.2	0.13	0.26
Refueling for plant	354	Large artic	2.4	849.6	1.93	3.86
Stone to Proposed Project site	49,799	Truck	2.4	119,517.6	271.63	543.3

Material	Total Truck Loads	Truck type	PCU Value	Total PCUs	PCU Movements /day (1 way) *	PCU Movements /day (2-Way) *
Materials for Proposed Grid Connection	120	Large artic	2.4	288.0	0.65	1.31
Proposed Onsite 220kV Substation	1000	Truck	2.4	2400.0	5.45	10.9
Stone for temporary construction compound	333	Truck	2.4	799.2	1.82	3.64
Site maintenance	257	Large artic	2.4	616.8	1.40	2.80
Miscellaneous	171	Large artic	2.4	410.4	0.93	1.86
Total	53,001			126,792	288.16	576.33
* Estimation based on groundwork period of 440 working days						

15.1.4.1.2 Stage 2 – Turbine Construction

During the turbine construction stage, including delivery and assembly, some deliveries to the Proposed Wind Farm will be made by abnormally large vehicles, referred to in this section as extended artics, transporting the component parts of the turbines (nacelles, blades and towers). There will also be deliveries made by standard large HGVs, transporting cables, tools and smaller component parts. The types of load and associated numbers of trips made to the site during the turbine construction period are shown in Table 15-12, which summarises that a total of 120 trips will be made to and from the site by extended artics, with a further 60 trips made by conventional large articulated HGVs.

Table 15-12 Trip generation - Stage 2 – Wind turbine plant – total loads

Material	Units	Quantity per Unit	Total Quantity	Quantity per Truck	Total Truck Loads	Truck type
Nacelle	15	1	15	1	15	Extended Artic
Blades	15	3	45	1	45	Extended Artic
Towers	15	4	60	1	60	Extended Artic
Sub total					***120***	
Transformer	15	1	15	1	15	Large Artic
Drive train and blade hub	15	1	15	1	15	Large Artic

Material	Units	Quantity per Unit	Total Quantity	Quantity per Truck	Total Truck Loads	Truck type
Base and other deliveries	15	2	30	1	30	Large Artic
Sub total					***60***	
Total					**180**	

For the purposes of this assessment an assumed delivery period is provided although this may be subject to change. It is assumed that the turbine delivery element will progress at the rate of 3 extended artic trips made by convoy to the site on 5 nights per week, resulting in this stage taking approximately 40 nights spread over an estimated 8-week period. On a further two days per week, lasting for approximately 8 weeks, the remaining equipment required during this phase will be delivered to the Proposed Wind Farm. The additional traffic movements for these 2 types of days are summarised in Table 15-13 and Table 15-14. In Table 15-13, a PCU equivalent value of 10 was allocated to each extended artic movement, resulting in an additional 60 PCUs on the study network on these days, while an additional 19 PCUs are forecast to travel on the network on two additional days per week, as shown in Table 15-14.

Table 15-13 Trip generation - Stage 2 – Wind turbine plant, extended artics – total movements and volumes per delivery day

Material	Units	Truck Type	PCU Value	PCU Movements 1 way) *	PCU Movements (2-Way) *
Nacelle	1	Extended Artic	10	10.0	20.0
Blades	3	Extended Artic	10	30.0	60.0
Towers	4	Extended Artic	10	40.0	80.0
Total per turbine	8			80.0	160.0
Total per delivery day	3			30.0	60.0

*Estimation based on 3 abnormal sized loads being delivered per day on 5 days per week (total 120 loads will take 40 nights spread over 8 weeks)

Table 15-14 Trip generation - Stage 2 - Wind turbine plant, standard artic HGVs - total movements and volumes per delivery day

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

Construction Employee Traffic

During the construction of the Proposed Project, it is estimated that approx. 100-120 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 Project 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.

15.1.4.2 Development Trip Generation – During Operation

There will be 1 no staff permanently present on the 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 Entrance 1, Site Entrance 3 and Site Entrance 4) as well as tourists and members of the local community accessing the site for the purposes of amenity via Site Entrance 1, Site Entrance 2, Site Entrance 3 and Site Entrance 5. There will be a similarly low level of maintenance trips generated by the proposed onsite 220kV substation, which will access the site via Site Entrance 4 on the L7002.

While there will be no scheduled trips required for the Proposed Grid Connection, maintenance may be required, although this will occur rarely generating a modest number of trips via Site Entrances 3 and Site Entrance 5.

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 Proposed Project 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.

15.1.4.3 Development Trip Generation – During Decommissioning

Traffic generation to the Proposed Wind Farm during decommissioning will be significantly less than the trip generation estimates presented for the construction phase presented in Section 15.1.4.1 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 4-9 Decommissioning Plan for further detail.

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

15.1.5 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, Pell Frischmann provided assessments for turbines with a blade length of 76m via Superwing Carrier and a turbine with a blade length of 85m via a Clamp and Dolly trailer (Appendix 4-7).

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 76m 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

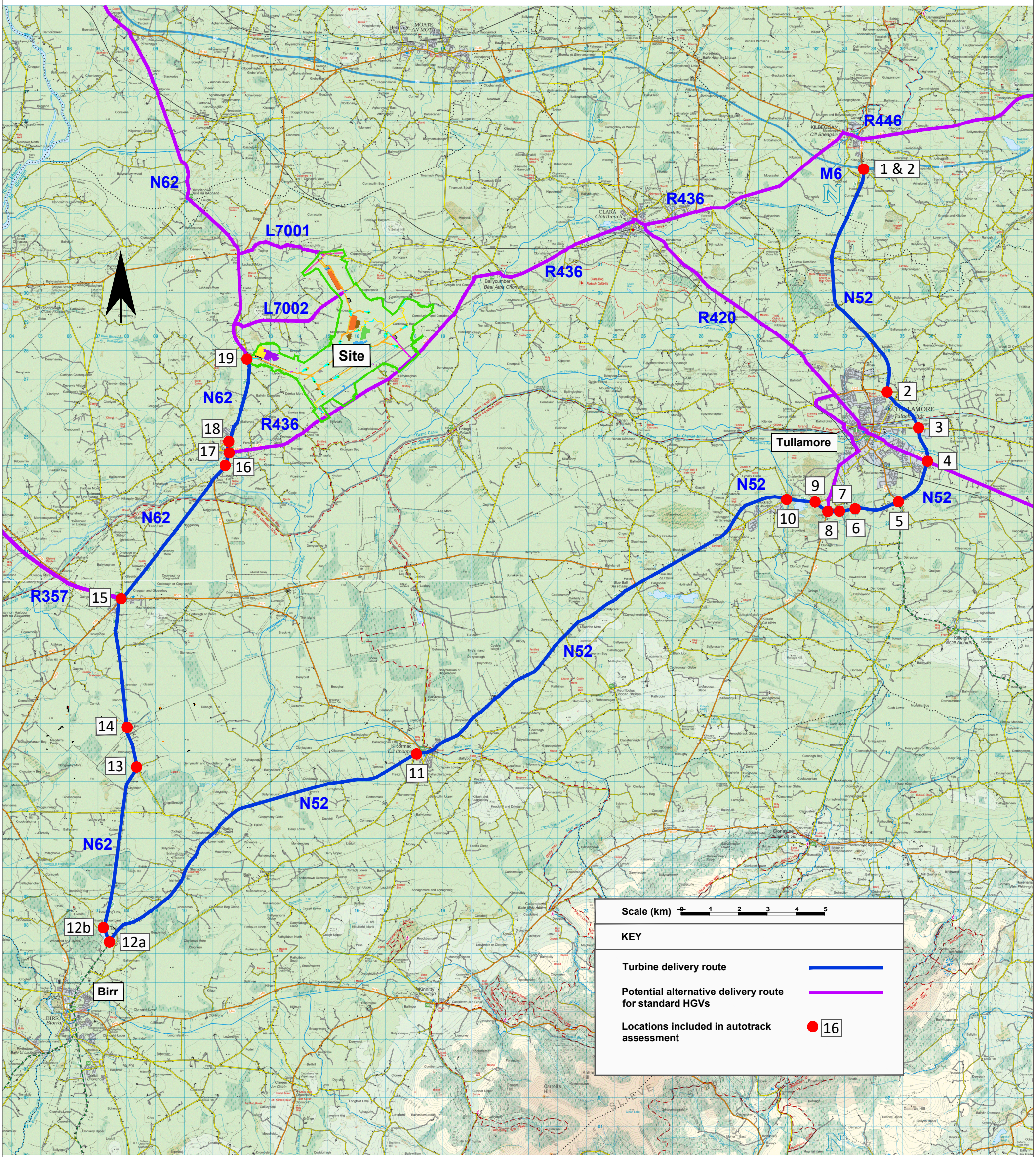
Total length of vehicle	80.0m
Length of blade	76.0m

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 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.



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-3 Autotrack assessment location plan

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	NTS
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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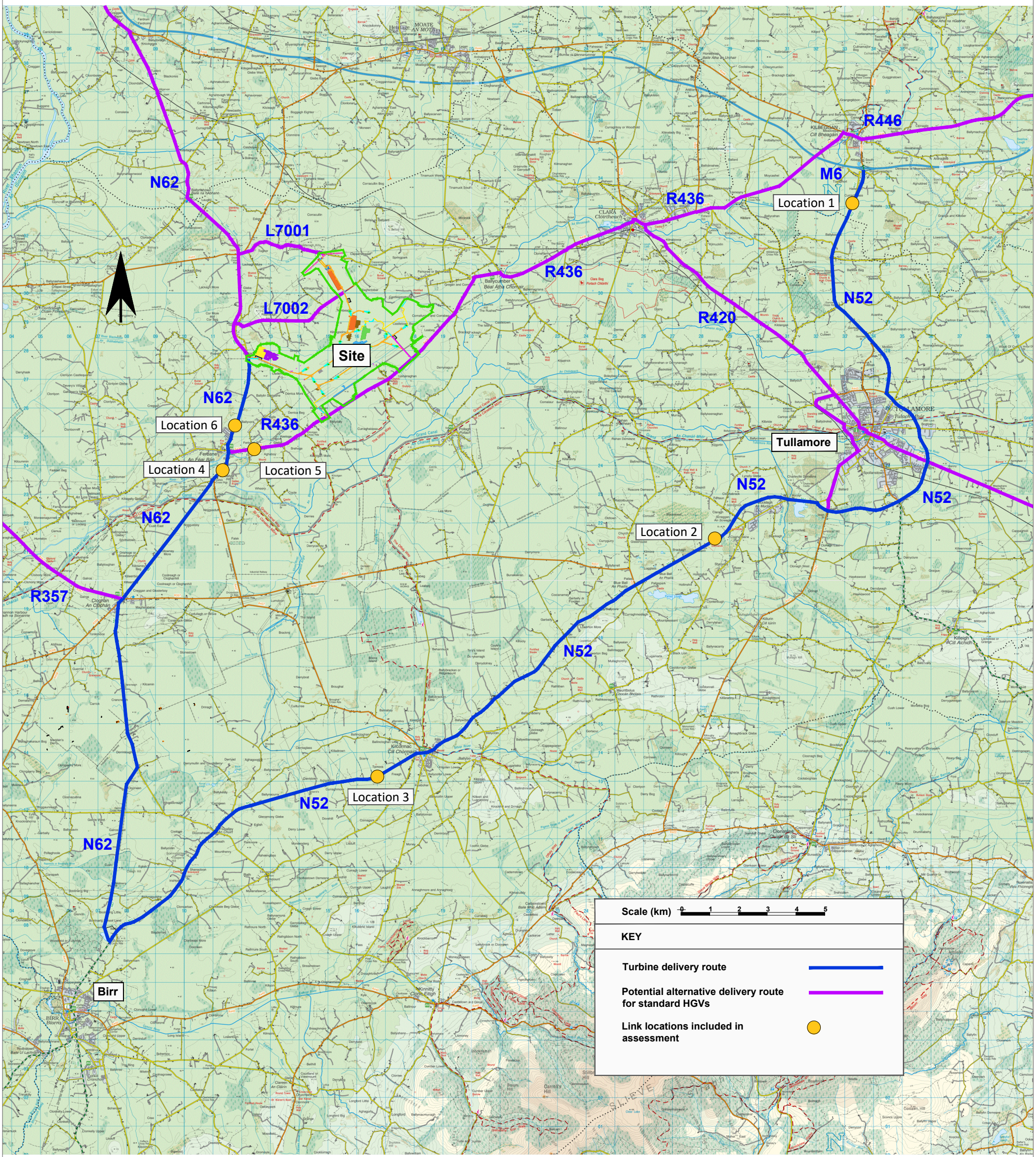

NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-4 Link count locations included in assessment

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	NTS
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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

As detailed below, 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 have been assumed to do so from the TDR and proposed construction haul routes shown in Figure 15-1 and Figure 15-2 and discussed in Sections 15.1.2.3 and 15.1.2.4 of this EIAR.

15.1.6.1.1 *Effect on Link Flows – During Construction*

Background traffic volumes and Proposed Wind Farm generated traffic volumes are shown for the 4 typical construction stage scenarios, discussed in Section 15.1.6.4 and shown in Tables 15-15 to 15-18, 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 15-20 to 15-22. 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:

Concrete foundation pours (15 days)

For 15 days during which concrete deliveries are made to the site for the construction turbine foundations, an additional 454 PCUs will travel to and from the site via the identified construction delivery routes. During these days it is forecast that the increase in traffic volumes will range from between +2.5% to +9.2% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). For the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that the construction traffic will result in a +5.0% to +5.1% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 (Link 5) it is forecast that the additional traffic will result in an 11.1% increase on these 15 days.

Site preparation and general construction works (440 days)

For 440 days comprising the main element of the construction phase of the Proposed Project an additional 646 PCUs will travel to and from the site via the identified construction delivery routes. On these days it is forecast that the increase in traffic volumes will range from between +3.6% to +13.1% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a maximum +7.3% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 (Link 5) it is forecast that there will be a +15.8% increase on these 440 days.

Delivery of turbine components (abnormally sized loads) (40 days)

On these 40 days, a convoy of 3 abnormally sized loads accompanied by an escort provided by An Garda Siochana will travel to the site and access via Sita Entrance 1 off the N62. On these days it is forecast that the increase in traffic volumes will range from between +0.6% to +2.1% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a +1.2% increase in traffic volumes.

Delivery of turbine components (abnormally sized loads) (15 days)

For 15 days when smaller turbine components will be delivered to the site by standard HGVs an additional 64 PCUs will travel to and from the site via the identified construction delivery routes. On these days it is forecast that the increase in traffic volumes will range from between +0.4% to +1.3% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a +0.7% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 (Link 5) it is forecast that there will be a +1.6% increase on these 440 days.

Table 15-15 Daily traffic volumes during concrete foundation 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 – N52 between Tullamore and Kilbeggan	15,269	2,632	17,901	70	384	454	15,339	3,016	18,355
2 – N52 southwest of Tullamore	8,231	1,084	9,315	70	384	454	8,301	1,468	9,769
3 – N52 between Birr and Kilcormac	4,175	743	4,918	70	384	454	4,245	1,127	5,372
4 – N62 south of Ferbane	7,583	1,244	8,827	70	384	454	7,653	1,628	9,281
5 – R436 east of Ferbane	3,792	291	4,083	70	384	454	3,862	675	4,537
6 – N62 north of Ferbane	7,845	1,181	9,026	70	384	454	7,915	1,565	9,480

Table 15-16 Daily traffic volumes during site preparation and general construction works - 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 – N52 between Tullamore and Kilbeggan	15,269	2,632	17,901	70	576	646	15,339	3,208	18,546
2 – N52 southwest of Tullamore	8,231	1,084	9,315	70	576	646	8,301	1,660	9,961

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
3 – N52 between Birr and Kilcormac	4,175	743	4,918	70	576	646	4,245	1,319	5,563
4 – N62 south of Ferbane	7,583	1,244	8,827	70	576	646	7,653	1,820	9,473
5 – R436 east of Ferbane	3,792	291	4,083	70	576	646	3,862	867	4,729
6 – N62 north of Ferbane	7,845	1,181	9,026	70	576	646	7,915	1,757	9,672

Table 15-17 Daily traffic volumes during delivery of turbine component (abnormal loads) - 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 – N52 between Tullamore and Kilbeggan	15,269	2,632	17,901	45	60	105	15,314	2,692	18,006
2 – N52 southwest of Tullamore	8,231	1,084	9,315	45	60	105	8,276	1,144	9,420
3 – N52 between Birr and Kilcormac	4,175	743	4,918	45	60	105	4,220	803	5,023
4 – N62 south of Ferbane	7,583	1,244	8,827	45	60	105	7,628	1,304	8,932
5 – R436 east of Ferbane	3,792	291	4,083	45	60	105	3,837	351	4,188
6 – N62 north of Ferbane	7,845	1,181	9,026	45	60	105	7,890	1,241	9,131

Table 15-18 Daily traffic volumes during delivery of turbine component (standard HGVs) - 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

Link	Background PCUs			Proposed Project PCUs			Total PCUs (Background + Proposed Project)		
1 – N52 between Tullamore and Kilbeggan	15,269	2,632	17,901	45	19	64	15,314	2,651	17,965
2 – N52 southwest of Tullamore	8,231	1,084	9,315	45	19	64	8,276	1,103	9,379
3 – N52 between Birr and Kilcormac	4,175	743	4,918	45	19	64	4,220	762	4,982
4 – N62 south of Ferbane	7,583	1,244	8,827	45	19	64	7,628	1,263	8,891
5 – R436 east of Ferbane	3,792	291	4,083	45	19	64	3,837	310	4,147
6 – N62 north of Ferbane	7,845	1,181	9,026	45	19	64	7,890	1,200	9,090

Table 15-19 Summary daily effects of Proposed Project traffic – concrete foundation pouring - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N52 between Tullamore and Kilbeggan	17,901	454	18,355	2.5%	15
2 – N52 southwest of Tullamore	9,315	454	9,769	4.9%	15
3 – N52 between Birr and Kilcormac	4,918	454	5,372	9.2%	15
4 – N62 south of Ferbane	8,827	454	9,281	5.1%	15
5 – R436 east of Ferbane	4,083	454	4,537	11.1%	15
6 – N62 north of Ferbane	9,026	454	9,480	5.0%	15

Table 15-20 Summary daily effects of Proposed Project traffic – site preparation and general construction works - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N52 between Tullamore and Kilbeggan	17,901	646	18,546	3.6%	440
2 – N52 southwest of Tullamore	9,315	646	9,961	6.9%	440
3 – N52 between Birr and Kilcormac	4,918	646	5,563	13.1%	440
4 – N62 south of Ferbane	8,827	646	9,473	7.3%	440
5 – R436 east of Ferbane	4,083	646	4,729	15.8%	440
6 – N62 north of Ferbane	9,026	646	9,672	7.2%	440

Table 15-21 Summary daily effects of Proposed Project traffic – delivery of turbine component (abnormal loads) - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N52 between Tullamore and Kilbeggan	17,901	105	18,006	0.6%	40
2 – N52 southwest of Tullamore	9,315	105	9,420	1.1%	40
3 – N52 between Birr and Kilcormac	4,918	105	5,023	2.1%	40
4 – N62 south of Ferbane	8,827	105	8,932	1.2%	40
5 – R436 east of Ferbane	4,083	105	4,188	2.6%	40
6 – N62 north of Ferbane	9,026	105	9,131	1.2%	40

Table 15-22 Summary daily effects of Proposed Project traffic – delivery of turbine component (abnormal loads) - % increase and number of days, year 2030

Link	Background	Proposed Project	Total	% increase	Estimated No. of days
1 – N52 between Tullamore and Kilbeggan	17,901	64	17,965	0.4%	15
2 – N52 southwest of Tullamore	9,315	64	9,379	0.7%	15
3 – N52 between Birr and Kilcormac	4,918	64	4,982	1.3%	15
4 – N62 south of Ferbane	8,827	64	8,891	0.7%	15
5 – R436 east of Ferbane	4,083	64	4,147	1.6%	15
6 – N62 north of Ferbane	9,026	64	9,090	0.7%	15

15.1.6.2 Link Capacity Assessment

An assessment of the impact on link capacity on all delivery routes (TDR and proposed construction haul routes) was undertaken for the various construction stages as set out in Tables 15-23 to 15-25 with the capacity of the links on the route options, as shown in Table 15-23, varying from 11,600 vehicles per day on the N52 between Tullamore and Kilbeggan (Link 1), to 8,600 vehicles per day on the various sections of the N52 and the N62 north and south of Ferbane (Links 2,3,4 and 6), down to 5,000 vehicles per day for R436 to the east of Ferbane (Link 5).

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

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

Background traffic flows are compared to flows forecast for the various construction delivery stages, in Table 15-24, with the percentage capacity reached for each stage shown in Table 15-25.

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

- Link 1 – N52 (between Tullamore and Kilbeggan) - It is forecast that this section of the N52 will operate at 154% link capacity based on background traffic levels by the year 2030. For the 440 days that the general construction takes place it is forecast that this will increase to a maximum of 160%, reducing to a 155% to 158% for the remainder of the construction period.
- Link 2 – N52 (southwest of Tullamore) – This section of the N52 is forecast to operate over link capacity at 108% based on background traffic levels by the year 2030. For

the 440 days that general construction takes place it is forecast that this will increase to +116%, reducing to 109% to 114% for the rest of the construction period.

- Links 4 and Link 6 – N62 (south and north of Ferbane) – These sections of the delivery route on the N62 are forecast to operate just over link capacity at 103% and 105% based on background traffic levels by the year 2030. For the 440 days that general construction takes place it is forecast that this will increase to +110% and 112%, reducing to 103% to 108% and 106% to 110% south and north of Ferbane for the rest of the construction period.
- For the remainder of the TDR (Links 3 and 5) and the links assessed on the alternative delivery route, it is forecast that all links will operate well within link capacity for all scenarios.

In summary, while sections of the delivery routes are forecast to operate above or at link capacity by the year 2030, it is considered that the magnitude of impacts arising from construction traffic generated by the Proposed Project will be slight with respect to link capacity.

Table 15-23 Delivery routes link type and link capacity (at Level of Service D)

Link	Link type	Link capacity (Level of Service D)
1 – N52 between Tullamore and Kilbeggan	Type 1 Single	11,600
2 – N52 southwest of Tullamore	Type 2 Single	8,600
3 – N52 between Birr and Kilcormac	Type 2 Single	8,600
4 – N62 south of Ferbane	Type 2 Single	8,600
5 – R436 east of Ferbane	Type 3 Single	5,000
6 – N62 north of Ferbane	Type 2 Single	8,600

Table 15-24 Delivery route link capacity and summary of link flows by construction delivery day

Link	Link capacity (Level of Service D)	Construction delivery day				
		Background traffic	Concrete foundation pours	Site preparation and general construction	Turbine component deliveries – abnormal loads	Turbine component deliveries – standard HGVs
1 – N52 between Tullamore and Kilbeggan	11,600	17,900	18,354	18,546	18,005	17,964
2 – N52 southwest of Tullamore	8,600	9,315	9,769	9,961	9,420	9,379
3 – N52 between	8,600	4,917	5,371	5,563	5,022	4,981

Birr and Kilcormac						
4 – N62 south of Ferbane	8,600	8,827	9,281	9,473	8,932	8,891
5 – R436 east of Ferbane	5,000	4,083	4,537	4,729	4,188	4,147
6 – N62 north of Ferbane	8,600	9,026	9,480	9,672	9,131	9,090

Table 15-25 Delivery route link capacity and % of link capacity by construction delivery day

Link	Link capacity (Level of Service D)	Construction delivery day				
		Background traffic	Concrete foundation pours	Site preparation and general construction	Turbine component deliveries – abnormal loads	Turbine component deliveries – standard HGVs
1 – N52 between Tullamore and Kilbeggan	11,600	154%	158%	160%	155%	155%
2 – N52 southwest of Tullamore	8,600	108%	114%	116%	110%	109%
3 – N52 between Birr and Kilcormac	8,600	57%	62%	65%	58%	58%
4 – N62 south of Ferbane	8,600	103%	108%	110%	104%	103%
5 – R436 east of Ferbane	5,000	82%	91%	95%	84%	83%
6 – N62 north of Ferbane	8,600	105%	110%	112%	106%	106%

15.1.6.3 Effect on Link Flows – During Operation

Once the Proposed Project is operational it is estimated that there will be 1-2 staff members accessing the site each day via Site Entrance 1 on the N62, Site Entrance 3 on the R436 and Site Entrance 4 on the L7002 with a similar number of vehicle trips. In addition, there will be a low level of amenity/recreational trips travelling to the site (approx. 20 per day in total) by car or LGV cumulatively via Site Entrance 1 on the N62, Site Entrance 2 on the R436, and Site Entrance 4 on the L7002). It is considered that the magnitude of the traffic impact during this phase will be imperceptible.

15.1.6.4 Effect on Junctions – During Construction

The junction most affected on the identified delivery routes will be the junction at Site Entrance 1 on the N62 which will provide for deliveries made by abnormally sized loads during nighttime hours and standard HGVs during the day. For this reason, a detailed junction capacity test was undertaken for this junction, as discussed below.

Junction capacity tests were undertaken using the industry standard junction simulation software PICADY, which permits the capacity of any junction to be assessed with respect to existing or forecast traffic movements and volumes for a given time period. The capacity for each movement possible 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, in accordance with TII requirements.
- Delay – Output in minutes, this gives an indication of the forecast average delay during the time period modelled for each movement.

15.1.6.4.1 *Scenarios Modelled*

The greatest effect in terms of traffic will be experienced during peak hours when, during peak construction periods, approximately 70 workers (35 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 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 during 10-hour days.

15.1.6.4.2 *N62 / Site Entrance 1 Junction Capacity Test Results*

The AM and PM peak hour traffic flows for the base year 2024 and the proposed construction year of 2030 are shown in Figures 15-5a and 15-5b respectively. The additional traffic movements that are forecast to be generated by construction workers are shown in Figure 15-5c, while the maximum HGV movements and PCUs that may be generated in one hour are shown in Figures 15-5d and 15-5e respectively. The resulting peak hour traffic movements for the with construction scenario in 2030 are shown in Figure 15-5f.

The results of the junction capacity tests are shown in Table 15-26 and show that with all construction staff traffic and the maximum volume of HGVs accessing and exiting the site during the AM and PM peak hours will result in the following:

- A maximum ratio of flow to capacity (RFC) of 8.4% is forecast during the AM peak hour, which will apply to the right turn from the N62 into the Proposed Wind Farm. For this movement no queuing (maximum 0.16 PCUs) and minimal delays (maximum 0.08 minutes, or 5 seconds) are forecast.
- During the PM peak hour a maximum ratio of flow to capacity (RFC) of 9.1% is forecast, which is forecast to apply to the right turn out of the Proposed Wind Farm onto the N62. For this movement no queuing (maximum 0.10 PCUs) and relatively minor delays (maximum 0.19 minutes, or 12 seconds) are forecast.

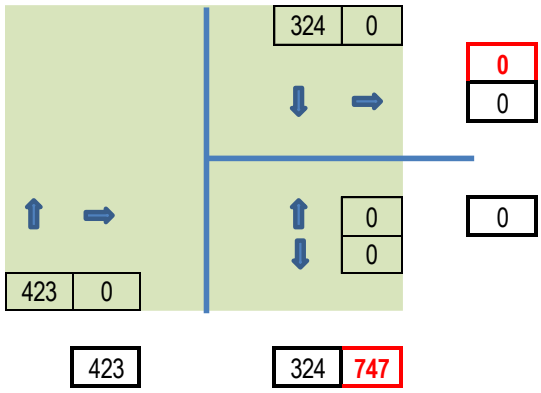
The assessment shows that the junction is forecast to operate well within the acceptable limit of 85% as specified by TII in the Traffic and Transport Assessment Guidelines (May 2014).

Table 15-26 Junction capacity test results, N62 / Proposed Wind Farm access junction (Site Entrance 1), AM and PM peak hours, with all construction traffic, by time period, year 2030.

Movement	AM peak hour			PM peak hour		
	RFC	Queue (vehicles)	Delay (minutes)	RFC	Queue (vehicles)	Delay (minutes)
Right turn from wind farm	3.3%	0.03	0.19	9.1%	0.10	0.19
Left turn from wind farm	2.0%	0.02	0.11	5.6%	0.06	0.12
Right turn from N62	8.4%	0.16	0.08	2.9%	0.04	0.08

15.1.6.4.3 *Effect on Junctions – During Operation*

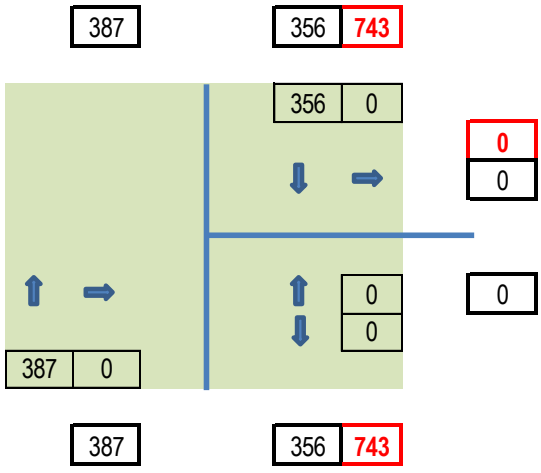
As discussed in Section 15.1.6.3 it is forecast that once operational, the Proposed Wind Farm is expected to generate 1 to 2 trips per day for maintenance purposes through Site Entrances 1, 3 and 4, and for a low number of amenity/recreational trips (approx. 20 LGVs per day cumulatively) through entrances 1, 3 and 5. It is therefore concluded that the Proposed Wind Farm will have an imperceptible effect on the local network once constructed.



Observed traffic flows
Tuesday 26th November 2024
AM peak hour (08:00 - 09:00)
All flows in pcus

N62 south

N62 / site access junction



Observed traffic flows
Tuesday 26th November 2024
PM peak hour (17:00 - 18:00)
All flows in pcus

N62 south

N62 / site access junction

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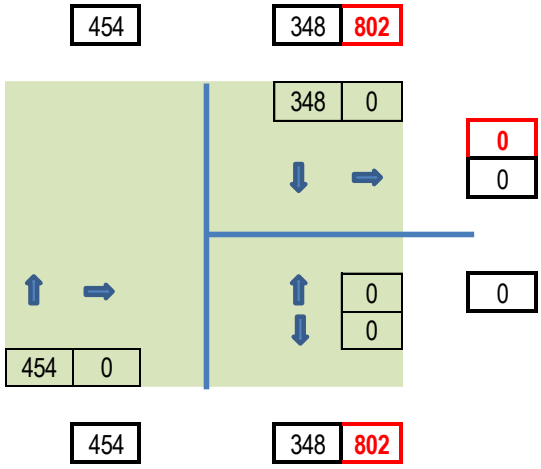
Figure 15-5a Observed traffic flows, N62 / site access junction
Year 2024 - pcus



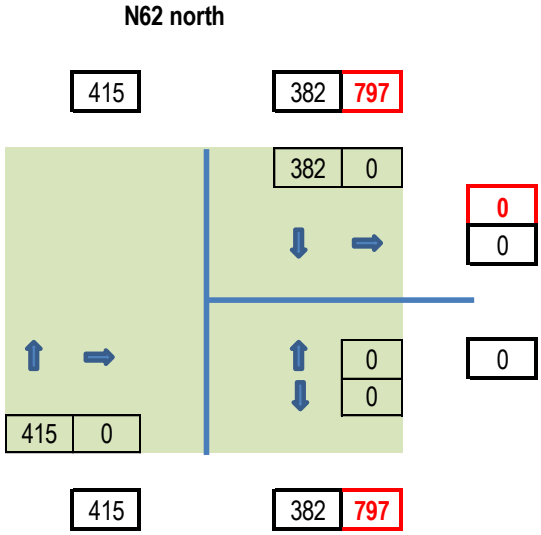


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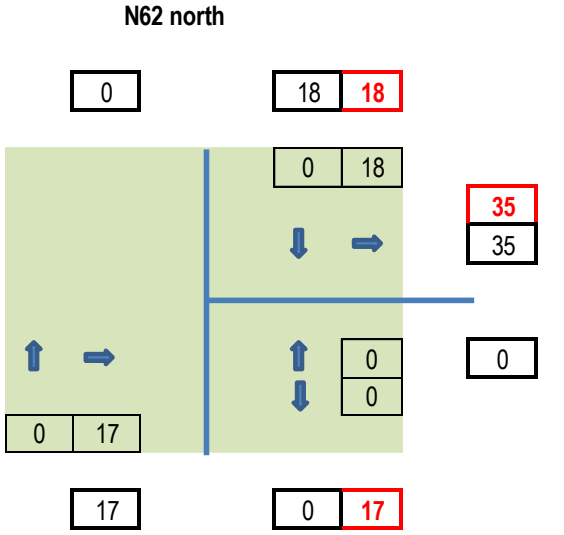
Figure 15-5b Background traffic flows, N62 / site access junction
Year 2030 - pcus



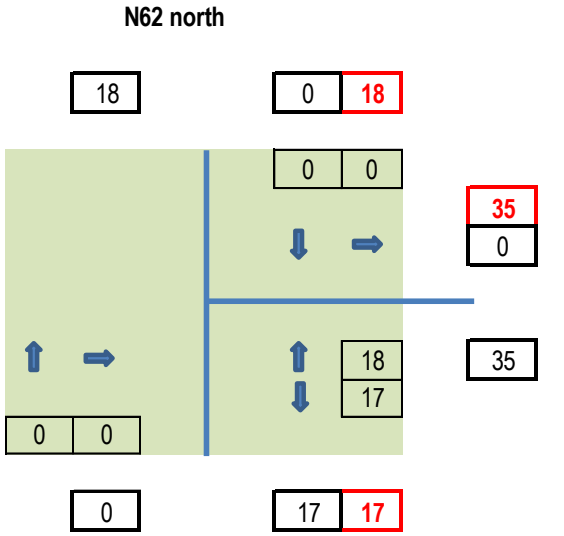


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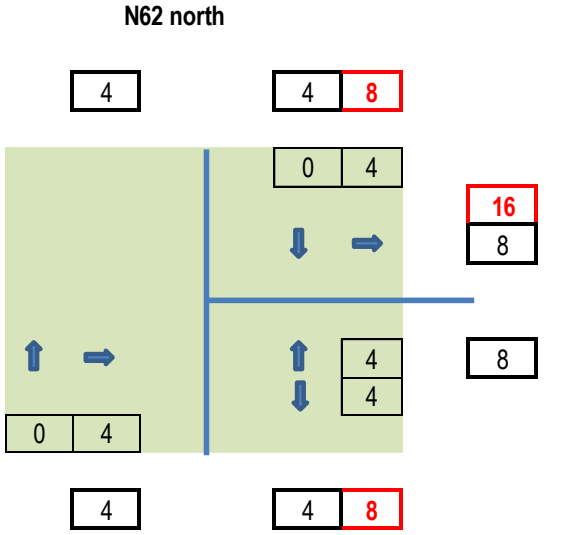
Figure 15-5c Construction staff traffic flows, N62 / site access junction

pcus



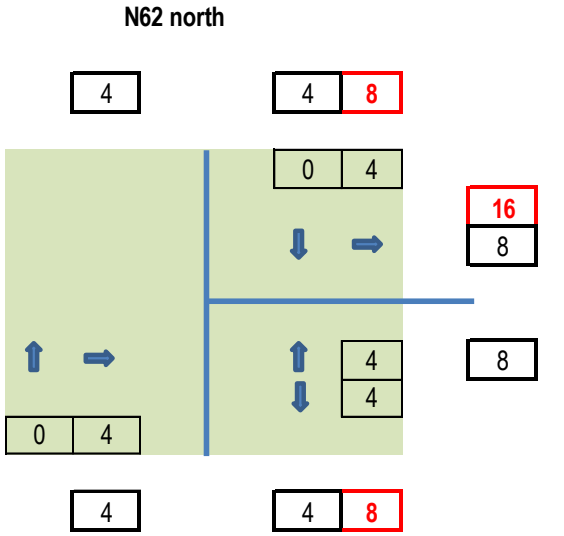


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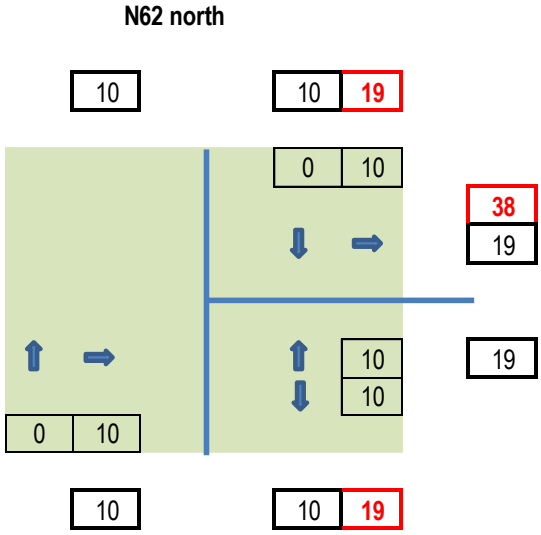
Figure 15-5d Foundation concrete load, N62 / site access junction
HGVs



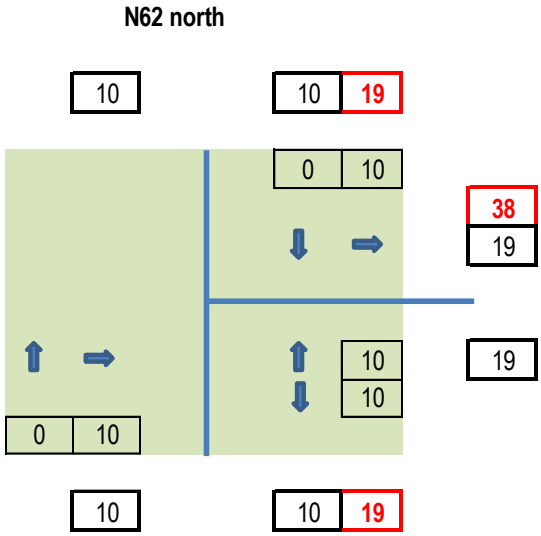


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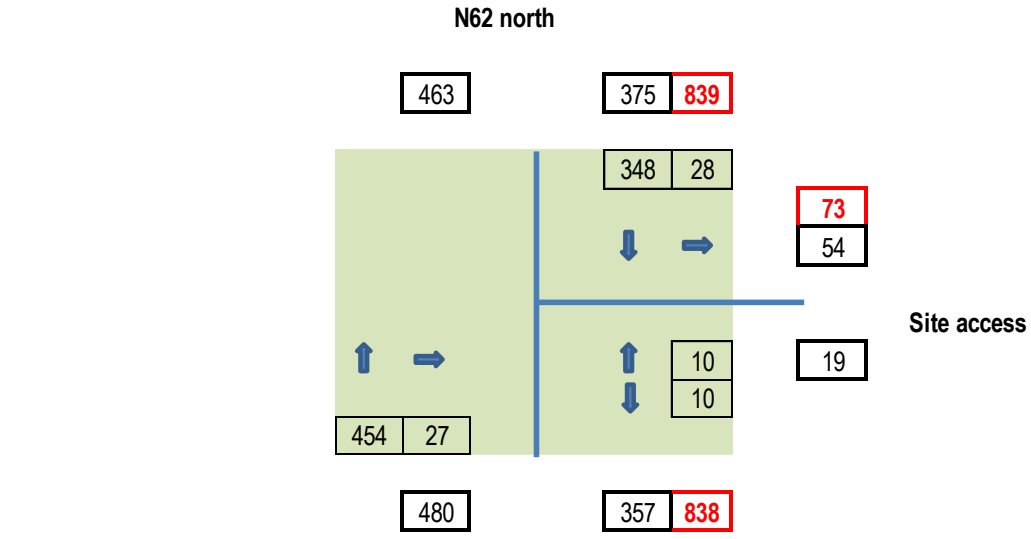
Figure 15-5e Foundation concrete load, N62 / site access junction
pcus



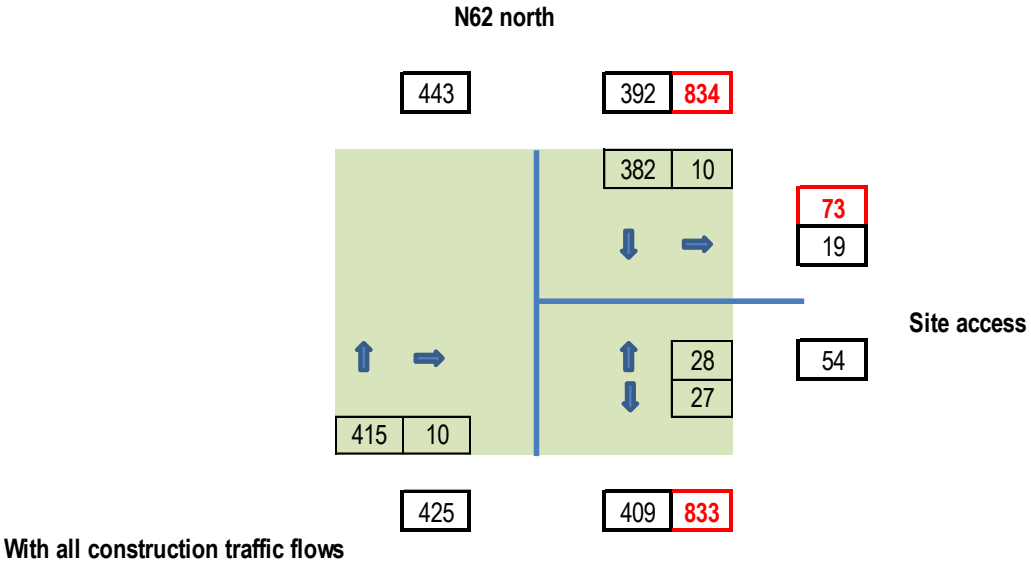


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Figure 15-5f With all construction traffic flows, N62 / site access junction
Year 2030 - pcus

15.1.7 Effect on Network of the Proposed Grid Connection

A detailed description of the Proposed Grid Connection is provided in Section 4.4.2 of Chapter 4 of this EIAR.

15.1.8 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 at one location, 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.

15.1.9 Abnormal Load Route Assessment

Galway Port in Galway City is the proposed point of arrival for all proposed turbine infrastructure (i.e., turbine blades, turbine towers and other large wind turbine components). Galway 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 Galway Port and the Proposed Wind Farm. An autotrack assessment from Galway Port to the N6 Coonagh Roundabout located on the east side of Galway City 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 site from the exit slip of the M6 junction 5 onto the N52 and towards Site Entrance 1 on the N62, a swept path assessment was undertaken at the locations shown in Figure 15-2a. 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 76m blade and a 30m long tower section by Pell Frischmann, with their report included as Appendix 4-7 to the EIAR. All of the works that are required on the public road network are summarised from Pell Frischmann's Report. All measures will be temporary in nature and 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 40 nights spread over an 8-week period.

All drawing numbers referred to in the assessment summary below are included in Appendix 4-7. The locations discussed are as follows:

- Location 1 & 2 – M6 Slip Road / N52 Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK00)
- Location 1 & 2 – M6 Slip Road / N52 Roundabout – SG155 Blade & Tower - Temporary Measures (Dwg No. SK00A)
- Location 3 – Ardan Roundabout – SG155 Blade - Autotrack assessment (Dwg No. SK01)
- Location 3 – Ardan Roundabout – Tower - Autotrack assessment (Dwg No. SK01A)
- Locations 3 – Ardan Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK01B)
- Location 4 – Cappancur Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK02)
- Location 4 – Cappancur Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK02A)
- Location 5 – Cloncollog Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK03)
- Location 5 – Cloncollog Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK03A)
- Location 6 – Clonminch Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK04)
- Location 6 – Clonminch Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK04A)
- Location 7 – Distillery Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK05)
- Location 7 – Distillery Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK05A)
- Location 8 – Ballard Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK06)
- Location 8 – Ballard Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK06A)
- Location 9 – Charleville Roundabout – SG155 Blade - Autotrack assessment (Dwg No. SK07)
- Location 9 – Charleville Roundabout – Tower - Autotrack assessment (Dwg No. SK07A)
- Locations 9 – Charleville Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK07B)
- Location 10 – Mucklagh Roundabout – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK08)
- Location 10 – Mucklagh Roundabout – SG155 Blade & Tower – Temporary Measures (Dwg No. SK08A)
- Location 11 – N52 Kilcormac – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK09)
- Location 11 – N52 Kilcormac – SG155 Blade & Tower – Temporary Measures (Dwg No. SK09A)
- Location 12a – N52 / N62 junction – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK10)
- Location 12a – N52 / N62 junction – SG155 Blade & Tower – Temporary Measures (Dwg No. SK10A)
- Location 12b – N62 north of N52 / N62 junction – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK11)

- Location 12b – N62 north of N52 / N62 junction – SG155 Blade & Tower – Temporary Measures (Dwg No. SK11A)
- Location 13 – N62 south of BnM Briquette Factory – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK12)
- Location 13 – N62 south of BnM Briquette Factory – SG155 Blade & Tower – Temporary Measures (Dwg No. SK12A)
- Location 14 – Briquette Factory – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK14)
- Location 15 – N62 Cloghan – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK15)
- Location 15 – N62 Cloghan – SG155 Blade & Tower – Temporary Measures (Dwg No. SK15A)
- Location 16 – N62 Ferbane (a) – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK16)
- Location 16 – N62 Ferbane (a) – SG155 Blade & Tower – Temporary Measures (Dwg No. SK16A)
- Location 17 – N62 Ferbane (b) – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK17)
- Location 17 – N62 Ferbane (b) – SG155 Blade & Tower – Temporary Measures (Dwg No. SK17A)
- Location 18 – N62 Ferbane (c) – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK18)
- Location 18 – N62 Ferbane (c) – SG155 Blade & Tower – Temporary Measures (Dwg No. SK18A)
- Location 19 – N62 Proposed Site Entrance – SG155 Blade & Tower - Autotrack Assessment (Dwg No. SK19)
- Location 19 – N62 Proposed Site Entrance – SG155 Blade & Tower – Temporary Measures (Dwg No. SK19A)

Location 1 & 2 – M6 Slip Road / N52 Roundabout

Drawing Nos SK00 and SK00A

The abnormally sized loads will undertake a contraflow flow movement through the first roundabout and continued south through the centre island of the southern roundabout.

A temporary load bearing surface will be required on the southern verge of the entry arm of the first roundabout in order to provide for an over-run area. The existing over-run area at the southern roundabout will require to be extended in order to accommodate the abnormally sized loads driving south through the roundabout. Temporary removal of traffic signs, lighting columns will also be required at both roundabouts.

Location 3 – Ardan Roundabout

Drawing Nos SK01, SK01A and SK01B

The autotrack assessment shows that the blade will oversail the eastern verge on the approach to the roundabout and will overrun and oversail the roundabout centre island where the existing load bearing surface should be utilised and extended. The temporary removal of traffic signs will be required at this location.

Location 4 – Cappancur Roundabout

Drawing Nos SK02 and SK02A

The abnormally sized loads will require to travel contraflow through this roundabout. The autotrack assessment shows that over-run and oversail of the roundabout centre island will be required at this location with the over-run area requiring to be lowered to existing carriageway level.

Location 5 – Cloncollog Roundabout

Drawing Nos SK03 and SK03A

Again, the abnormally sized loads will require to travel contraflow through this roundabout. The autotrack assessment shows that over-run and oversail of the roundabout centre island will be required at this location with the over-run area requiring to be lowered to existing carriageway level. The temporary removal of 2 traffic signs will be required at this location.

Location 6 – Clonminch Roundabout

Drawing Nos SK04 and SK04A

The autotrack assessment shows that the blade will oversail the southern verge when accessing the roundabout. Oversail and overrun of the central island will be required and a temporary load bearing surface, lowered to existing carriageway levels will require to be provided at this location. Vegetation will also require to be trimmed / removed. On exiting the roundabout, a temporary load bearing overrun area will be required on the southern verge. The temporary removal of 2 traffic signs will be required at this location.

Location 7 – Distillery Roundabout

Drawing Nos SK05 and SK05A

The autotrack assessment shows that the blade will oversail the southern verge when accessing the roundabout. Oversail and overrun of the central island will be required and a temporary load bearing surface, will require to be provided extended at this location. The temporary removal of 2 traffic signs will be required at this location.

Location 8 – Ballard Roundabout

Drawing Nos SK06 and SK06A

The autotrack assessment shows that the blade will oversail the safety barrier on southern verge when accessing the roundabout. Oversail and overrun of the central island will be required and the existing overrun area will be required to be extended at this location. The temporary removal of 2 traffic signs will be required at this location. On exiting the roundabout a temporary load bearing overrun area will be required on the southern verge. The temporary removal of 2 traffic signs will be required at this location. The blade will overhang/oversail both verges when exiting the roundabout where 1 traffic sign and 2 bollards will require to be temporarily removed.

Location 9 – Charleville Roundabout

Collett Drawing Nos SK07, SK07A and SK07B

The autotrack assessment shows that the blade will oversail the southern verge of when accessing the roundabout with the temporary removal of 2 traffic signs required. Oversail and overrun of the central island will be required and a temporary load bearing surface will require to be provided at this location. On exiting the roundabout the blade will oversail the southern verge although no further works will be required.

Location 10 – Mucklagh Roundabout

Drawing Nos SK08 and SK08A

The autotrack assessment shows that the blade will oversail the southern verge of when accessing the roundabout although no works will be required. Oversail and overrun of the central island will be required and a temporary load bearing surface lowered to the level of the existing road, will require to be provided at this location. On exiting the roundabout the blade will oversail the southern verge although no further works will be required.

Location 11 – N52 Kilcormac

Drawing Nos SK09 and SK09A

While oversail of the blade will be required, there will be no works required on this section of the N52. Local parking restrictions will be required on the nights that the abnormally sized loads are delivered to site.

Location 12 – N52 / N62 and N62 north of junction

Drawing Nos SK10, SK10A, SK11 and SK11A

The swept path assessment indicates that loads will oversail the verge of the bypass track where two trees should be removed. Loads will oversail both verges of the N62 on exit from the junction and through the following right bend.

Location 13 – N62 south of BnM Briquette Factory

Drawing Nos SK12 and SK12A

The autotrack assessment shows that all abnormally sized vehicles will be accommodated at this location.

Location 14 – N62 Briquette Factory

Drawing No SK14

The autotrack assessment shows that all abnormally sized vehicles will be accommodated at this location.

Location 15 – N62 Cloghan

Drawing Nos SK15 and SK15A
The swept path assessment indicates that loads will oversail the western footway on approach to the junction where two road signs and one lighting column should be removed. Loads will overrun and oversail the footway on the inside of the turn where a load bearing surface should be laid and one road sign and the traffic bollards should be removed. Loads will overrun and oversail the northwestern

footway where a load bearing surface should be laid and two road signs and one lighting column should be removed. It is noted that clearances are highly constrained at this location.

Locations 16, 17 & 18 – N62 Ferbane

Drawing Nos SK16, SK16A, SK17, SK17A, SK18 and SK18A

Location 16 – The autotrack assessment indicated that the blade will overhang the inside (west) verge, while no works are required.

Location 17 – The autotrack assessment indicated that the blade will oversail the western verge where parking should be suspended on delivery nights and one road sign should be removed. The blade will overhang into the bus stop area on the eastern side of the road and its use should be suspended, or that the deliveries are made during nighttime hours, as proposed.

Location 18 – The autotrack assessment indicated that the blade will overhang / oversail footpaths on both sides of the road and 1 traffic sign will require to be removed temporarily.

15.1.10 Proposed Wind Farm Access Junctions

TDR Location 19 – Site Entrance 1 on N62 – TDR, general construction, maintenance and amenity access

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 amenity trips once the Proposed Project is operational.

The proposed junction layout is shown in Figure 15-6a. 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 to the south of the proposed access road on the east side of the N62 in order to facilitate the delivery of the abnormally sized turbine loads. This area will require to be surfaced to accommodate the wheels of the abnormally sized loads. Additional areas to the north and south of the access road will require to be cleared to facilitate overhang of the turbine blade transport vehicles. On completion of the delivery of the abnormally sized loads the temporary run-over areas will be closed off to traffic with the junction layout reduced in size to the standard junction layout described above.

With a speed limit of 100 km/h the required visibility splays in accordance with TII DN-GEO-03060 are 215 taken from a setback of 3m. These splays are shown to be available in both directions as illustrated in Figure 15-6b. Forward visibility from 215m is also shown to be available in both directions, enabling general traffic approaching from both directions to observe a vehicle turning right into Site Entrance 1.

The autotrack assessment shown in Figures 15-6c and 15-6d demonstrates that the proposed access junction off the N62 will accommodate the turning requirements of the blade and tower transport vehicles. Similarly, the autotrack assessment set out in Figure 15-6e demonstrates that the reduced junction layout proposed for the general construction stage will accommodate a large articulated HGV.

Site Entrance 2 on R436 – general construction, maintenance and amenity access

During the construction phase it is proposed that this junction will provide for general construction traffic and may also be used as a staff car access. Once the Proposed Project is operational it is proposed that this access will provide for maintenance and amenity trips.

The junction layout for Site Entrance 2 is shown in Figure 15-7a and has junction radii of 13m with 1:10 tapers to provide for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual.

Visibility splay requirements are set out in DMS-97 of Chapter 13 Development Management Standards of Offaly County Development Plan 2021 – 2027, which requires visibility splays of 150m for regional roads measured from a setback of 2.4m. For the 80 km/h speed limit the corresponding visibility splay requirements set out in TII DN-GEO-03060 are 160m taken from a setback of 3m. As relatively high speeds were observed at this location during a site visit it is proposed that the more conservative visibility splays of 160m x 3m are provided, as set out in Figure 15-7b. The autotrack assessment set out in Figure 15-7c demonstrates that the proposed junction layout will accommodate the large articulated HGVs requiring access during the construction phase.

Site Entrance 3 on north side of L7002 – Onsite 220kV Substation construction and maintenance

It is proposed that Site Entrance 3 located on the northern side of the L7002 will be used during the construction stage for deliveries and staff trips for the proposed on-site substation only. Similarly, once the Proposed Project is operational, this access will be used only for occasional maintenance trips to and from the substation by ESB/EirGrid. This access will be gated and closed at all other times.

The proposed junction layout shown in Figure 15-8a has junction radii of 13m with 1:10 tapers to provide for standard HGV access in accordance with TII DN-GEO-03060. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual.

The L7002 is a local secondary road and the visibility splay requirements for this type of road as set out in DMS-97 of Chapter 13 Development Management Standards of Offaly County Development Plan 2021 – 2027, are for splays of 90m taken from a setback of 2.4m. It is noted that the requirement for a local primary road is for visibility splays of 120m. Due to the straight alignment of the L7002 at this location it is proposed that the increased visibility splays of 120m taken from a setback of 2.4m are provided, as shown in Figure 15-8b.

The autotrack assessment set out in Figure 15-8c demonstrates that the proposed junction layout will accommodate the large articulated HGVs requiring access during the construction phase.

Site Entrance 4 on south side of L7002 – closed during construction, to be used as maintenance and amenity access once operational only

This access will be closed during the construction stage of the Proposed Project and will only be opened once the Proposed Wind Farm is operational and will be used for the purpose of amenity access only.

The proposed junction layout shown in Figure 15-8a has junction radii of 9m to provide for LGV and car trips. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual.

As for Site Entrance 4, detailed above, it is proposed that the increased visibility splays of 120m taken from a setback of 2.4m are provided at this junction, as shown in Figure 15-8b.

Site Entrance 5 on south side of L7001 – construction of Proposed Grid Connection, closed during operational stage

The purpose of this temporary access is to provide for a limited number of deliveries during the construction stage for the purpose of erecting 2 no. new steel masts and associated infrastructure to facilitate the line break of the existing Shannonbridge-Maynooth 220kV Overhead Line (OHL).

It is noted that visibility splays are limited at this location due to the horizontal alignment of this section of the L7001 and it is therefore proposed that this access will be open only when accompanied by temporary traffic management measures, including temporary signage and the presence of flagmen. During construction this access will be gated and closed outside of periods when it is being managed and used for deliveries.

On completion of the works this access will continue to facilitate agricultural activities and will allow for occasional planned maintenance of this section of the OHL when accompanied by temporary traffic measures.

The proposed junction layout shown in Figure 15-9a and has a junction radius of 13m on the western corner to provide HGV access and egress. STOP road markings and signs are as per Figure 7.35 of the Traffic Signs Manual. The autotrack assessment set out in Figure 15-9b demonstrates that the proposed junction layout will accommodate a large articulated HGV.

SITE ENTRANCE 1

Proposed Use:

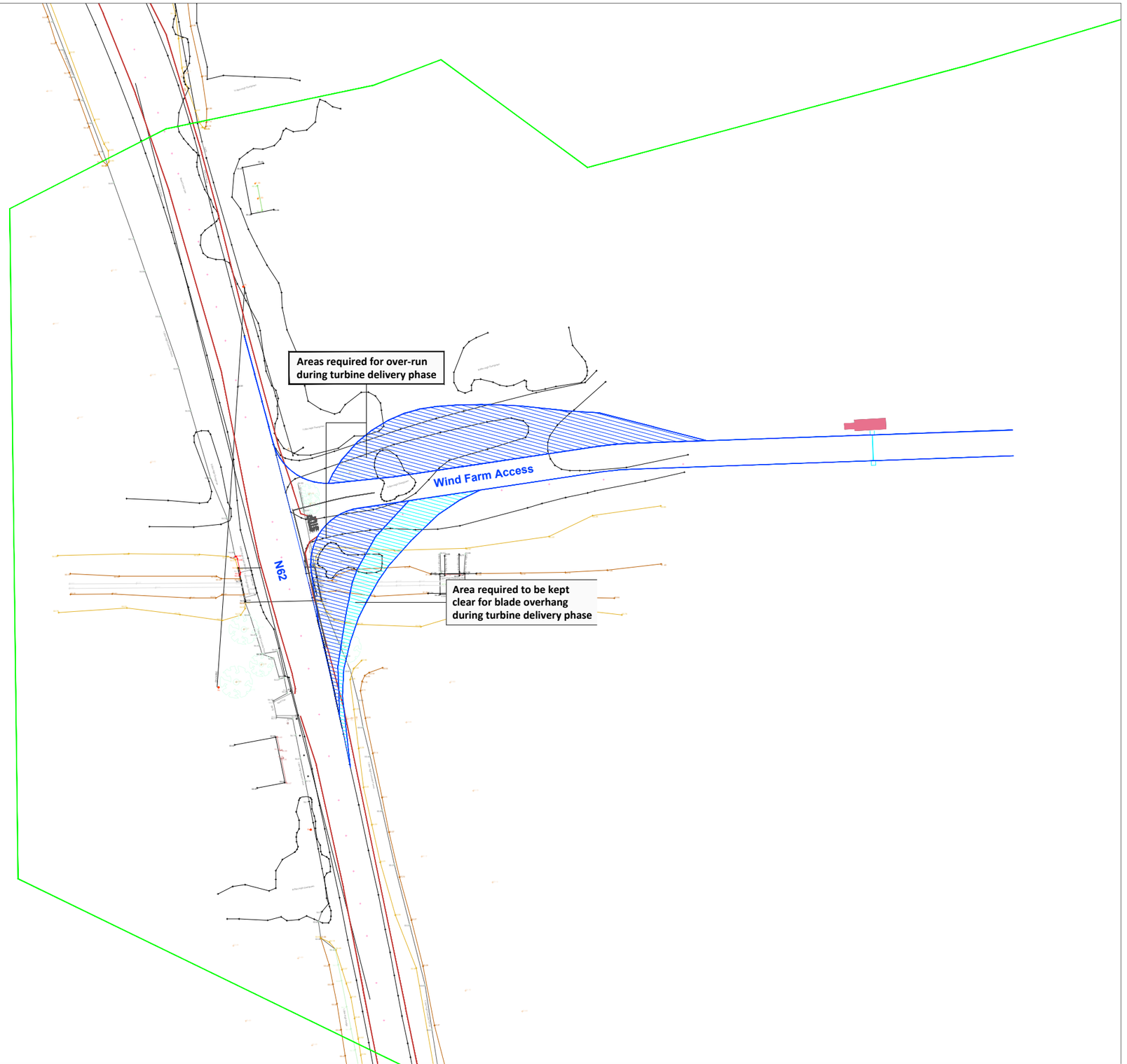
Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access

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 15-6a Site Entrance 1 - N62 / Wind Farm access junction, junction layout

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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SITE ENTRANCE 1

Proposed Use:

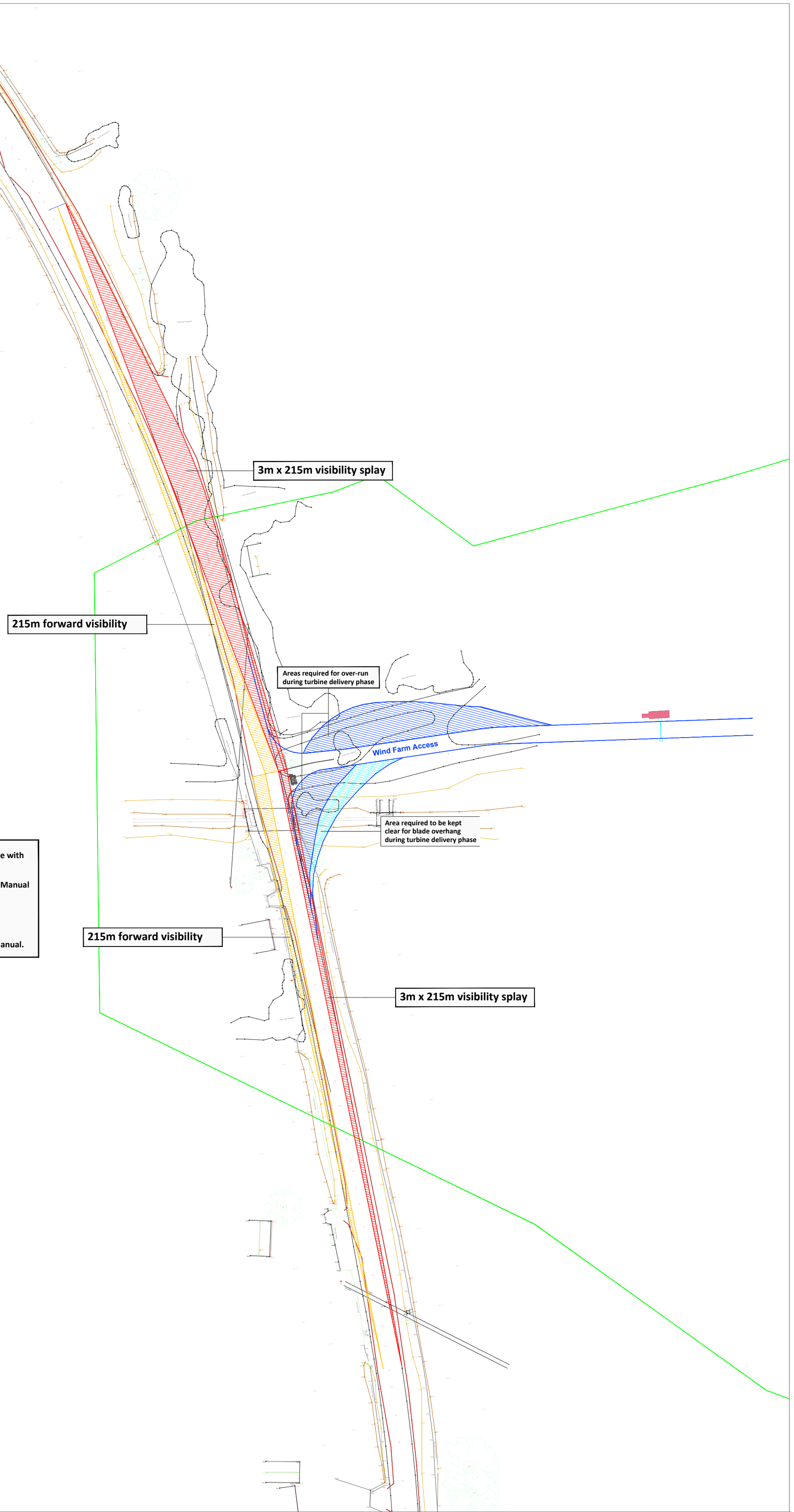
Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access

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

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

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

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



NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Figure 15-6b Site Entrance 1 - N62 / Wind Farm access junction, junction layout with visibility splays

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A2
PROJECT NO: 9320	DATE: 06.03.26	DRAWN BY:	AL

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SITE ENTRANCE 1

Proposed Use:

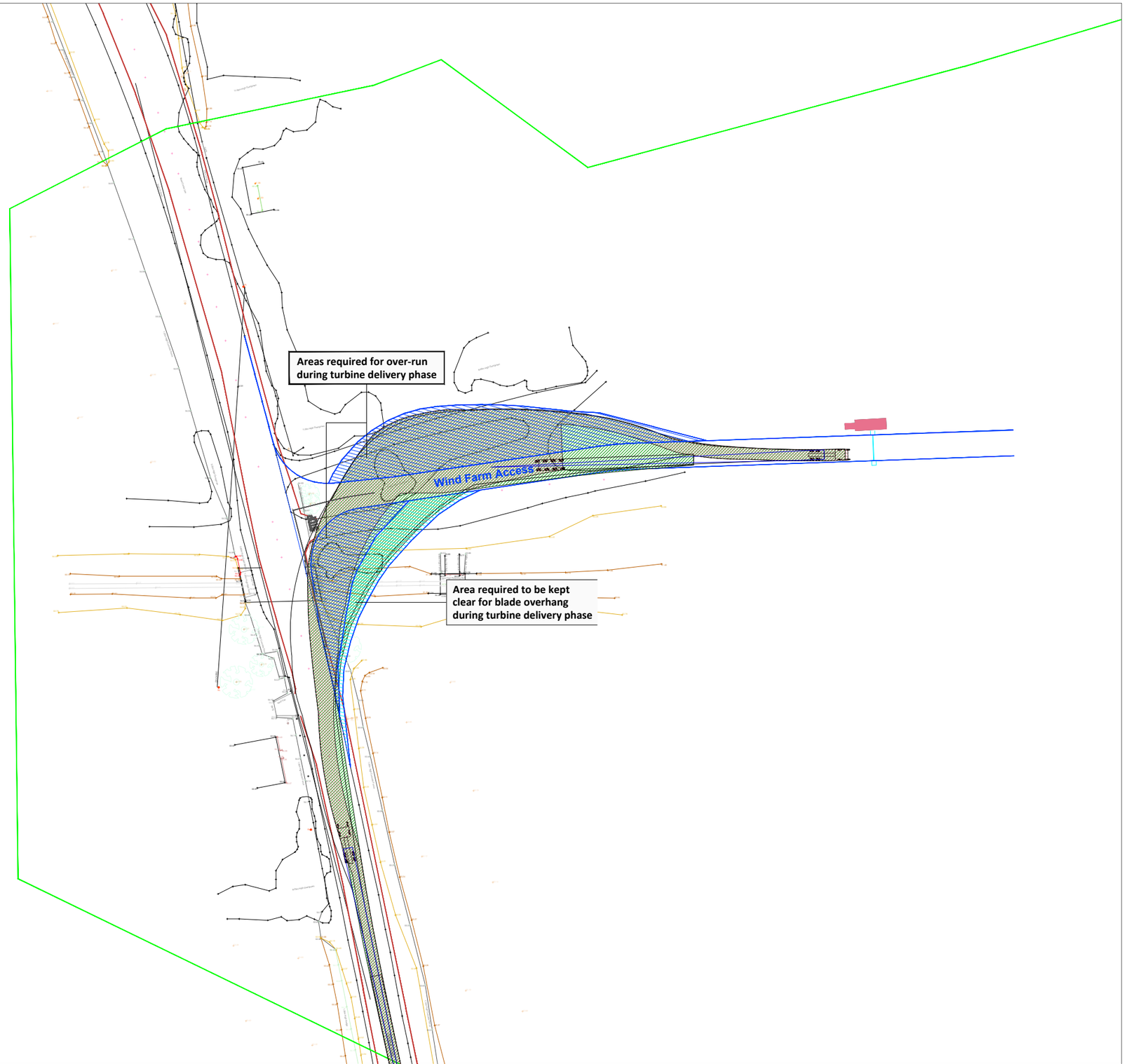
Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access

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 15-6c Site Entrance 1 - N62 / Wind Farm access junction, extended blade transporter

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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SITE ENTRANCE 1

Proposed Use:

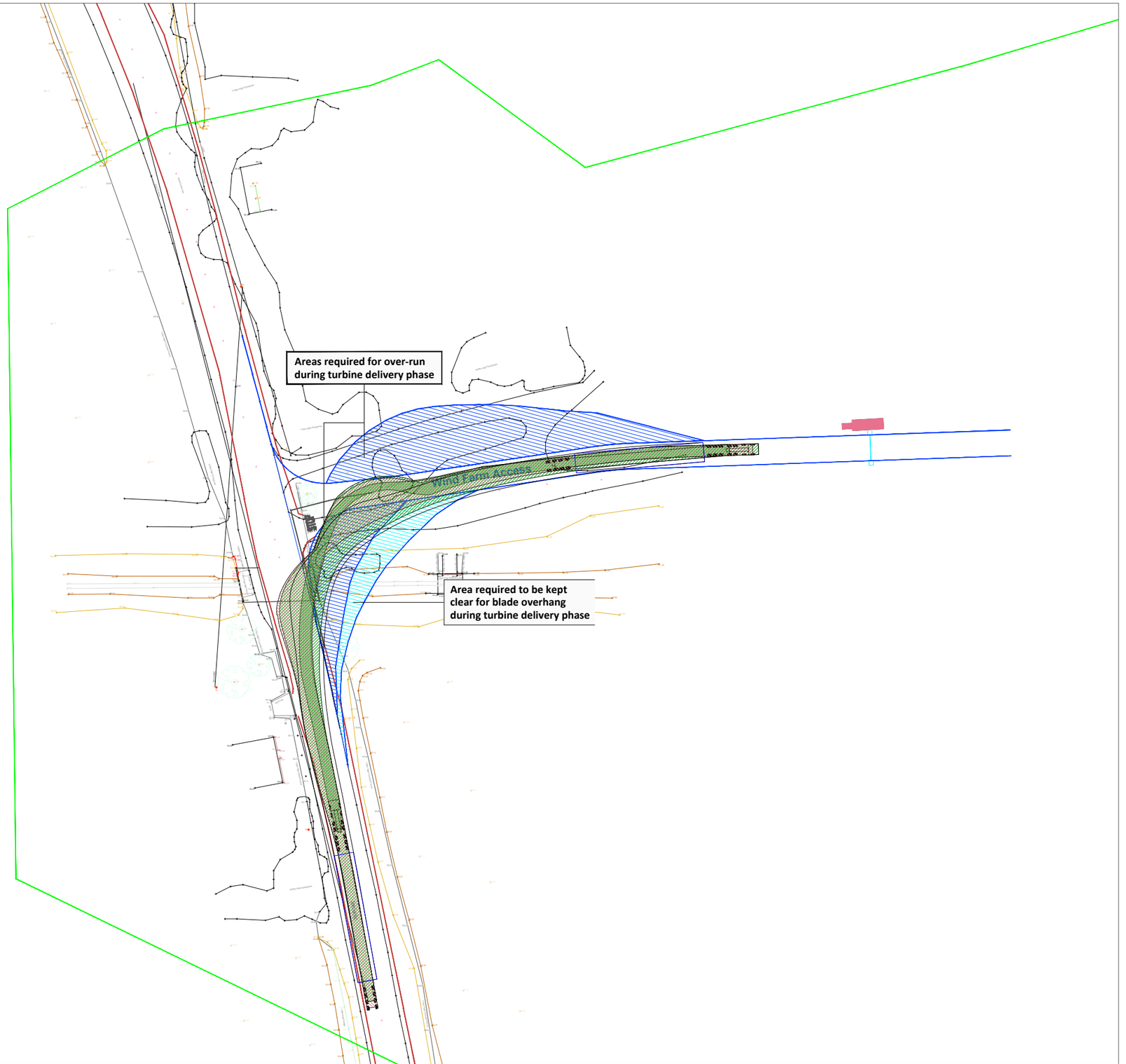
Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access

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 15-6d Site Entrance 1 - N62 / Wind Farm access junction, extended tower transporter

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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SITE ENTRANCE 1

Proposed Use:

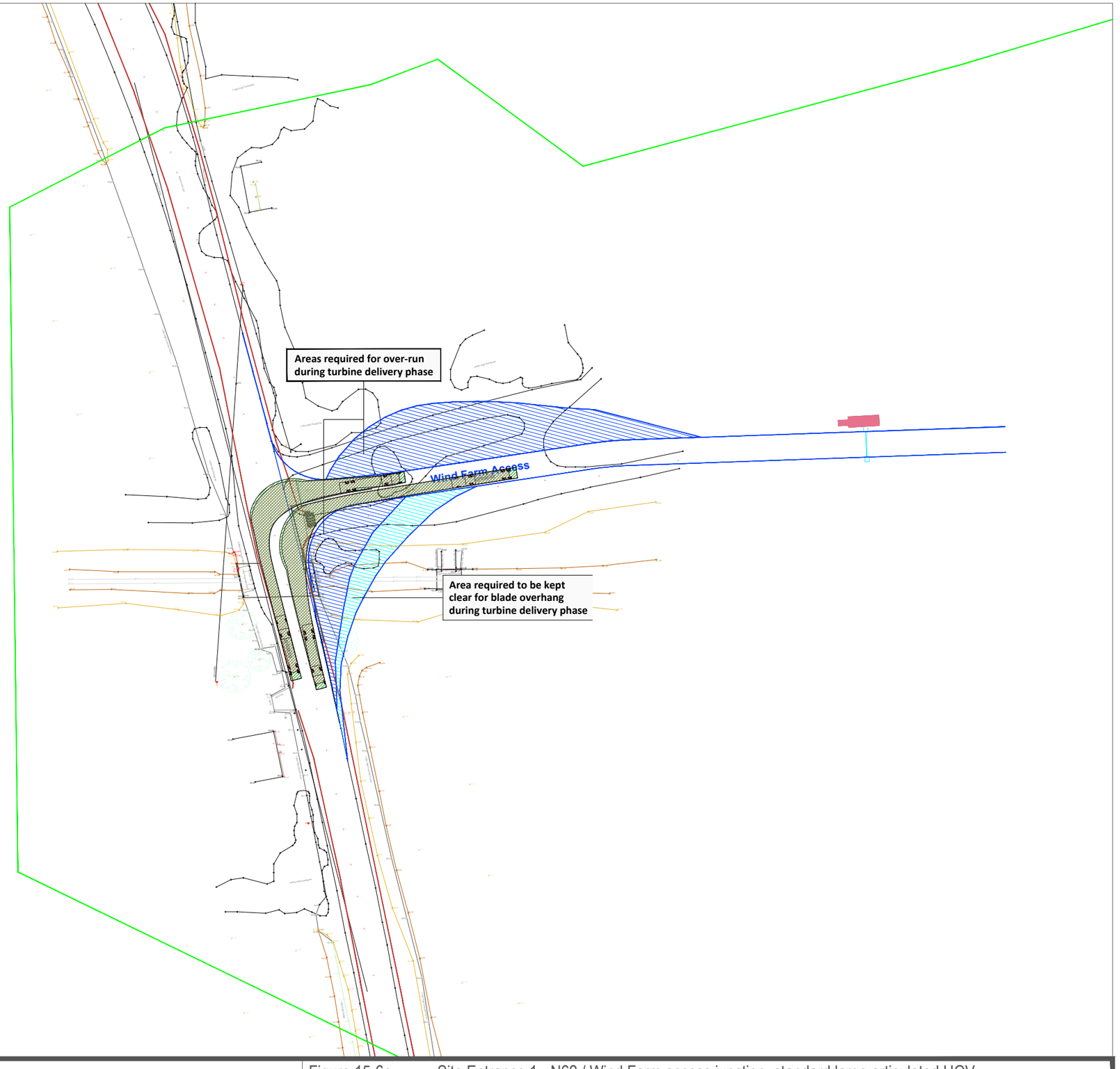
Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access

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 15-6e Site Entrance 1 - N62 / Wind Farm access junction, standard large articulated HGV

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 06.03.26	DRAWN BY:	AL

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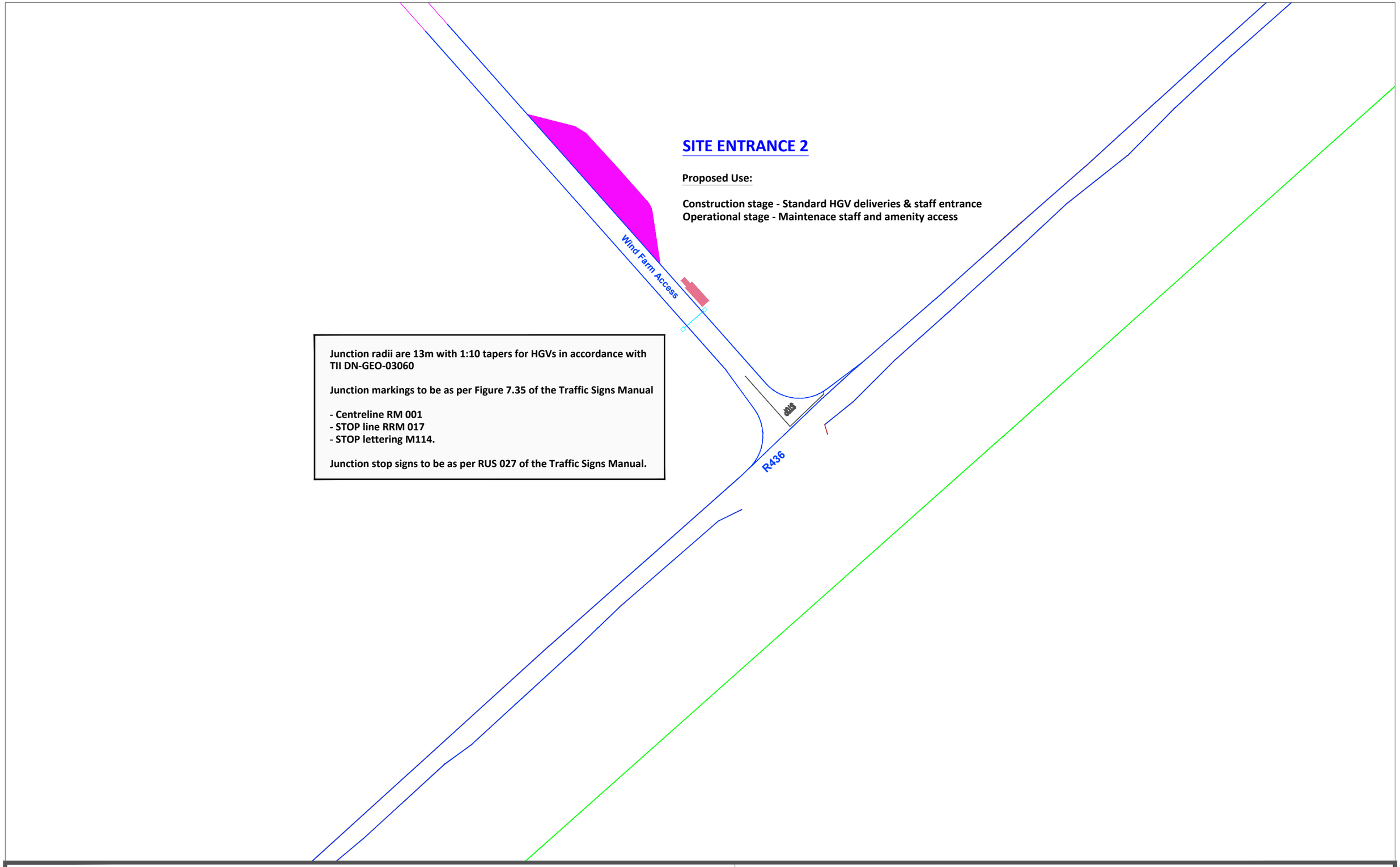


NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Base mapping provided by MKO

Figure 15-7a Site Entrance 2 - R436 / Wind Farm access junction, junction layout

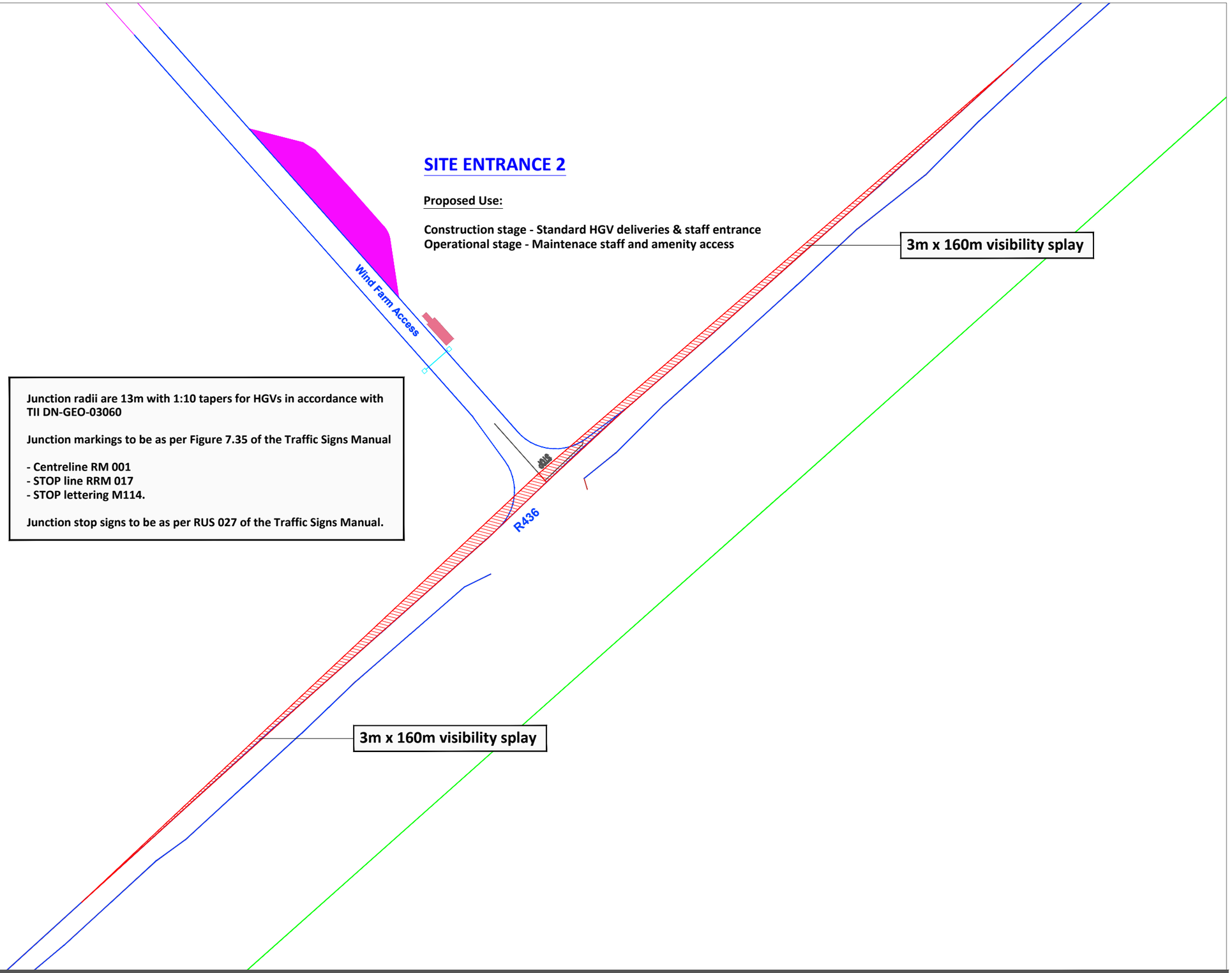
PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

SITE ENTRANCE 2

Proposed Use:

Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access



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 15-7b Site Entrance 2 - R436 / Wind Farm access junction, junction layout with visibility splays

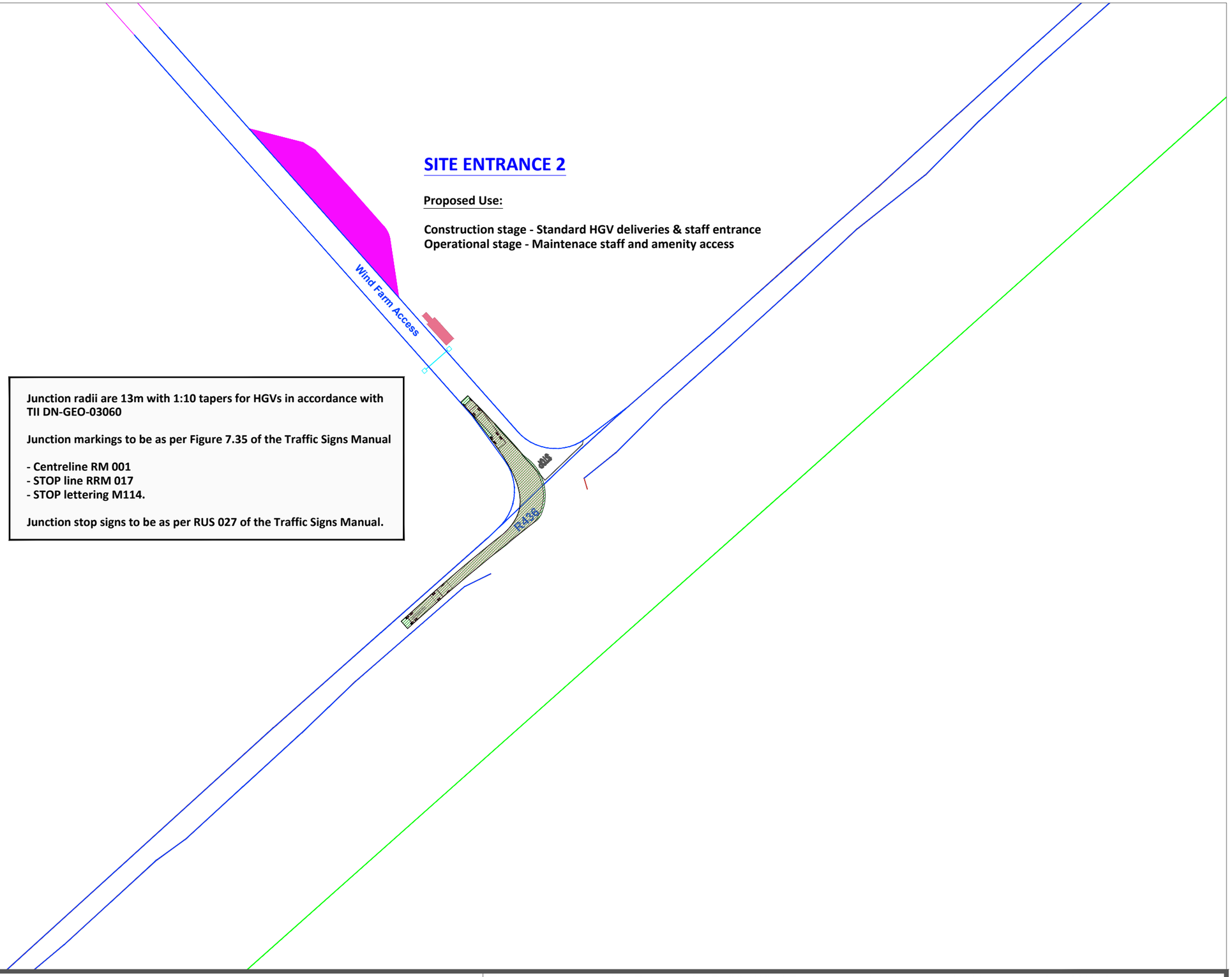
PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

SITE ENTRANCE 2

Proposed Use:

Construction stage - Standard HGV deliveries & staff entrance
Operational stage - Maintenace staff and amenity access



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.

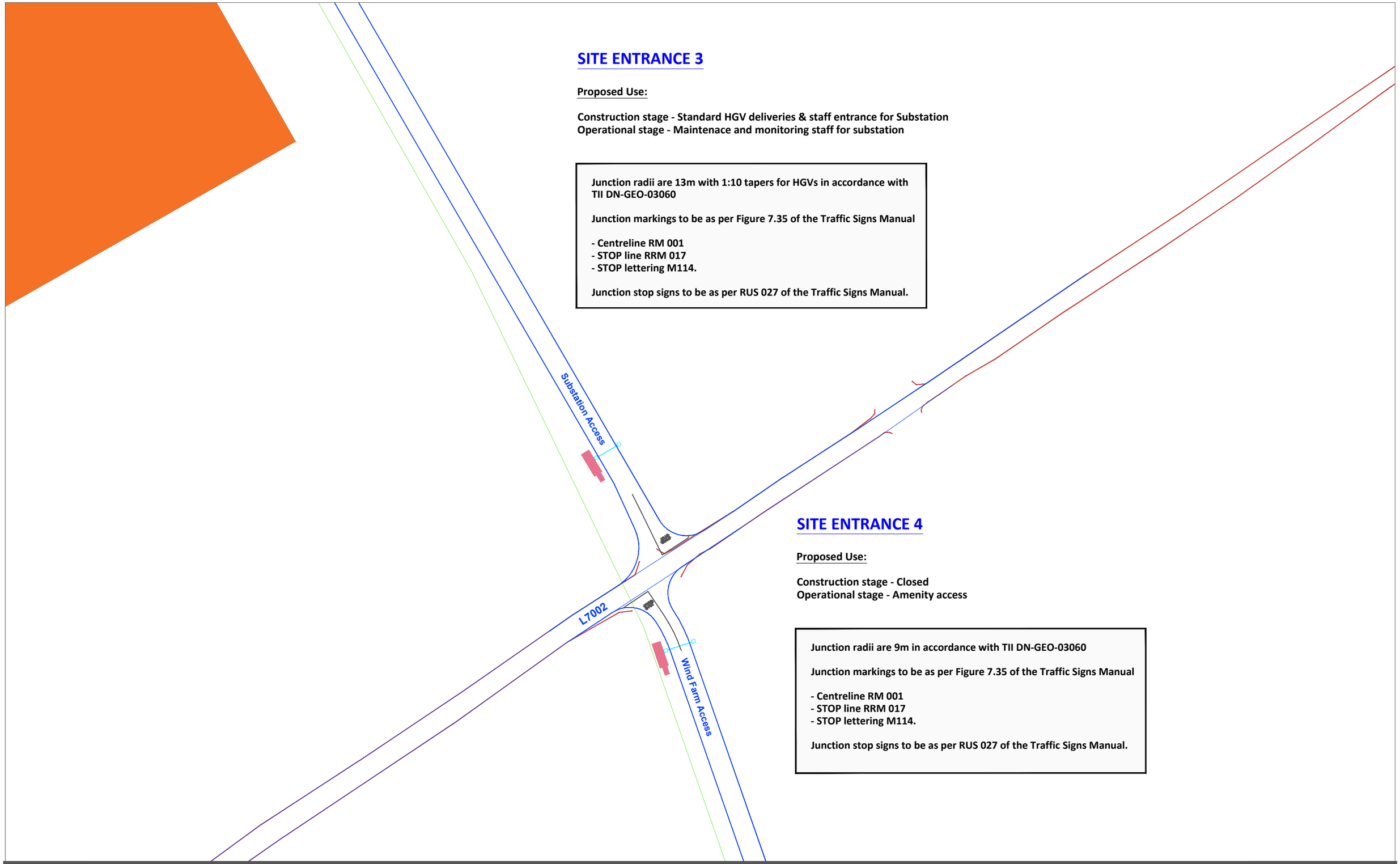
NOTES:

PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Base mapping provided by MKO

Figure 15-7c Site Entrance 2 - R436 / Wind Farm access junction, standard large articulated HGV

PROJECT: Lemanaghan Wind Farm			ALAN LIPSCOMBE TRAFFIC & TRANSPORT CONSULTANTS
CLIENT: Lemanaghan Wind Farm DAC		SCALE: 1:1000@A3	
PROJECT NO: 9080	DATE: 02.12.25	DRAWN BY: AL	



SITE ENTRANCE 3

Proposed Use:

Construction stage - Standard HGV deliveries & staff entrance for Substation
Operational stage - Maintenace and monitoring staff for substation

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 ENTRANCE 4

Proposed Use:

Construction stage - Closed
Operational stage - Amenity access

Junction radii are 9m 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 15-8a Site Entrance 3 - L7002 (north) / Substation access junction and Site Entrance 4 - L7002 (south) / Wind Farm access junction, junction layouts

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

SITE ENTRANCE 3

Proposed Use:

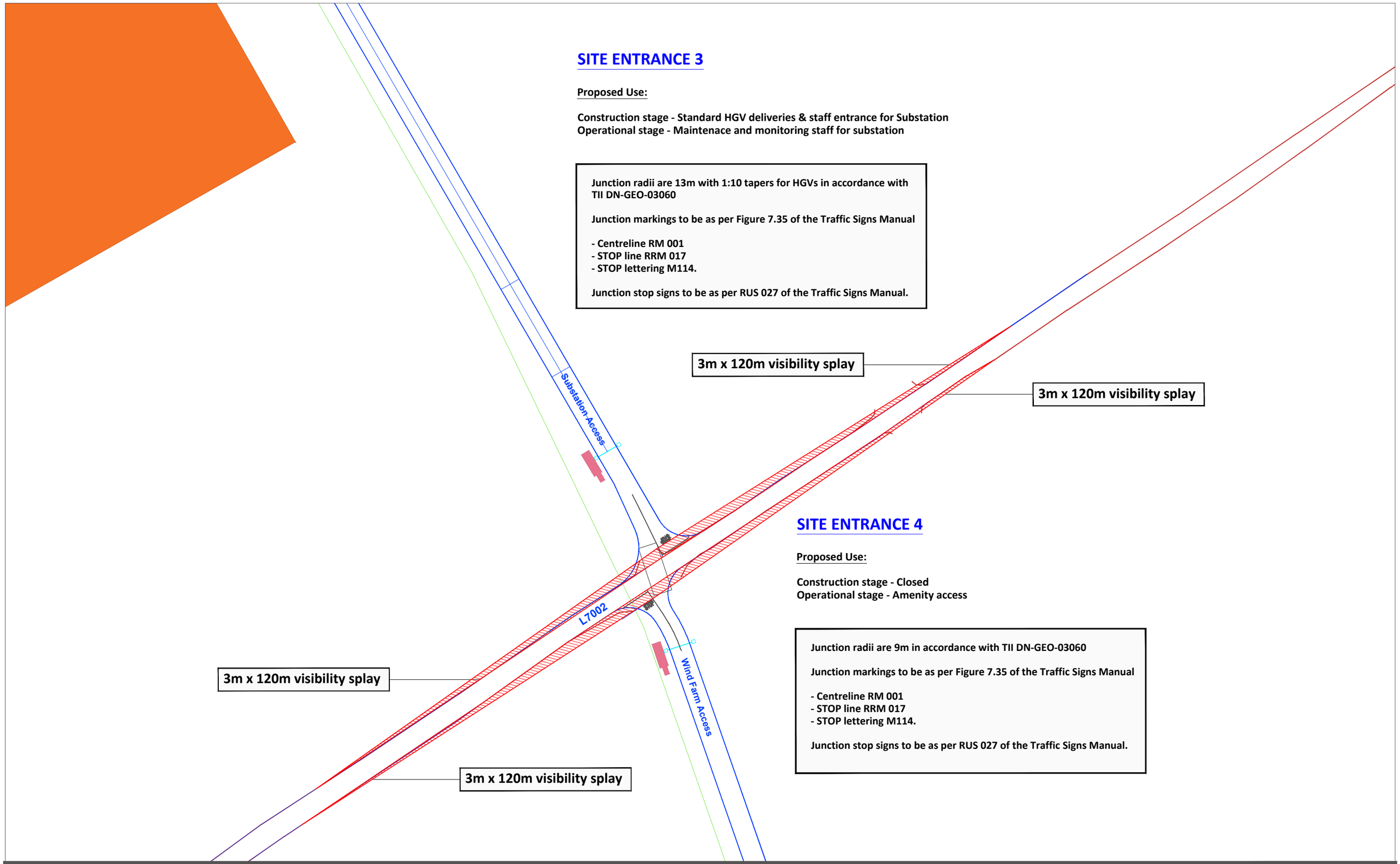
Construction stage - Standard HGV deliveries & staff entrance for Substation
Operational stage - Maintenace and monitoring staff for substation

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 ENTRANCE 4

Proposed Use:

Construction stage - Closed
Operational stage - Amenity access

Junction radii are 9m 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:

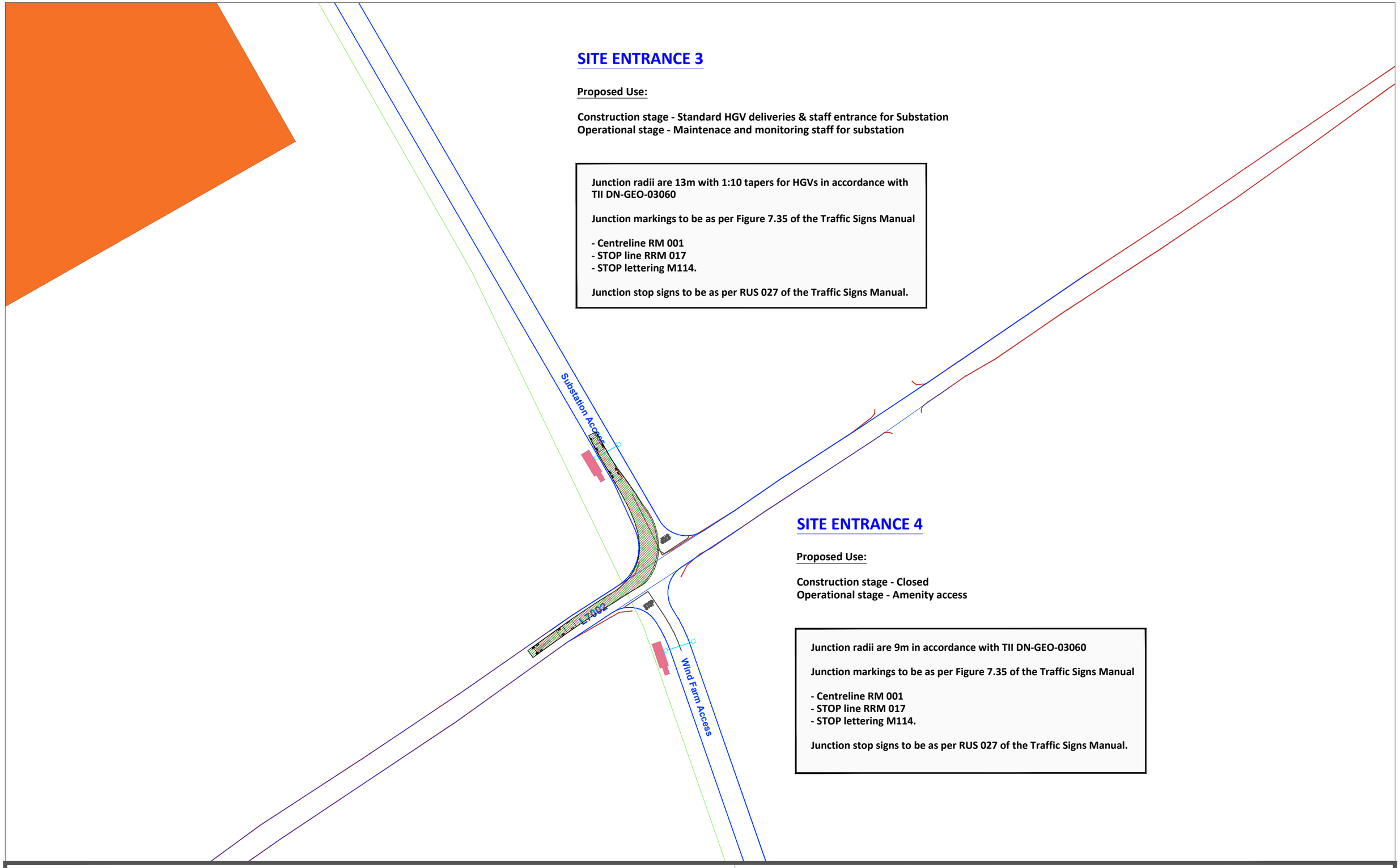
PLANNING DRAWING ONLY - NOT FOR CONSTRUCTION PURPOSES

Base mapping provided by MKO

Figure 15-8b Site Entrance 3 - L7002 (north) / Substation access junction and Site Entrance 4 - L7002 (south) / Wind Farm access junction, junction layout with visibility splays

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS



SITE ENTRANCE 3

Proposed Use:

Construction stage - Standard HGV deliveries & staff entrance for Substation
Operational stage - Maintenace and monitoring staff for substation

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 ENTRANCE 4

Proposed Use:

Construction stage - Closed
Operational stage - Amenity access

Junction radii are 9m 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 15-8c Site Entrance 3 - L7002 (north) / Substation access junction and Site Entrance 4 - L7002 (south) / Wind Farm access junction, standard large articulated HGV

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

SITE ENTRANCE 5

Proposed Use:

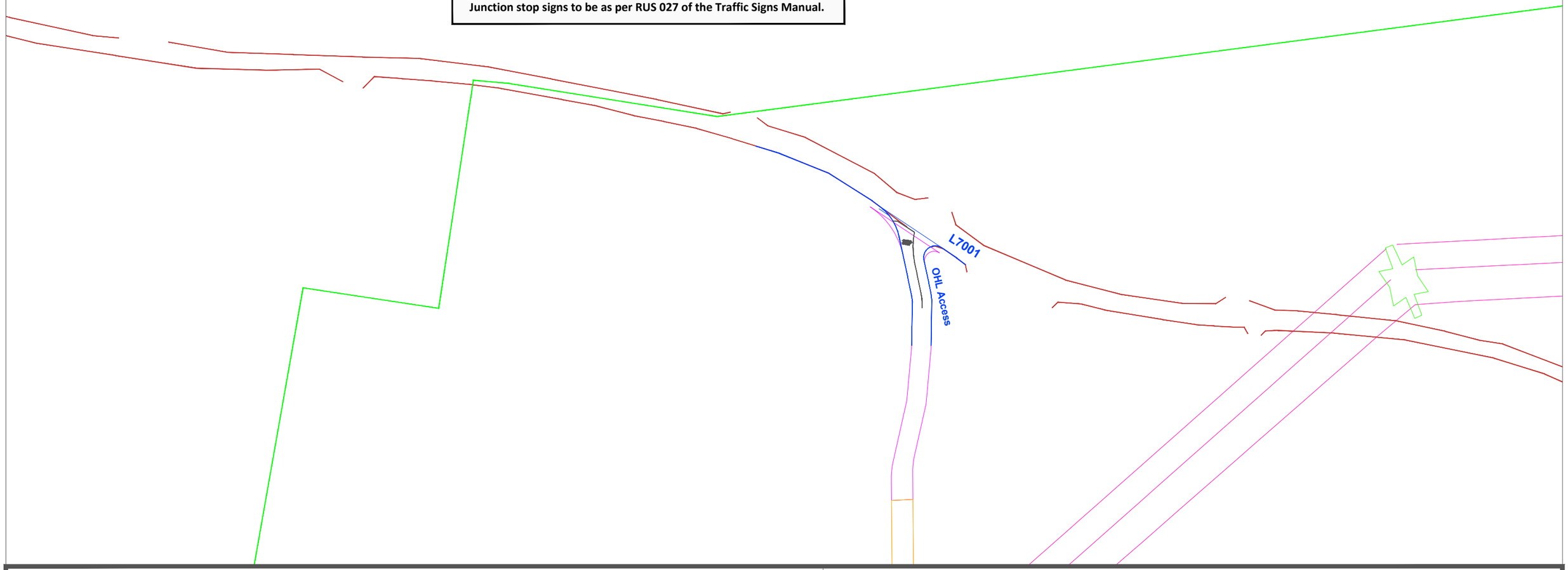
Construction stage - Used for access to substation. Must be used with traffic management measures. Will be Closed when not in use.
Operational stage - To Be Retained for Agricultural Use

Junction radius on western corner is 13m. There will be no traffic to and from the east.

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 15-9a Site Entrance 5 - L7001 / OHL construction access junction, junction layout

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

ALAN LIPSCOMBE
TRAFFIC & TRANSPORT CONSULTANTS

SITE ENTRANCE 5

Proposed Use:

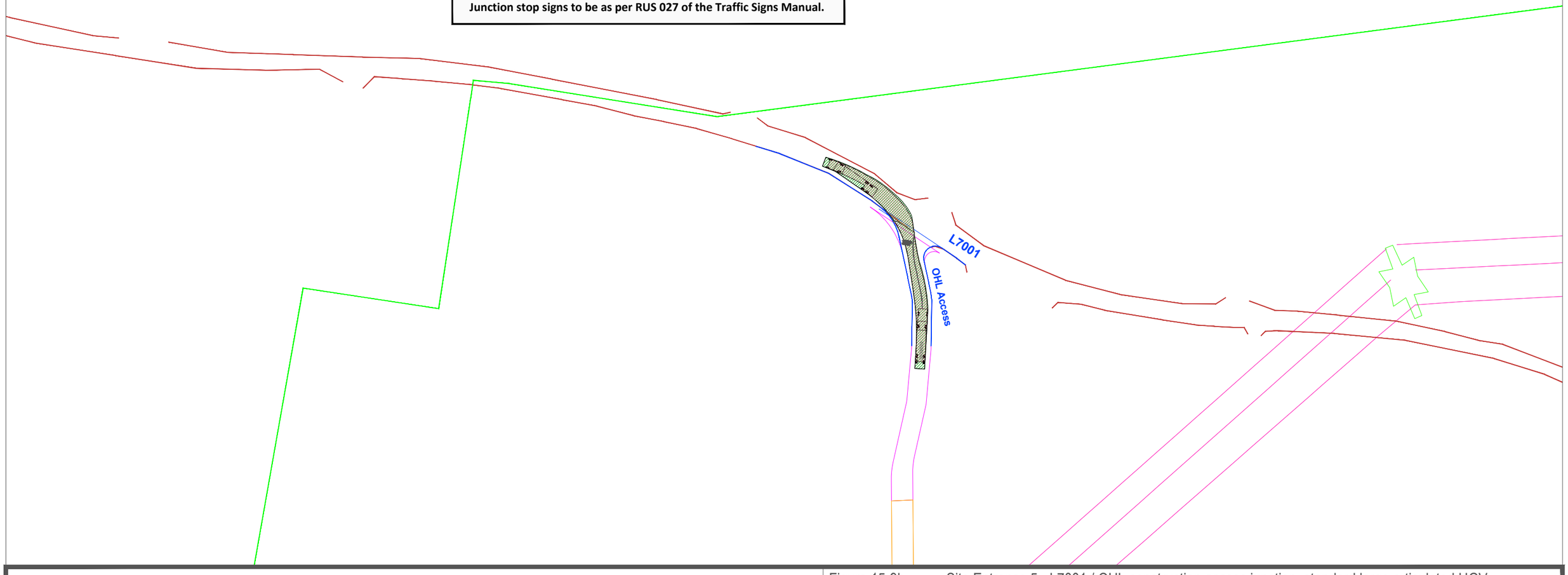
Construction stage - Used for access to substation. Must be used with traffic management measures. Will be Closed when not in use.
Operational stage -To Be Retained for Agricultural Use

Junction radius on western corner is 13m. There will be no traffic to and from the east.

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 15-9b Site Entrance 5 - L7001 / OHL construction access junction, standard large articulated HGV

PROJECT:	Lemanaghan Wind Farm		
CLIENT:	Lemanaghan Wind Farm DAC	SCALE:	1:1000@A3
PROJECT NO: 9080	DATE: 11.02.26	DRAWN BY:	AL

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TRAFFIC & TRANSPORT CONSULTANTS

15.1.11 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 5 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 5 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 2.1

Road Sign Partially Obscuring Visibility, Location: Site Entrance 1 - Existing Chevron Board to South of Site Entrance 1

The Audit Teams notes that the line of sight looking to the left for drivers attempting to exit the site appeared to be partially obscured by an existing chevron board. This could increase the risk of side impact type collisions at the access.

The Audit Team recommends that the chevron board should be relocated to a suitable position which does not obscure visibility.

The Design Team Response is as follows – The relocation of the chevron board will be agreed with TII and Offaly County Council prior to finalising the detailed design of the proposed junction.

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

Problem 2.2

Visibility Splays Obscured Looking to Left, Location: Site Entrance 2 - Redundant Level Crossing Gate

The Audit Teams notes that the line of sight looking to the left for drivers attempting to exit the site appeared to be partially obscured by a redundant level crossing gate. This could increase the risk of side impact type collisions at the access.

The Audit Team recommends that the level crossing gate should be removed so that it does not obscure visibility.

The Design Team Response is as follows – The existing level crossing gate is redundant and will be removed.

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

Problem 2.3

No road safety issued were identified at Site Access 3 and Site Access 4.

Problem 2.4

Visibility Splays Obscured in Both Directions - Location: Site Entrance 5 - Existing Boundary Treatments Either Side of Access

Drivers attempting to leave the site will have their view blocked in both directions by the existing field boundary. This limited visibility could increase the risk of side-impact collisions at the access.

The Audit Team recommends that the field boundary should be modified to ensure that an appropriate level of visibility can be provided for drivers exiting the access.

The Design Team Response is as follows – It is acknowledged that visibility splays at this junction (referred to as 6 in the RSA and renumbered to 5 in the EIAR) are constrained. For this reason, a comprehensive set of traffic management measures (including traffic signs and the presence of Flagmen) will be implemented on the days that it is proposed to use this access for construction traffic, and on the limited number of days access is required for maintenance. This access will return to operate as an agricultural access at all other times.

The Design Team response was accepted in 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.

15.1.12 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 proposed Site Entrance 1 on the N62. The report was uploaded onto TIIs Departures Portal on 6th March 2026 and is included as **Appendix 15-5** of this EIAR.

15.1.13 Provision for Sustainable Modes of Travel

15.1.13.1 Walking and Cycling

The provision for these modes is not relevant during the construction stage of the Proposed Project as travel distances will likely exclude any employees walking or cycling to work, and there is no continuous footpath on the N62 or the R436 to facilitate access on foot. It is noted that once operational there will be trails for cyclists and pedestrians to access and travel through the site as part of the Midlands Trail Network, with vehicle access provided to these trails via the proposed amenity carparks accessed via Site Entrances 1, 2 and 4 off the N62, R436 and L7002 roads respectively.

15.1.13.2 Public Transport

Public bus route Bus Eireann 72 (Limerick / Nenagh / Birr / Ferbane / Athlone) travels on the western boundary of the site on the N62. It is noted that at present these services are infrequent (3 services per day), and while staff will be encouraged to use them, they are unlikely to be suitable for most

construction staff to access the site due to hours of work. The provision of minibuses will be considered for transporting staff to and from the site in order to minimise traffic generation and parking demand on the site, although for the purpose of this assessment trip generation estimates are based on construction staff travelling by private car.

15.1.14 Likely and Significant Effects and Associated Mitigation Measures

15.1.14.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, the site would continue to be managed under the requirements of the IPC licence (P0500-01) and therefore the ongoing decommissioning activities, site management and environmental monitoring would continue.

In the absence of the Proposed Project, natural revegetation processes would continue across the site. Areas of bare peat would progressively revegetate and transition through successional stages, potentially developing into heath communities, scrub or bog woodland over time, depending on local hydrological conditions. Therefore, the existing baseline of the landscape will transition from a predominantly industrial cutover peatland landscape, with open exposed peat surfaces and drainage features, to a more natural mosaic landscape of cutaway peatland, wetland and regenerating bog habitats.

The Proposed Project site is located on lands that are subject to ongoing and future peatland rehabilitation and decommissioning works required under the existing IPC Licence. Therefore, under a 'Do-Nothing' scenario, the implementation of the Draft Rehabilitation Plans as required under IPC License would continue. These rehabilitation works are mandatory and will proceed irrespective of whether the Proposed Project is permitted, in order to ensure compliance with the IPC Licence.

If the Proposed Project were not to proceed, the opportunity to capture part of County Offaly's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost.

15.1.14.2 Construction Phase: Traffic and Transport

15.1.14.2.1 *Proposed Project*

For 15 days when concrete is delivered to the Proposed Wind Farm for the construction of the turbine foundations via the identified construction delivery routes, an additional 454 PCUs will travel to and from the site. During these days it is forecast that the increase in traffic volumes will range from between +2.5% to +9.2% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). For the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that the construction traffic will result in a 5.0% to 5.1% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 (Link 5) it is forecast that the additional traffic will result in an 11.1% increase on these 15 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 access junctions on the N62 and R436.

During the 440 days during which the main element of the construction phase of the Proposed Project will occur an additional 646 PCUs will travel to and from the site via the identified construction delivery routes. On these days it is forecast that the increase in traffic volumes will range from between +3.6% to +13.1% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a maximum +7.3% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site

Entrance 2 (Link 5) it is forecast that there will be a +15.8% increase on these 440 days. During this period, it is forecast that the additional traffic generated by the Proposed Project will have a ***temporary, slight, negative effect***, which is Not Significant, on existing traffic on the delivery route and at the access junctions on the N62 and R436.

On these 40 days, a convoy of 3 abnormally sized loads accompanied by an escort provided by An Garda Siochana will travel to the site and access via Sita Entrance 1. On these days it is forecast that the increase in traffic volumes will range from between +0.6% to +2.1% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a 1.2% increase in traffic volumes. 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 access junction on the N62.

For 15 days when smaller turbine components will be delivered to the site by standard HGVs an additional 64 PCUs will travel to and from the site via the identified construction delivery routes. On these days it is forecast that the increase in traffic volumes will range from between +0.4% to +1.3% on the N52 between the M6 and the junction with the N62 (Links 1 to 3). On the section of the N62 travelling north from Ferbane toward Site Entrance 1 (Links 4 and 6) it is forecast that there will be a 0.7% increase in traffic volumes, and for the R436 heading east from Ferbane towards Site Entrance 2 (Link 5) it is forecast that there will be a 1.6% increase on these 440 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 proposed access junctions.

15.1.14.3 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.

15.1.14.4 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 4-8 of this EIAR.

15.1.14.5 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).

15.1.14.5.1 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 15.1.2.3.

15.1.14.5.2 *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 40 convoys of 3 vehicles, undertaken over 40 separate nights.
- These nights will be spread out over an approximate period of 8 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 4-4) 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 Offaly County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, TII and MMaRC and 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 Offaly 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 Offaly 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 Offaly 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 4-4.
- **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

15.1.14.5.3 *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. Therefore, only Site Entrance 1, Site Entrance 2 and Site Entrance 3 will be used for operational phase maintenance and monitoring activities; with Site

Entrance 1 and Site Entrance 2 also being used for the purposes of amenity. Site Entrance 4 will only be used for the purposes of amenity and Site Entrance 5 is not proposed to be used during the operational phase for the purposes of the Proposed Project.

15.1.14.5.4 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 4-8 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).

15.1.14.6 Residual Effects

15.1.14.6.1 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 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.

15.1.14.6.2 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.

15.1.14.6.3 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 will remain in-situ and continue to operate as part of the national electricity grid network.

15.1.15 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).

15.1.15.1.1 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 15-27. 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 15-27 below, there is one wind farm within the cumulative study area that are permitted and one further that is being considered by ACP.

It is noted that the port of entry for both of these wind farms may be the same as for the Proposed Projects, Galway Port, and theoretically there is the potential that there could be cumulative impacts at the port and on the turbine delivery routes in close proximity to the port, should the delivery of the turbines for one or more of these developments be done simultaneously. It is, however, the case that even if the port has the handling and 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 2 wind farm developments listed in Table 15-27, based on the criteria set out above (project status, overlap of delivery routes and traffic volumes) it is estimated that there is one wind farms (Cush 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 2 wind farms listed in Table 15-27, 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 15-27 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 – Cush Wind Farm (8 turbines) - ACP Reference PA19.318816	Granted	High	Medium	High
2 – Umma More Wind Farm (9 turbines) - ACP Reference PA25M.321595	With ACP	Low	Medium	Low

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

There are a total of 22 other developments currently within the 10 km buffer zone progressing through the planning process (14 permitted by Local Authorities and 8 permitted by An Coimisiún Pleanála (ACP)) with the potential for cumulative impacts with the Proposed Project, as set out in Tables 15-28 and 15-29.

Of these 9 developments there are 2 developments (a new 110kV substation and underground cabling works associated with Upperchurch Wind Farm, and amendments to an electrical substation located at Graniera, Shevry, Co Tipperary) where it is considered that the potential for cumulative impacts is high. 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.

Of these there are no developments where it is considered that the potential for cumulative impacts is High, 10 where the potential is considered medium, with the remaining 12 development considered to have a low risk of cumulative impacts with the Proposed Project based on the criteria set out above (project status, overlap of delivery routes and traffic volumes).

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 15-28 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*
1 - RED IIIi application for a solar (PV) farm and all associated works. Stonestown Kilcamin, Crancreagh Derrinlough , Co. Offaly Offaly County Council Planning Ref 26/60064.	Proposed	High	Low	Medium

2 - 100mw battery energy storage station with 53 battery containers and associated equipment. Birr, Co. Offaly Offaly County Council Planning Ref 25/60367.	Proposed	Medium	Low	Low
3- The demolition of an existing single storey shed to the south-west of the site; (ii) the construction of a residential development comprising of 39 no. units. Woodlands Park fronting Burke's Hill, Townparks Birr Co. Offaly Offaly County Council Planning Ref 25/60186.	Granted	Medium	Low	Low
4 - The construction of 7 no. wind turbines and associated hardstand areas in the townlands of Faddan Beg, Croghan Clohaskin Caherhoereigh, Ballykinash, Tinnakilly, Arragh More Ballyloughnane Faddan Beg Coolderry , Tinlough Sharragh Doughkill Ballaghgar Faddan More, Cloncorig Killeen and Cornhill Co. Tipperary. Tipperary County Council Planning Ref 23/60763. ACP Ref 318689-23	Granted	Low	Medium	Low
5 - An extension to the existing battery energy storage system (BESS) facility. Lumcloon , Cloghan, Co. Offaly. Offaly County Council Planning Ref 23/60111.	Granted	High	Low	Medium
6 - The construction of 25 no. dwellings.	Granted	Low	Low	Low

Kilcoursey, Clara, Co. Offaly Offaly County Council Planning Ref 23/56.				
7 - Development of a solar photovoltaic (PV) energy development. Within the townlands of Lumcloon, Bun, Derrycarney, Falsk, Derries Rin Lea Beg and, Lea More, Co. Offaly. Offaly County Council Planning Ref 23/20. ACP Ref 316303-23	Granted	Medium	Low	Low
8 - A 10 year permission. the development will consist of solar PV development. Clonbeale Beg Glebe Rathure North (parcel 1) and Parkmore (parcel 2), Co. Offaly Offaly County Council Planning Ref 22/368.	Granted	Medium	Low	Low
9 - Change of use of the former three-storey over basement mill building, from resource and leisure use to 12 no. self-contained apartments. The Maltings Castle Street Townparks, Birr , Co. Offaly. Offaly County Council Planning Ref 22/356.	Granted	Medium	Low	Low
10 - Erection of a fully serviced residential housing development of 40 units. Banagher Road R439 Townparks Birr , Co. Offaly Offaly County Council Planning Ref 22/274.	Granted	Medium	Low	Low
11 - Development of a multi-unit residential scheme comprising a total of 26 no. residential units.	Granted	Low	Low	Low

Ormer Carmelite Monastery , Legan Townland , the Newtown Moate. Westmeath County Council Planning Ref 22/281.				
12 - construction of 20 no. houses. Ballyvora , Ferbane, Co. Offaly. Offaly County Council Planning Ref 22/198.	Granted	High	Low	Medium
13 - The construction of 44 no. dwellings. Kilcoursey , Clara , Co. Offaly. Offaly County Council Planning Ref 21/584.	Granted	Medium	Low	Low
14 - The construction of 61 no. dwelling units. Seffin and Scurragh , Birr , Co. Offaly. Offaly County Council Planning Ref 17/78.	Granted	Medium	Medium	Medium

Table 15-29 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*
1 - Erection of a fully serviced residential housing development of 40 units. Forest View, Banagher Road (R439), Townparks, Birr, Co. Offaly. ACP Ref 315825	Granted	Medium	Low	Medium

2 - Install approximately 12.5km of 38kv electricity transmission line from the permitted (windfarm) substation in Stonestown, County Offaly to the electricity substation in Clondallow, County Offaly. Across the townlands of Stonestown, Kilcamin, Crancreagh, Derrinlough, Clooneen, Whigsborough, Galros East, Galros West, Cush, Boolinarig Big, Conspark, Ballaghanoher, Ross and Clondallow, Co Offaly. ACP Ref 304056.	Granted	High	Low	Medium
3- Permission for a period of 10 years to construct and complete a solar PV development. Within the townland of Culleenagower, Moate, County Westmeath. ACP Ref 318352.	Granted	Low	Low	Low
4 - Construction of 66 residential units along with section of new distributor road and all associated site development works. Railway Road Townparks & Seffin , Birr , Co. Offaly ACP Ref 322482	Granted	Medium	Medium	Medium
5 - Construction of wind energy converter on a tower and all associated development works. Rin, Ferbane, County Offaly ACP Ref 321244.	Granted	High	Low	Medium
6 - Construction of two independent power provider (IPP) buildings, associated	Granted	High	Low	Medium

infrastructure and all associated works. Lumcloon, Cloghan, County Offaly ACP Ref 322004.				
7 - Upgrade Birr Water Supply Scheme comprising refurbishment of 2-storey masonry WTP buidling, demolition of open sludge lagoon, construct new WTP process building, new tank structures. Seefin, Birr, Co. Offaly. ACP Ref 247027.	Granted	Medium	Medium	Medium
8 - The extraction of material over an area of 0.95 hectares and planning permission for the restoration to agricultural use of the same 0.95 hectare area. Clonaderg, Ballinahown, Co. Offaly. ACP Ref 300919.	Granted	Medium	Low	Low

15.1.15.1.2 *Substitute Consent Application for Extraction in Lemanaghan Bog (Case Ref: SU19.323676)*

As identified in Table 2-2 in Chapter 2, an application for substitute consent was submitted to An Coimisiún Pleanála (Case Ref: SU19.323676) on 12th September 2025, for peat extraction and ancillary works from July 1988 to the present day that have been carried out within Lemanaghan Bog. A Remedial Natura Impact Statement (rNIS) and Remedial Environmental Impact Assessment Report (rEIAR) was submitted with this application.

Traffic impacts within the substitute consent application during the identified Remedial Phase were determined to be negative, not significant, and long term, which is Not Significant. The effect of the construction, operational and decommissioning phases of the proposed Lemanaghan Wind Farm in combination with the Remedial Phase of the Project is not considered to be significant, given the nature of the Remedial Phase works. As such the potential cumulative effect of the substitute consent project with the Proposed Project is considered to be a potential slight, negative, short term, effect on traffic volumes, roads and road users.

15.1.15.1 EPA Licenced Activities

EPA licensed activities refer to industrial and waste management operations that require a license from the Environmental Protection Agency under various pieces of environmental legislation. A list of all EPA licenced activities within the cumulative study area is included in Appendix 2-3.

From May 2000, peat extraction and ancillary activities within Lemanaghan Bog and the surrounding Boora Bog group were subject to the conditions of BnM's IPC Licence (Ref. P0500-01) from the EPA. Industrial scale peat extraction was permanently ceased by BnM in Lemanaghan Bog in June 2020. From June 2020 until the end of 2024, all remaining stockpiled peat was systematically removed from the Lemanaghan Bog. BnM's statutory duties to discharge the conditions of its Integrated Pollution Control Licence (IPC) Licence (Ref. P0500-01; hereafter "IPC Licence"), from the Environmental Protection Agency for the Boora Bog Group, which encompasses Lemanaghan Bog remain on-going.

The IPC Licence and the statutory duties to discharge its conditions, most notably the Draft Rehabilitation Plan which is described in Section 2.10.2.1.1 in Chapter 2 and provided as Appendix 2-4, have also been taken account in this cumulative assessment.

Irrespective of any further development on the site, BnM's statutory duties to discharge the conditions of its IPC Licence will remain ongoing.

IPC Licence (P0500-01) - Draft Rehabilitation Plan

It is also a requirement of '*Condition 10 Cutaway Bog Rehabilitation'* of the IPC Licence that following the decommissioning of use of all or part of their bogs, BnM prepares (to the satisfaction of the EPA) and implements a Cutaway Bog Rehabilitation Plan. BnM has produced a Draft Cutaway Bog Decommissioning and Rehabilitation Plan (Draft Rehabilitation Plan) for Lemanaghan Bog, and it is the intention of BnM to rehabilitate the bog in a phased approach under the IPC Licence. The Draft Rehabilitation Plan is included as Appendix 2-4.

The implementation of the Draft Rehabilitation Plan in conjunction with the construction, operation and decommissioning of the Proposed Project as well as proposed, permitted and operational plans and projects listed in Chapter 2 of its EIAR is considered. As detailed above, the potential effect of the Remedial Phase of the Project on traffic and transport is considered a short-term, imperceptible negative effect. There is a potential for increased traffic movements associated with the implementation of the rehabilitation works identified in the Remedial Phase. The overall footprint of the Proposed Project will represent approximately 3% of the total area of the site and therefore will not impact or change the overall goals and outcomes of the Draft Rehabilitation Plan. As such, it is the intention of the BnM to integrate the peatland remedial measures proposed as part of the substitute consent project with the Proposed Project. The effect of the construction, operational and decommissioning phases of the Proposed Project in combination with the Remedial Phase of the substitute consent project is not considered to be significant, given the nature of the Remedial Phase works.

15.1.15.2 Peatland Climate Action Scheme

In 2023 the Peatland Climate Action Scheme (PCAS) selected Ballaghurt and Glebe Bogs located approximately 4.4km west of the Proposed Wind Farm at its closest point (i.e., T01), Clynan Bog located approximately 25.5km north of the Proposed Grid Connection, and Killeglan Bog located approximately 28.1km northwest of the Proposed Grid Connection for PCAS. In 2024, PCAS has selected Curraghalassa Bog and Derrynagun bog which are adjacent to the Proposed Project site. Due to the construction phase resulting in a short-term, slight, negative effect on existing road users, it is not expected that there will be any significant negative effects associated with the Proposed Project and PCAS in adjacent lands should these works occur in parallel.

15.2 Telecommunications and Aviation

This section of the Material Assets chapter assesses the likely significant effects of the Proposed Project on 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.

Section 15.2.3 describes the way in which wind turbines can potentially interfere with telecommunications signals or aviation activities. Section 15.2.4 details the scoping process, identifying how any potential impacts will be avoided, Section 15.2.5 outlines the telecommunications impact assessment carried out for the Proposed Project, while the likely significant effects are assessed (and mitigation measures proposed) in Section 15.2.6.

15.2.1 Introduction

The Proposed Wind Farm is located approximately 3 kilometres (km) northeast of Ferbane and approximately 2.5 km southwest of the village of Ballycumber in Co. Offaly. Current activities onsite include site management and environmental monitoring as required under Integrated Pollution Control (IPC) Licence P0500-01[3] from the Environmental Protection Agency (EPA). The Lemanaghan Bog underwent peat extraction under IPC Licence No. 500-01, until it ceased in June 2020. Previously extracted stockpiled peat continued to be removed off the bog until the end of 2024. Activities at the site are currently limited to ongoing monitoring and decommissioning activities associated with the conditions of the IPC licence.

15.2.1.1 Statement of Authority

This section, which includes a summary of the Telecommunications Impact Assessment conducted by Kevin Hayes of Ai Bridges, was completed by Catherine Johnson and reviewed by Ellen Costello and Seán Creedon, of MKO.

Catherine is a Project Environmental Scientist at MKO with over 3 years of consultancy experience in sustainability and renewable energy. Prior to joining MKO in 2022, Catherine worked as an Environmental Social Governance (ESG) analyst for Acasta in Edinburgh. Catherine has expertise in international climate law and policy, renewable energy, earth science, and sustainability/ESG processes. Catherine has a BSc in Earth and Ocean Science and an LLM in Global Environment and Climate Change Law.

Ellen is a Senior Environmental Scientist with over 6 years of consultancy experience with MKO and has been involved in a number of wind energy EIAR applications involving the compilation of numerous chapters including chapters on Material Assets. Ellen holds a BSc. in Earth Science and a MSc. in Climate Change: Integrated Environmental and Social Science Aspects.

Sean is an Associate Director in the Environment Team at MKO. He oversees a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery and hydrogen as well as a range of thermal and other energy related developments. He is a member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Sean has over 23 years' experience in program and project development, holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

Kevin Hayes is a senior radio planner / engineer with Ai Bridges and holds a B.Eng, M.Eng. in Communications & Electronic Engineering with over 30 years of experience in telecommunications network design, software modelling services and project implementation and roll-out of turnkey solutions for clients. Kevin Hayes takes overall responsibility for the approval of all Telecommunications, Aviation and Television Impact Statements provided by Ai Bridges.

[3] *Integrated Pollution Control License PO-500-01 issued by the EPA for the Boora Bog Group. Available at: https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0500-01*

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. Telecommunications operators and aviation authorities were contacted in November 2020 and March 2025 in order to determine the presence of telecommunications links either traversing or in close proximity to the Proposed Wind Farm. Scoping was carried out in line with the EPA Guidelines (EPA, 2022)[4], and the "*Best Practice Guidelines for the Irish Wind Energy Industry*" (Irish Wind Energy Association, 2012)[5] which provides a list of telecommunications operators for consultation. In addition to this, consultation was also carried out with Commission for Communications Regulation (ComReg) in order to identify any other additional licensed operators in the vicinity of the Proposed Project site to be contacted, who may not have been on the list of main operators.

A full description of the scoping and consultation exercise is provided in Section 2.8 of Chapter 2 of this EIAR. Consultation with the telecommunications operators and aviation bodies informed the constraints mapping process, which in turn informed the layout of the Proposed Wind Farm, as described in Chapter 3, Section 3.2.5.2.1 of the EIAR.

Following the scoping and consultation exercise undertaken, Ai Bridges was engaged to carry out a Telecommunications Impact Assessment for the Proposed Project, which is included as Appendix 15-6. The Telecommunications Impact Assessment undertaken by Ai Bridges included detailed technical desktop analysis as well further consultation with the telecommunications operators engaged with during the scoping exercise. Using the technical information obtained during the desktop survey assessments and consultation process, a telecommunications impact analysis was carried out utilising radio planning/modelling software. Further detail on the methodology for the Telecommunications Impact Assessment is included in Appendix 15-6.

A further Telecommunications Impact Assessment, specific to Irish Rail (Irish Rail Telecommunications Impact Assessment) was conducted by Ai Bridges using the above methodology and is included in Appendix 15-7.

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

15.2.2.1 Legislation, Policy and Guidance

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

- Offaly County Development Plan 2021-2027 (Offaly County Council, 2021),
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022),
- Draft Air Corps Wind Farm/Tall Structures Position Paper (Air Corps, 2014),
- Best Practice Guidelines for the Irish Wind Energy Industry (Irish Wind Energy Association, 2012),
- Wind Energy Development Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government, 2006), hereafter referred to as the DoEHLG 2006 Guidelines,

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

- Draft Revised Wind Energy Development Guidelines for Planning Authorities (Department of Housing, Planning and Local Government, 2019), hereafter referred to as the Draft DoHPLG 2019 Guidelines,
- Code of Practice for Avoiding Danger from Overhead Electricity Lines (ESB Networks, 2019),
- EMF & You: Information about Electric & Magnetic Fields and the Electricity Network in Ireland (ESB, 2017),
- Irish Rail (2018) CCE Department Technical Guidance Document CCE-TMS-310 Guidance on Third Party Works,
- Irish Rail (2009) CCE Departmental and Multidisciplinary Standard I-DEP-0121 Third Party Works: Additional Details of Railway Safety Requirements.

15.2.3 Background

15.2.3.1 Broadcast Communications

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

15.2.3.2 Domestic Receivers

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

There are two types of potential electromagnetic interference to domestic receivers, depending on the location of the receiver in relation to a wind farm. 'Shadowed' houses are located directly behind a wind farm, relative to the location from where the signal is being received. In this case, the main signal passes through the wind farm and the rotating blades can create a degree of signal scattering. In the case of viewers located beside the wind farm (relative to the broadcast signal direction), the effects are likely to be due to periodic reflections from the 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 detailed 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 aviation facility is Ballyboy Airfield located approx. 14.5 km south of the Proposed Wind Farm. The next closest facility is Birr Aerodrome located approx. 20.5 km southwest of the Proposed Wind Farm. Clonbullogue Airfield is located approx. 41.5 km east southeast of the proposed turbine T14. The closest large international airports are Knock Airport (93.5 km northwest of the Proposed Wind Farm) and Dublin Airport (96.0 km west of the Proposed Wind Farm). There are no flying clubs in close proximity of the Proposed Project, with the nearest being the Irish Jet Modellers Flying Club, located c.

8.9 km southwest of the proposed turbine T03. Manna Air Delivery, a drone operator, conducts test flights at the Bellair Bog, located c. 1 km north of the proposed onsite 220kV substation.

All airports listed above are outside the range at which such issues would be expected, and as detailed in Table 15-30 below, the IAA noted no issues with the Proposed Project however they issued observations as discussed in Section 15.2.4.1.

15.2.3.4 Electromagnetic Interference

15.2.3.4.1 *National Guidelines*

Both the DoEHLG 2006 Guidelines and the Draft DoHPLG 2019 Guidelines 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 Section 15.2.4 and Section 15.2.5. The layout and design of the Proposed Project have taken into account nearby telecommunications links.

15.2.3.4.2 *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 15-7 reproduced from the 2017 ESB information booklet which demonstrates the alternating magnetic field of AC overhead lines and underground cables. As can be seen in Figure 15-7 below, EMF from 220kV overhead lines and underground cables diminishes quickly with distance from the potential impacted receptor, with EMF from overhead 220kV cables, diminishing from 7µT to 5µT at 10 m away from the cable and 2µT at 20 m away from the cable; EMF reduces to almost 0µT at 30 m.

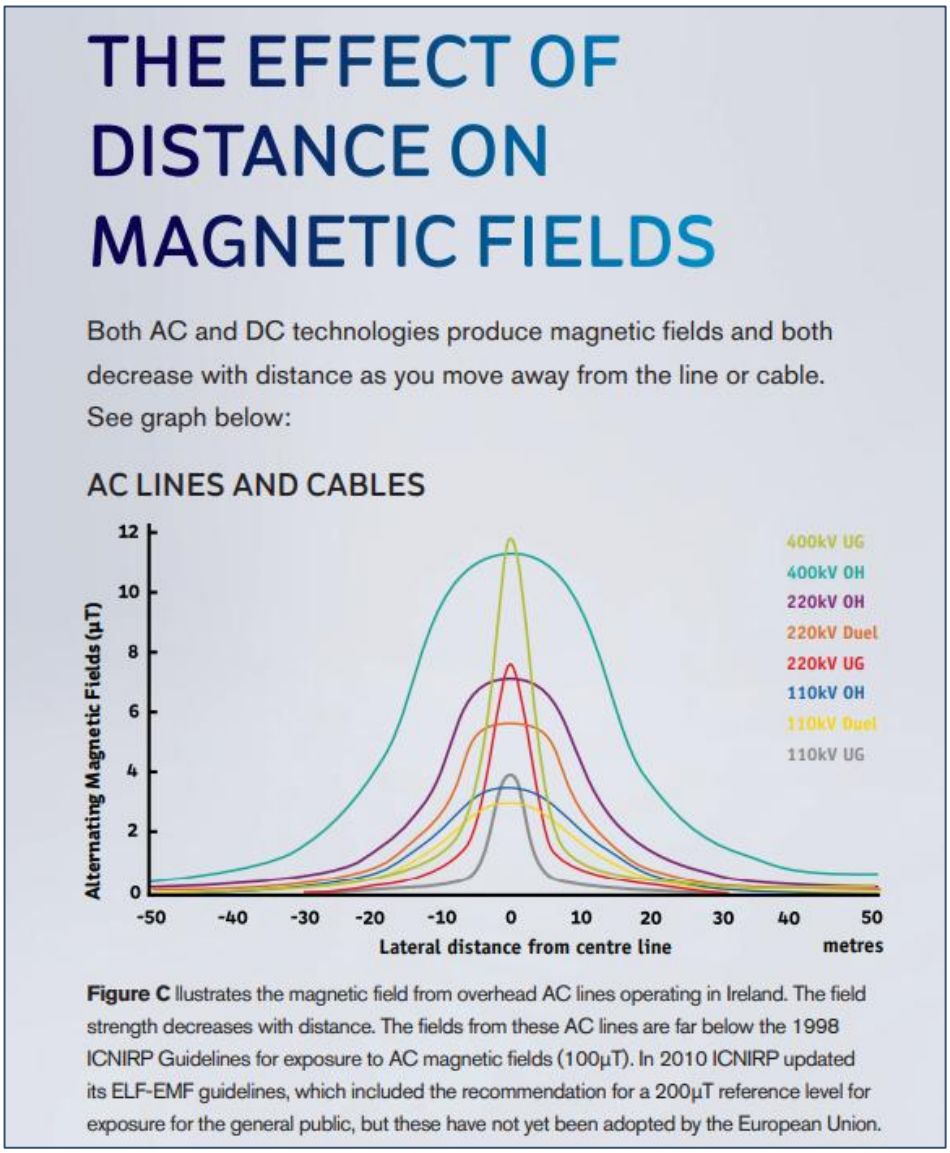

Figure 15-7 The magnetic field from overhead AC lines operating in Ireland

15.2.3.5 Aviation

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

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

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

- Lands underlying military airspace used for flying activity, including designated Military Operating 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, AirNav Ireland[6] 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 15-30; full details are provided in Section 2.8 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. Consultation was also carried out with ComReg (Commission for Communications Regulation) in order to identify any other additional licensed operators in the vicinity of the Proposed Project to be contacted.

Telecommunication operators were contacted in November 2020 (and again in October 2024 and March 2025) in order to determine the presence of telecommunications links or aviation assets traversing or located in close proximity to the Proposed Wind Farm. The responses received by MKO from the telecommunications and aviation consultees are summarised below in Table 15-30. Please refer to Section 2.8 in Chapter 2 for further information on scoping and consultation for the Proposed Project.

A full description of the scoping and consultation exercise is provided in Section 2.8 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 January 2021 and March 2025, which is clarified in Table 15-30 below and further detailed in Section 15.2.5 and Appendix 15-6.

[6] *IAA restructured in May 2023. Previously, IAA was responsible for providing both air navigation services and aviation regulation. Now, AirNav Ireland focuses solely on providing air navigation services while IAA acts purely as the aviation regulator.*

Table 15-30 Telecommunications and Aviation Scoping Responses

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
AirNav Ireland	Not included in 2020 scoping as IAA restructuring had not occurred.	N/A	N/A	No response	N/A	N/A
Broadcasting Authority Ireland	Received 26.11.2020	No	N/A	Received 14.03.2025	No	N/A
BT Communications Ireland	Received 11.11.2020	No	N/A	Received 25.03.2025	No	N/A
Cellnex	Not included in 2020 scoping	N/A	N/A	No response	N/A	N/A
Dense Air	Not included in 2020 scoping	N/A	N/A	No response	N/A	N/A
Department of Defence	No Response	N/A	N/A	Received 08.11.24	Not identified.	Conditions requested, see Section 15.2.4.2.
Eir (Formerly Meteor)	Received 26.11.2020	No	N/A	Received 19.03.2025	Identified 1 no. link with potential to be affected and required buffer.	Yes, further consideration required. Please refer Section 15.2.5 below, which details the Telecommunications Impact

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
					Please see Section 15.2.4.1 below	Assessment undertaken by Ai Bridges (included as Appendix 15-6).
Enet	Received 11.12.2020	Identified 5 no. links with potential to be affected and required buffers. Please see Section 15.2.4.1 below	Implement buffers at design stage	Received 14.03.2025	Yes, 3 no. links in area, however there is no overlap	Yes, further consideration required. Please refer Section 15.2.5 below, which details the Telecommunications Impact Assessment undertaken by Ai Bridges (included as Appendix 15-6).
EOBO Ltd	Not included in 2020 scoping	N/A	N/A	No response	N/A	N/A
ESB Telecoms	Received 20.11.2020	No	N/A	Received 22.04.2025	No	N/A
JFK Communications Ltd	Not included in 2020 scoping	N/A	N/A	No response	N/A	N/A
Hibernian Towers	Not included in 2020 scoping	N/A	N/A	Received 25.03.2025	No	N/A

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
Imagine Group	Received 16.11.2020	No	N/A	Received 14.03.2025	No	N/A
Irish Aviation Authority	Received 25.05.2021	Specific comments not provided, just general observations.	Conditions requested, see Section 15.2.4.2.	Received 22.11.2024	As per 2021.	Conditions requested, see Section 15.2.4.2.
Irish Rail	Not included in 2020 scoping	N/A	N/A	Received 14.03.2025	Yes, GSM-R Train Radio in service along operational railway line approximately 2.9 km north and 3 km northeast of the Proposed Wind Farm. Please see Section 15.2.4.1 below	Yes, please see Section 15.2.5 below, which details the Irish Rail Telecommunications Impact Assessment undertaken by Ai Bridges (included as Appendix 15-7).
Ivertek Ltd	Not included in 2020 scoping	N/A	N/A	Received 14.03.2025	No	N/A
JS Whizzy Internet Limited	Not included in 2020 scoping	N/A	N/A	Received 19.03.2025	No	N/A

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
Lackabeha Services Ltd T/A Airwaves Internet	Not included in 2020 scoping	N/A	N/A	Received 14.03.2025	No	N/A
MP&E Trading Company Ltd/ EMR Integrated Solutions	Received 13.11.2020	No	N/A	Received 24.03.2025	No	N/A
NBI Infrastructure DAC	Not included in 2020 scoping	N/A	N/A	Received 24.03.2025	No	N/A
Ripplecom	Received 11.11.2020	Yes, identified 1 no. link and required buffer. Please see Section 15.2.4.1 below	Implement buffers at design stage.	No response	N/A	N/A
RTE Transmission Network (2rn)	Received 12.11.2020	Yes	Protocol to be signed by Lemanaghan Wind Farm DAC (the Applicant) for Digital Terrestrial Television (DTT) Coverage.	Received 14.03.2025	Yes Please see Section 15.2.6.3.1 below for details of protocol agreement.	Protocol to be signed by Applicant for DTT Coverage prior to construction.

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
St Brigid's Credit Union Ltd., County Offaly	Received 26.11.2020	No	N/A	Received 24.03.2025	No	N/A
Tetra Ireland Communications (emergency services)	Received 13.11.2020	No	N/A	No response	N/A	N/A
Three Ireland	Received 13.11.2020	Yes identified 2 no. links and required buffers. Please see Section 15.2.4.1 below	Implement buffers at design stage.	Received 14.03.2025	Yes identified 3 no. links and required buffers. Please see Section 15.2.4.1 below	Implement buffers at design stage.
Towercom	Received 03.12.2020	No	N/A	Received 21.03.2025	No	N/A
Uisce Eireann (Formerly Irish Water)	Not included in 2020 scoping	N/A	N/A	No response	N/A	N/A
Virgin Media	Received 12.11.2020	Yes identified 1 no. link and required buffer.	Implement buffers at design stage.	Received 20.03.2025	Yes identified 1 no. link and required buffer.	Yes, please see Section 15.2.5 below, which details the Telecommunications Impact

Consultee	Initial Scoping Response	Potential for Interference Following Consultation Exercise	Action Required	Further Scoping Response on Final Design	Potential for Interference Following Final Consultation Exercise	Action Required
		Please see Section 15.2.4.1 below			Please see Section 15.2.4.1 below	Assessment undertaken by Ai Bridges (included as Appendix 15-6).
Viatel Ireland Ltd	Received 12.01.2021	No	N/A	No response	N/A	N/A
Vodafone Ireland	Received 12.11.2020	Yes identified 2 no. links and required buffers. Please see Section 15.2.4.1 below	N/A	Received 20.03.2025	Yes identified 2 no. links and required buffers. Please see Section 15.2.4.1 below	Yes, please see Section 15.2.5 below, which details the Telecommunications Impact Assessment undertaken by Ai Bridges (included as Appendix 15-6).
Western Broadband Network	Not scoped initially	N/A	N/A	Received 14.03.2025	No	N/A

The scoping responses from the telecommunications and aviation consultees are described below. The full scoping responses received are provided in Appendix 2-1. In addition to the links with potential impacts identified in Table 15-30, all operator links and setbacks with potential impacts were further considered and are illustrated in Appendix 15-6 Telecommunication Impact Assessment Report.

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.

RTÉ Transmission Network (operating as 2RN):

2RN replied on the 12th of November 2020 to the initial scoping request from MKO in November 2020, confirming that there are no links in the area. Therefore, no potential impacts were identified at this stage, and no layout changes were required to the Proposed Project. However, it was requested by 2RN that a protocol agreement be signed between 2RN and the Applicant due to a risk of interference to Digital Terrestrial Television (DTT) coverage.

A response to MKO's further scoping request in March 2025 was received from 2RN on the 14th of March 2025. 2RN identified an off-air link for DTT services in the area. The second scoping response stated that *'There is however a risk of interference to broadcast coverage to broadcasting services in the area so we would request that a protocol be signed between the developer and 2rn should the site go ahead.'* Therefore, this 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.

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.

Virgin Media

Virgin Media replied on 12th of the November to the initial scoping request sent by MKO in November 2020, noting that there is one link running through the site. A follow-up email from Virgin Media was received on the 1st of December 2020 requesting a buffer of 100m on the link if turbines are to be 185 m tall. A further follow-up email from Virgin Media was received on the 16th of December 2020, noting that a 52 m buffer would be sufficient for the link. As a result, the turbine layout was adjusted, with proposed turbines T01, T02 and T03 moved to the east, approximately 100 m, 130 m and 125 m respectively. Turbine locations have subsequently moved from these locations but remain outside the initially identified 52 m buffer.

A response to MKO's further scoping request in March 2025 was received from Virgin Media on the 19th of March 2025. This response again identified one link running through the site and request a 100 m buffer be applied to turbines from the link. However, all turbine locations are beyond this 100 m buffer, therefore no further layout changes were required.

This 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.

Vodafone Ireland

Vodafone Ireland replied on the 12th of December 2020 to the initial scoping request from MKO in November 2020, noting two links running through the Proposed Project site. It was noted that the link running through the site to Tullamore is only temporarily in use. In a further email response, Vodafone Ireland requested a 7.68m buffer and 9.77m buffer for the two links, respectively. However, all turbine locations at this stage of project design were beyond these buffers, therefore no layout changes were required at this stage.

A response to MKO's further scoping request in March 2025 was received from Vodafone Ireland on the 20th of March 2025. This response identified two links in the area and requested a 35 m buffer be applied to turbines from the Fresnel Zone of Link OY009-OY050, which runs across the site. However, all turbine locations are beyond these buffers, therefore no layout changes are required.

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 replied on the 19th of November 2020 to the initial scoping request from MKO in November 2020 stating there is one live link and one planned link traversing the Proposed Project site. The operator requested a setback of 20m for both links. However, all turbine locations at this stage of project design were beyond these buffers, therefore no layout changes were required at this stage.

A response to MKO's further scoping request in March 2025 was received from Three Ireland on the 14th of March 2025. This response identified an additional link in the area, with three links in total now passing through the site. On the 14th of March 2025, Three requested by email that a setback of 20m is applied for all links. However, all turbine locations are beyond these buffers, therefore no layout changes are required.

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 replied on the 26th of November 2020 to the initial scoping request from MKO in November 2020 noting five links running through the Proposed Project and requested setbacks of 100 m for each link. A further email from Enet was received by MKO on the 11th of December with relevant Fresnel Zones in order to ensure the five links are avoided.

A response to MKO's further scoping request in March 2025 was received from Enet on the 14th of March 2025. This response identified that there are now currently three links in the area. Two of these links were outside the required setback, with one link within the 100 m buffer.

These links, in particular the link within the 100 m buffer were subsequently assessed in the Telecommunications Impact Assessment conducted by Ai Bridges. In response to the scoping request from Ai Bridges as part of the Telecommunications Impact Assessment, Enet confirmed on 1st May 2025 that the link facing towards VDF Corr Hill "*is due for decommission in the coming months*". Therefore, no potential impacts were identified, as further detailed in Section 15.2.5 below.

Ripplecom

Ripplecom replied on the 11th of November 2020 to the initial scoping request from MKO in November 2020 noting one link which passes through the Proposed Project site. A second email from Ripplecom was received the same day requesting a 30 m clearance from blade tips in order to ensure

the link is avoided. However, all turbine locations at this stage of project design were beyond this buffer, therefore no layout changes were required at this stage.

MKO issued a further scoping request to Ripplecom on the 14th of March 2025 and followed up on the 19th and the 25th of March 2025. However, no response has been received to date.

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.

Eir

Eir replied to MKO's initial scoping request on 26th November 2020 indicating that no transmission services will be affected by the Proposed Project. Therefore, no potential impacts were identified at this stage, and no layout changes were required to the Proposed Project.

Enet

A response to MKO's further scoping request in March 2025 was received from Enet on the 19th of March 2025. This response identified one transmission link traversing the Proposed Project site. A buffer of 100 m was requested between turbines and the transmission path. However, all turbine locations are beyond these buffers, therefore no layout changes are required.

Irish Rail

A response to MKO's 2025 scoping request was received from Irish Rail on the 14th of March 2025. Irish Rail indicated that the Proposed Project site lies inside the GSM-R (Mobile Network for Railways) exclusion zone. Another response on the 18th of March 2025 indicated the presence of two antennae located approximately 2.9 km north, and approximately 3 km northeast of the Proposed Project site. The noted exclusion zones from Irish Rail are as follows:

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*

These antennae were further considered in the Irish Rail Telecommunications Impact Assessment (Appendix 15-7) conducted by Ai Bridges, no impacts were identified as further detailed in Section 15.2.5 below.

15.2.4.2 Aviation

Scoping responses were received from the following aviation consultees:

- DoD
- IAA

Pertinent information has been summarised below; see Appendix 2-1 for further detail.

Department of Defence

As discussed in Section 15.2.3.5, 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. The Proposed Project is mostly located outside Air

Corps assets with the exception of proposed turbine T14 and T15 which are located on the boundary of MOA 5.

The DoD was contacted by MKO on the 4th of May 2021. No response was received.

A further scoping request was issued by MKO to the DoD in October 2024. A response was received on the 8th of November 2024 and requested the following conditions should the Proposed Project be consented:

> *"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 Infra-Red (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 and entered into aircraft navigation databases to ensure they will be avoided during flight.

Irish Aviation Authority

The IAA was contacted by MKO on the 4th of May 2021. The IAA replied on the 25th of May 2021 stating that the Proposed Project appears to be approximately 29 kms northeast of Birr Airport and 40 km northwest of Clonbullogue Airport. Should the Proposed Project be consented. The IAA requested that the Applicant contact the IAA in regard to the following:

1. *'To agree an aeronautical obstacle warning light scheme for the Proposed Development*
2. *To provide as-constructed coordinates in WGS84 format together with above mean sea level tip height elevations at each wind turbine location*
3. *To notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.'*

A further scoping request was issued by MKO to the IAA in October 2024. A response was received on the 22nd of November 2024, and the conditions requested by the IAA remained as per the initial scoping response on 25th May 2021 and again requested the above conditions should the Proposed Project be consented. The conditions will be adhered to by the Applicant.

AirNav Ireland

AirNav was contacted by MKO on the 14th of March 2025, in tandem with the IAA. No response was received. AirNav Ireland was further contacted by the Applicant on the 21st of August 2025. At the time of writing this chapter, no response has been received.

15.2.5 Telecommunications Impact Assessment

Following the scoping and consultation exercises undertaken by MKO in 2020 and 2025 by MKO, Ai Bridges was engaged to carry out a Telecommunications Impact Assessment for the Proposed Project, which is included as Appendix 15-6. Appendix 15-6 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 Project. This Telecommunications Impact Assessment included a further scoping exercise in 2021 and 2025, subsequent to the initial MKO scoping exercise.

The Telecommunications Impact Assessment identified twelve radio links that cross over/through the Proposed Project. Only one of these links was identified as being impacted by the proposed turbine layout. This link, as identified in Section 15.2.4 is an Enet link between Corr Hill and to Scoil Muire Naofa, Castlecuff. However, it has been confirmed that this link is scheduled to be decommissioned prior to construction of the Proposed Project, and as such, there are no potential impacts.

A further Irish Rail Telecommunications Impact Assessment (Appendix 15-7) was conducted by Ai Bridges. The purpose of this assessment was to consider the GSM-R Train Radio communications system and requested 5 km Exclusion Zone from Irish Rail antenna. Field surveys identified four GSM-R radio antennas along the rail line north of the site. The nearest Irish Rail GSM-R base station is over 4 km from the nearest proposed turbine (T15). At this distance, it is highly unlikely that there would be any significant impact to the Irish Rail GSM-R radio network. The Ai Bridges report further notes that Vodafone operate a cellular service (including GSM) from the telecoms mast at Clonydonnin and, as outlined in Table 15-30 above, have raised no concerns regarding impacts to GSM service coverage. The assessment further determined that the 5 km Exclusion Zone requested by Irish Rail is excessive. Due to the distance from the base station, and lack of evidence of detrimental impact from other wind farms to the Irish Rail telecommunications network, there are no potential impacts.

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, the site would continue to be managed under the requirements of the IPC licence (P0500-01) and therefore the ongoing decommissioning activities, site management and environmental monitoring would continue.

In the absence of the Proposed Project, natural revegetation processes would continue across the site. Areas of bare peat would progressively revegetate and transition through successional stages, potentially developing into heath communities, scrub or bog woodland over time, depending on local hydrological conditions. Therefore, the existing baseline of the landscape will transition from a predominantly industrial cutover peatland landscape, with open exposed peat surfaces and drainage features, to a more natural mosaic landscape of cutaway peatland, wetland and regenerating bog habitats.

The Proposed Project site is located on lands that are subject to ongoing and future peatland rehabilitation and decommissioning works required under the existing IPC Licence. Therefore, under a 'Do-Nothing' scenario, the implementation of the Draft Rehabilitation Plans as required under IPC License would continue. These rehabilitation works are mandatory and will proceed irrespective of whether the Proposed Project is permitted, in order to ensure compliance with the IPC Licence.

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

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

15.2.6.2 Construction Phase

The potential for electromagnetic interference from proposed turbines occurs during the operational phase of the Proposed Wind Farm and Proposed Grid Connection. There are no electromagnetic interference impacts for telecommunications and aviation assets or operations associated with the construction phase of the Proposed Project, and therefore no mitigation required. Potential impacts during turbine erection and commissioning are assessed in the operational phase impact assessment (Section 15.2.6.3 below).

15.2.6.3 Operational Phase

15.2.6.3.1 *Telecommunications*

Pre-Mitigation Impact

Proposed Project

As per the consultation and Telecommunications Impact Assessment summarised in Sections 15.2.4 and 15.2.5, no impacts were identified to telecommunications from the Proposed Project.

Mitigation Measures

While no mitigation measures are required, 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 Effects

The Proposed Project will have no residual effects on the telecommunications signals due to the achieved setbacks from links in the area.

Significance of Effects

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

With the exception of Proposed turbine T14 and T15 of the Proposed Project site being located on the boundary of MOA 5, there are no other IAA or DoD assets within the Proposed Project site or surrounding landscape as listed in the IAC Position Paper that may be impacted by the Proposed Project. In the absence of mitigation, impacts to aviation is considered to have a negative, slight, long-term impact, which is Not Significant.

Proposed Grid Connection

There is no potential impact on aviation from the Proposed Grid Connection.

Mitigation Measures

The following IAA and DoD requests will be complied with should the Proposed Project be consented.

DOD requests:

1. *Turbines will be illuminated by high intensity obstacle lights that will allow the hazard to be identified and avoided by aircraft in flight (and in liaison with IAA requirement No.1 below)*
2. *Obstruction lights will be incandescent or of a type visible to Night Vision Equipment.*
3. *Obstruction lighting fitted to obstacles must emit light at the near Infra-Red (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.*

IAA requests:

1. *To agree an aeronautical obstacle warning light scheme for the Proposed Project*
2. *To provide as-constructed coordinates in WGS84 format together with above mean sea level tip height elevations at each wind turbine location*
3. *To notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.*

Residual Effects

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 15.2.3.4 above, the potential for electromagnetic interference from wind turbines occurs only during the operational phase of the Proposed Project. There are no electromagnetic interference impacts associated with the construction or decommissioning phases of the Proposed Project, and therefore no mitigation required.

15.2.6.5 Cumulative Effects

There is no potential for impacts on telecommunications and aviation during the construction phase of the Proposed Project therefore cumulative effects are not considered.

Chapter 2, Section 2.8 of this EIAR describes the methodology used in compiling the list of permitted or proposed projects and plans in the area, (wind energy or otherwise) considered in the assessment of cumulative effects, and provides a description of each project, including current status, and is set out in Section 2.10 in Chapter 2 of this EIAR. During the development of any large project that holds the potential to effect telecoms or aviation, the developer is responsible for engaging with all relevant telecom operators and the relevant aviation authorities to ensure that the proposal will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the developer for each individual project is responsible for ensuring that the necessary mitigatory measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact cannot arise.

As outlined above in Section 15.2.6.3.2 the Proposed Project will have no significant 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, and gas, railways and underground telecommunication. This section also considers waste management during the construction, operational and decommissioning phases of the Proposed Project.

15.3.1 Statement of Authority

This section was completed by Catherine Johnson and reviewed by Ellen Costello and Seán Creedon. Please refer to Section 15.2.1.1 above for details.

15.3.2 Methodology

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 the EPA Guidelines (EPA, 2022)[7] on the information to be contained in EIARs.

15.3.3 Scoping and Consultation

In order to assess the potential for significant effects on existing built services and waste management in the vicinity of the Proposed Project, scoping requests were made to EirGrid, Uisce Éireann, Irish Rail and numerous sections of Offaly County Council, including the Roads Department and Environment Department. Please refer to Section 2.8 of Chapter 2 of this EIAR for details in relation to the EIA scoping exercise.

Scoping was initially conducted in May 2021. Further scoping was conducted in October 2024 due to time elapsed from when previous scoping was carried out, updates in local and national policy and legislation, updates in relevant EIAR guidance, changes in the environmental baseline and refinement of the Proposed Project design.

15.3.3.1 Utilities

Uisce Éireann (Formerly Irish Water)

An initial scoping request was sent to Uisce Éireann on the 5th of May 2021. No response was received.

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

A further scoping request was issued to Uisce Éireann on 23rd of October 2024, with a follow-up issued on 21st November 2024. An automatic response was received, but no further response has been received to date.

Considering no responses were received, no impacts are identified through the scoping assessment. Therefore, no actions were required in response to the scoping exercise. However, further consideration of impacts to Uisce Éireann assets has been provided in the Section 15.3.4 below, where a data request was issued to Uisce Éireann.

Waterways Ireland

A scoping request was sent to Waterways Ireland on the 5th of May 2021. No response was received.

A further scoping request was issued to Waterways Ireland on 23rd of October 2024. Waterways Ireland responded on the same date, advising that they "*will not be commenting*".

Considering no responses were received, no impacts are identified through the scoping assessment. Therefore, no actions were required in response to the scoping exercise. Further desk-based assessments with consideration of impacts to water has been provided in the Section 15.3.4 below, as well as in Chapter 9 Water.

Department of the Environment, Climate and Communications (DECC)

A scoping request was sent to the Department of the Environment, Climate and Communications the 5th of May 2021. A response was received from DECC via Geological Survey Ireland on the 21st of May 2021. The response comprised a list of relevant data sources and websites relating to geoheritage, geological mapping, geohazards, groundwater, natural resources and geochemistry for the country. This data was reviewed and considered in Chapter 8 Land, Soils and Geology and Chapter 9 Water.

A further scoping request was sent to DECC on the 23rd of November 2024, with a follow-up email issued by MKO on the 21st of November 2024. No response has been received to date and no additional actions required.

EirGrid

A scoping request was sent to EirGrid on the 5th of May 2021. No response has been received to date.

A further scoping request was sent to EirGrid on the 23rd of November, with a follow-up email issued by MKO on the 21st of November 2024. No response has been received to date.

Considering no responses were received, no impacts are identified through the scoping assessment. Therefore, no actions were required in response to the scoping exercise. Further desk-based assessments with consideration to impacts on electricity infrastructure has been provided in the Section 15.3.4 below.

15.3.4 Baseline Environment

15.3.4.1 Existing Built Services and Utilities

The Proposed Project has been designed to avoid identified services and utilities 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.

Construction of underground cabling for cabling connecting proposed turbines to the proposed onsite 220kV substation will require cable trenching across the L7002 Local Road between two sections of the site and will therefore be subject to a Road Opening License (ROL). The timing of these works would therefore be controlled by the ROL process with the relevant Local Authority.

15.3.4.1.1 *Electricity*

The Shannonbridge-Maynooth 220kV Overhead Line (OHL) runs to the north of the site in a northeast-southwest direction and is located within the site, approximately 0.4 km north of the proposed onsite 220kV substation at its closest point. A break in the Shannonbridge-Maynooth 220kV OHL approximately 0.4 km north of the proposed onsite 220kV substation will facilitate the connection of the Proposed Project to the national grid. No other electricity infrastructure is present within the Proposed Project site.

A 38kV OHL runs in a north-south direction to the west of the Proposed Project site; there is no interaction with any Proposed Project infrastructure. This line passes 90 m from the westernmost boundary of the site at the N62.

There are no existing substations within the Proposed Project site. The nearest substation along the Shannonbridge-Maynooth 220kV OHL is at West Offaly Power Station, c. 15km east of the Proposed Project site. The nearest substation to the site is the Lumcloon 110kV Substation, located approximately 10km south of the Proposed Project site.

15.3.4.1.2 *Gas*

A data request was sent to Gas Networks Ireland in February 2023. The data returned demonstrated that there are no gas pipelines within the Proposed Project site.

In addition, GNI supply MKO with their latest infrastructure data on a quarterly basis. The latest data share illustrating all GNI infrastructure was provided to MKO in March 2026. The data indicates that there is no GNI infrastructure is located within or adjacent to the site with the nearest infrastructure being approximately 8.6 km to the east of the Proposed Project.

Therefore, considering no potential impacts will occur, gas has not been further considered in the assessment in Section 15.3.5 and Section 15.3.6.

15.3.4.1.3 *Water*

There are no underground water or sewerage networks within the Proposed Project site. Therefore, impacts on water or sewage networks has not been considered further in the assessment in Section 15.3.5.

15.3.4.2 Waste Management

There are no EPA-licensed or local authority-authorised waste facilities or activities located within the Proposed Project site. The closest, authorised municipal waste facility is located approximately 9km northwest of the Proposed Project site, near Athlone, Co. Westmeath.

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

Current activities onsite include site management and environmental monitoring as required under Integrated Pollution Control (IPC) Licence P0500-01 from the EPA. Condition 7 of the licence compels BnM to correctly dispose of waste to licenced facilities. As part of the licence compliance, BnM must dispose of waste appropriately to licenced waste facilities. Since active peat extraction under IPC Licence No. 500-01 ceased in June 2020, onsite activities have reduced considerably. However, waste materials will continue to be removed off site if recycling is not possible and disposed by licenced waste contractors. Waste currently produced at the Boora Bog Group, within which part of the Proposed Project site is located, is divided into hazardous and non-hazardous materials, weighed and reported in Annual Environmental Reports (AERs) which are submitted to the EPA each year. AERs from 2008 to 2024[8] are publicly available for viewing on the EPA licence permit portal.

15.3.5 Likely Significant Effects and Associated Mitigation Measures

The below assessment evaluates the impact (where there is the potential for an impact to occur) on existing built services and utilities, and waste management during the construction, operation and decommissioning phases of the Proposed Project.

15.3.5.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, the site would continue to be managed under the requirements of the IPC licence (P0500-01) and therefore the ongoing decommissioning activities, site management and environmental monitoring would continue.

In the absence of the Proposed Project, natural revegetation processes would continue across the site. Areas of bare peat would progressively revegetate and transition through successional stages, potentially developing into heath communities, scrub or bog woodland over time, depending on local hydrological conditions. Therefore, the existing baseline of the landscape will transition from a predominantly industrial cutover peatland landscape, with open exposed peat surfaces and drainage features, to a more natural mosaic landscape of cutaway peatland, wetland and regenerating bog habitats.

The Proposed Project site is located on lands that are subject to ongoing and future peatland rehabilitation and decommissioning works required under the existing IPC Licence. Therefore, under a 'Do-Nothing' scenario, the implementation of the Draft Rehabilitation Plans as required under IPC License would continue. These rehabilitation works are mandatory and will proceed irrespective of whether the Proposed Project is permitted, in order to ensure compliance with the IPC Licence.

In addition, if the Proposed Project were not to proceed, the potential to impact on utilities does not arise.

The opportunity to capture a significant part of County Offaly's and Ireland's valuable renewable energy resources would be lost, as would the opportunity to contribute to meeting Government and EU Targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy would also be lost. This would be a long-term slight negative effect and is not significant.

15.3.5.2 Construction Phase

The construction of the Proposed Project will be unlikely to have an impact on above ground or underground built services or waste management. The Proposed Project infrastructure has been

[8] *Integrated Pollution Control License PO-500-01 issued by the EPA for the Boora Bog Group. Available at: https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0500-01*

designed to avoid existing underground electricity cables and other services and can be described as mitigation by design, therefore there is no potential to give rise to effects on electrical and other services.

15.3.5.2.1 *Electricity*

Proposed Project

The Shannonbridge-Maynooth 220 kV OHL runs a northeast-southwest direction and is located within the site, approximately 0.4km north of the proposed onsite 220kV substation at its closest point. A break in the Shannonbridge-Maynooth 220kV OHL approximately 0.4 km north of the proposed onsite 220kV substation will facilitate the connection of the Proposed Project to the national grid.

The existing OHL will be impacted through breakage during the construction phase. As part of construction of the Proposed Grid Connection infrastructure under the existing OHL, the associated electricity supply will be shut off intermittently. This would have a temporary, moderate negative impact on electricity supply, which is Not Significant, in the absence of mitigation. In advance of works relating to the Proposed Grid Connection break of the existing OHL, comprehensive consultation and coordination will be carried out with EirGrid/ESB. This process will ensure that appropriate outage planning, network management measures, and contingency arrangements are implemented, thereby maintaining continuity of electricity supply and minimising any potential impact on local residents, businesses, and critical services.

A 38kV OHL runs in a north-south direction to the west of the Proposed Project site, c. 90 m from the westernmost boundary of the site at the N62. However, this line is located c. 155 m from the proposed site entrance and separated from the N62 by a bridge over the railway. Therefore, there is no interaction with any Proposed Project infrastructure and therefore no potential for impacts.

Mitigation Measures

- Goal posts will be established under the overhead line for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks
    - 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 operating voltages of overhead electricity lines running the site. 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 the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- When activities must be carried out beneath overhead lines, e.g. component delivery or substation construction, 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 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 the Construction Environment Management Plan and Chapter 5 Population and Human Health will be adhered to during the construction, operation and decommissioning phases.

Residual Effects

With the implementation of the above measures, the residual effect is considered to be a negative, temporary, slight effect on local electricity supply during the construction phase, which is Not Significant.

Significance of Effects

The effect on local electricity supply due to the construction of the Proposed Project is considered Not Significant.

15.3.5.2.2 *Water*

Pre-Mitigation Impacts

There are no underground water or sewerage networks within the Proposed Wind Project site. The nearest group water scheme (GWS) is located 0.6 km northeast of the site, and the source protection area does not lie within the Proposed Project site. The EPA mapped Fortified House Castlearmstrong Stream acts as a hydrological barrier between the Proposed Project site and this GWS. The closest mapped Public Water Supply (PWS) is located over 5 km from the Proposed Project site. In the absence of mitigation, impacts to water supply is considered to have a Negative, slight, long-term, impact, which is Not Significant.

Mitigation Measures

Chapter 9 Water assesses the potential for impact on public water supply and private wells during the construction, operation and decommissioning phases. While no significant effects are identified, best practice mitigation measures have been prescribed to in the chapter 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 potential groundwater well supplied, and prevailing geology, topography and groundwater flow directions, the residual effects are negative, imperceptible, long-term effect, which is Not Significant in terms of quality or quantity on water.

Significance of Effects

The effect on quality or quantity of water due to the construction of the Proposed Project is considered Not Significant.

15.3.5.2.3 *Waste Management*

Pre-Mitigation Impacts

Proposed Project

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste. Full details of wastes expected to be generated are detailed with the RWMP of the CEMP (Appendix 4-4 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 skip at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Proposed Project site. Therefore, all waste streams generated on site will be deposited into a single waste skip. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal.

Site personnel will be instructed at induction that under no circumstances can 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 waste management are presented in the CEMP which is included as Appendix 4-4.

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, which is Not Significant.

Significance of Effects

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

15.3.5.3 Operational Phase

15.3.5.3.1 *Electricity*

Pre-Mitigation Impacts

Proposed Project

In the unlikely event that a replacement of turbines components is required during this phase, the impacts described in Section 15.3.5.2.1 will be the same.

The Shannonbridge-Maynooth 220 kV OHL runs in a northeast-southwest direction and is located within the site, approximately 0.4km north of the proposed onsite 220kV substation at its closest point.

A break in the Shannonbridge-Maynooth 220kV OHL approximately 0.4km north of the proposed onsite 220kV substation will facilitate the connection of the Proposed Project to the national grid. The Proposed Project will supply approximately 90MW of electricity to the national grid during the operational phase, offsetting the use of fossil fuels within the electricity generating sector. The Proposed Project has the potential supply approximately 65,700 Irish households with clean electricity per year. Therefore, the Proposed Project will have a positive moderate long-term impact on electricity, which is Not Significant.

Mitigation Measures

The measures listed in Section 15.3.5.2.1, which relate to the delivery of turbine components through the site will be implemented in the unlikely event that a replacement of turbine components is required.

Residual Effects

The Proposed Project will have a positive, moderate, long-term residual effect on national electricity supply during the operational phase, which is Not Significant.

Significance of Effects

The effect on local electricity supply due to the operation of the Proposed Project is considered Not Significant.

15.3.5.3.2 *Water*

Pre-Mitigation Impacts

Proposed Project

Potential health effects are associated with negative impacts (i.e. contamination) on public and private water supplies and potential flooding. There are no mapped PWS or GWS within the Proposed Project site. The Boher Leamonaghan GWS is located to the northeast of the site, however the mapped source protection zone for this GWS does not fall within the Proposed Project site. A local stream also acts as a hydrological barrier between the Proposed Project site and this GWS. Therefore, the Proposed Project will have a slight negative long-term impact on water, which is Not Significant

Mitigation Measures

Chapter 9 Water assess 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 quality or quantity of water due to the operation of the Proposed Project is considered Not Significant.

15.3.5.3.3 *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.

Members of the public accessing the amenity track will generate low levels of municipal waste. The proposed 220kV substation 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 site will include appropriate signage encouraging amenity users 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 disposed of in a covered skip, located within the proposed onsite 220kV 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.

The wastewater holding tank 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.

15.3.5.4 Decommissioning Phase

The wind turbines proposed as part of the Proposed Wind Farm are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Wind Farm will be decommissioned fully as described in Chapter 4 and the accompanying decommissioning plan in Appendix 4-8.

The works required during the decommissioning phase are described in Section 4.13 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, albeit to a lesser extent. Based on the assessment outlined above in Section 15.3.4, there will be no significant effects on existing and built services, or waste management as part of the decommissioning phase

15.3.6 Cumulative Effects

Potential cumulative effects on material assets between the Proposed Project and other permitted or proposed plans in the area, (wind energy or otherwise), as set out in Section 2.10 in Chapter 2 of this EIAR, were also considered as part of this assessment. The developments considered as part of the cumulative effect assessment are described in Section 2.10 of this EIAR, with relevant developments presented in Appendix 2-3; please see Table 2.10 of Chapter 2 for the relevant cumulative assessment boundary justification.

As part of the IPC licence rehabilitation requirements, BnM is required to produce cutaway bog decommissioning and rehabilitation plans, please see Appendix 2-4 to view the draft Cutaway Bog Decommissioning and Rehabilitation Plan for the site. These plans have considered the Proposed Project footprint and demonstrate that both peatland rehabilitation and renewable energy can coexist harmoniously onsite. Irrespective of any further development on the site, BnM's statutory duties to discharge the conditions of its IPC Licence will remain ongoing.

The Peatland Climate Action Scheme (PCAS) comprises enhanced peatland rehabilitation (above and beyond IPC licence requirements). As identified in Section 2.10.2.4 of Chapter 2, PCAS is proposed in bogs in the vicinity and adjacent to the Proposed Project site; PCAS will not occur within the site and does not form part of the Proposed Project application. Please note, PCAS activities in the vicinity and adjacent to the Proposed Project site have been cumulatively assessed.

15.3.6.1 Construction Phase

15.3.6.1.1 *Electricity*

As demonstrated in Section 15.3.5.2.1 above, there are no potential impacts and no significant effects on electricity supply and infrastructure during the construction phase of the Proposed Project. Therefore, during the construction phase, there will be no significant cumulative effects on electricity infrastructure or supply with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they be constructed in parallel with the Proposed Project.

15.3.6.1.2 *Water*

As demonstrated in Section 15.3.5.2.2 above, there are no significant effects on water infrastructure or supply during the construction phase of the Proposed Project. Therefore, during the construction phase, there will be no significant cumulative effects on water supply with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they be constructed in parallel with the Proposed Project.

In 2024, PCAS has selected Curraghalassa Bog and Derrynagun Bog which are located on the southern side of the R436 road which connects Ferbane, Co. Offaly to Ballycumber, Co. Offaly. Both Curraghlassa and Derrynagun Bog are not hydrologically connected to the Proposed Project site and therefore there is no potential for cumulative impacts on water should PCAS works and the construction of the Proposed Project occur in parallel.

15.3.6.1.3 *Waste Management*

As demonstrated in Section 15.3.5.2.3 above, there are no significant effects on waste management services during the construction phase of the Proposed Project. Therefore, during the construction phase, there will be no significant cumulative effects on waste management services with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they be constructed in parallel with the Proposed Project.

15.3.6.2 Operational Phase

15.3.6.2.1 *Electricity*

As demonstrated in Section 15.3.5.3.1, there is a long-term slight positive effect on electricity supply during the operational phase. The Proposed Project will supply approximately 90MW of electricity to the national grid during the operational phase. The Proposed Project has the potential supply approximately 65,700 Irish households with clean electricity per year. There will be a positive, long-term, significant cumulative effect on electricity supply if planning permission is granted alongside existing and proposed wind energy developments in County Offaly. There is no cumulative effect with other non-energy producing developments within the surrounding landscape during the operational phase.

15.3.6.2.2 *Water Supply*

As demonstrated in Section 15.3.5.3.2 above, there are no significant effects on water infrastructure or supply during the operational phase of the Proposed Project. Therefore, during the operational phase, there will be no significant cumulative effects on water infrastructure or supply with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they operate in parallel with the Proposed Project.

The implementation of the Draft Rehabilitation Plan in conjunction with the of the Proposed Project as well as proposed, permitted and operational plans and projects listed in Chapter 2 of its EIAR is considered. As it is the intention of the BnM to integrate the peatland rehabilitation measures proposed as part of the substitute consent project with the Proposed Project there are no significant negative cumulative effects on water when considering the future works associated with the Lemanaghan Bog (i.e., the Draft Rehabilitation Plan) and the Proposed Project.

15.3.6.2.3 *Waste Management*

As demonstrated in Section 15.3.5.3.3 above, 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. Therefore, during the operational phase, there will be no significant cumulative effects on waste management with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they operate in parallel with the Proposed Project.

15.3.6.3 Decommissioning Phase

As demonstrated in Section 15.3.5.4 above, there are no significant effects on utilities and waste management during the decommissioning phase of the Proposed Project. Therefore, during the decommissioning phase, there will be no significant cumulative effects on utilities and waste management with other proposed or consented plans, projects and peatland rehabilitation measures within the surrounding landscape should they be constructed in parallel with the Proposed Project.

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 15-31 Impact Assessment Classification Summary

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
Traffic and Transport	Temporary, Slight, Negative	Section 15.1.14.5.1 Section 15.1.14.5.2	Temporary, Slight Negative	Not Significant
Telecoms and Aviation	N/A	N/A	N/A	N/A
Other Material Assets	**Electricity**: Temporary, Moderate Negative **Water**: Long-Term, Slight, Negative **Waste Management**: Short-Term, Moderate Negative	Section 15.3.5.2.1 Section 15.3.5.2.2 Section 15.3.5.2.3	**Electricity**: Temporary, Slight Negative **Water**: Long-Term, Imperceptible, and Negative **Waste Management**: Short-Term, Slight Negative	Not Significant
Operational Phase				
Traffic and Transport	Long-Term, Imperceptible, and Negative	N/A (Section 15.1.14.5.3)	Long-Term, Imperceptible, and Negative	Not Significant
Telecoms and Aviation	Telecoms: no identified impacts Aviation: Slight, Long-Term and Negative	Section 15.2.6.3.1 Section 15.2.6.3.2	Telecoms: no identified impacts Aviation: Imperceptible, Long-Term and Negative	Not Significant
Other Material Assets	**Electricity**: Long-Term, Moderate, Positive **Water**: Long-Term, Slight, Negative **Waste Management**: Long-Term, Slight, Negative	Section 15.3.5.3.1 Section 15.3.5.3.2 Section 15.3.5.3.3	**Electricity**: Long-Term, Moderate, Positive **Water**: Long-Term, Imperceptible, Negative **Waste Management**: Long-Term,	Not Significant

			Imperceptible, Negative	
Decommissioning Phase				
Traffic and Transport	Temporary, Imperceptible, and Negative.	Section 15.1.14.5.4	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