MOANMORE LOWER GREEN ENERGY LIMITED

MOANMORE LOWER WIND FARM

COUNTY CLARE

TRAFFIC MANAGEMENT PLAN

April 2025

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DOCUMENT APPROVAL

PROJECT	Moanmore Lower Wind Farm	
CLIENT / JOB NO	Moanmore Lower Green Energy Limited	6778
DOCUMENT TITLE	Traffic Management Plan (TMP)	

	Prepared by	**Reviewed/Approved by**
Document Final	Name John Doogan	Name David Kiely
Date 8th April 2025	Signature	Signature

6778/703/JD

MOANMORE LOWER WIND FARM

TRAFFIC MANAGEMENT PLAN

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1 INTRODUCTION

1.1 Brief

Jennings O'Donovan & Partners Limited has been appointed by Moanmore Lower Green Energy Limited to prepare a Traffic Management Plan ("TMP") for the proposed Moanmore Lower Wind Farm (The Development), Co. Clare. The wind farm Site is located in south-west county Clare, 3km northwest of the town of Kilrush and 6.8km southwest of Cooraclare village. The wind farm Site is located within the townland Moanmore Lower. It is located within an area comprised of agricultural livestock grazing farmland, bog, and shrub land. The townlands through which the proposed Grid Connection will transect include the townlands of Moanmore Lower, Moanmore South, and Tullabrack. Vertical realignment works will be undertaken on a crest curve of the L6132 in the townland Gower South. Construction of a temporary blade transfer area off the L6132 local road in the townland of Tullabrack East. Temporary works will be required in the verges of the L6132, L2036 and the L2034 in the townlands of Derreen, Tullagower, Gowerhass, Tullabrack east, Tullabrack West, Tullabrack, Moanmore South and Moanmore Lower.

The Development will include the following main components:

- Erection of 3 no. wind turbines with an overall ground to blade tip height of 150m, with a rotor diameter of 136m and a hub height of 82m and a total generating capacity of 15MW,
- Construction of turbine hardstand areas and turbine foundations,
- Construction of new internal site access tracks and upgrade of existing site track, to include all associated site drainage,
- Construction of 1. no new site entrance along the turbine delivery route with access onto the adjoining local road network (L6132),
- Construction of 1 no. temporary construction compound with associated temporary site offices, parking areas and security fencing,
- Development of a site drainage network,
- Construction of 1 no. 38kV electrical substation with all associated electrical plant and equipment, security fencing, lightening protection, security cameras and gates, and all ancillary structures and works,
- 1 no. permanent spoil storage area,
- All wind farm internal cabling connecting the wind turbines to the electrical substation,
- All works associated with the permanent connection of the wind farm to the national electricity grid comprising a 38kV underground cable in permanent cable ducts from the proposed, permanent, on-site substation and to the existing Tullabrack 110kV ESBN Substation,
- 2 no. flood compensation areas,

- Vertical realignment of an existing crest curve on the L6132 local road in order to prevent grounding of abnormal load vehicles during delivery of turbine components,
- Ancillary forestry felling to facilitate construction and operation of the development,
- Construction of a blade transfer area off the L6132,
- Provision of 2 no. biodiversity enhancement areas,
- Upgrade of an existing site entrance onto the adjoining local road network (L2034) including the demolition of an existing wall and removal of hedgerow at the site entrance to facilitate abnormal load vehicles during delivery of turbine components and reconstruction of same wall and replanting of hedgerow,
- Landscaping and all associated ancillary works.

1.2 Statement of Authority

The Traffic Management Plan has been prepared by John Doogan of Jennings O'Donovan & Partners Limited, Finisklin, Sligo. Established in Sligo in 1950, Jennings O'Donovan & Partners Limited is a Clean Tech Company providing consulting engineering services in the areas of road design, renewable energy, civil and structural engineering, water supply, wastewater collection and treatment, environmental resource management and impact assessment and in the area of industrial and commercial development.

1.3 Site Location, Context and proposed Development

The proposed Development is located in south-west County Clare 3.5km north-east of the town of Kilrush and 3km southwest of Cooraclare village. The Development will consist of 3 No. 4-5MW wind turbines with an overall ground to blade tip height of 150m. The candidate wind turbine will have a rotor diameter of 136m and a hub height of 82m. Each turbine will be erected on an insitu concrete foundation with steel reinforcement and will have a Turbine Hardstand constructed from granular material, the Turbine Hardstand will be used to store turbine components and to support a crane during the erection of the turbine. Each Turbine Hardstand will be linked to the site entrance on the L2034 by a network of access tracks constructed from granular materials with associated drainage and fencing. The turbines will be linked to the Onsite Substation by electrical cabling laid in buried ducts alongside the site access track. The Onsite Substation will be linked to the national grid via an underground grid connection to the existing Tullabrack 110kV substation. A permanent Met Mast with a height of 82m for monitoring wind speeds will be constructed within the wind farm site. Surplus material arising from excavations at the wind farm site will be used to landscape site access track and hardstand embankments and to backfill the onsite borrow pit. Any remaining surplus material will be deposited in the permanent spoil storage area. The Location and layout of the wind farm site is shown on **Figure 1**. The location of the wind farm Grid Connection is shown on **Figure 2**.

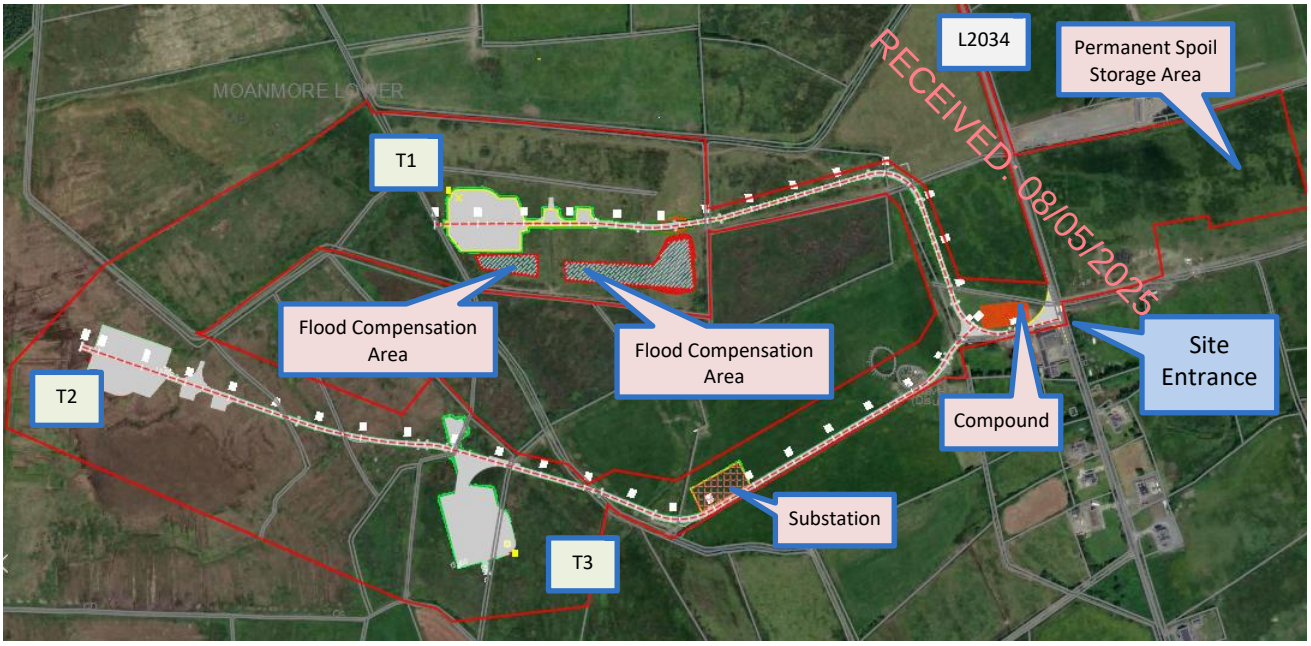


Figure 1: Site Layout

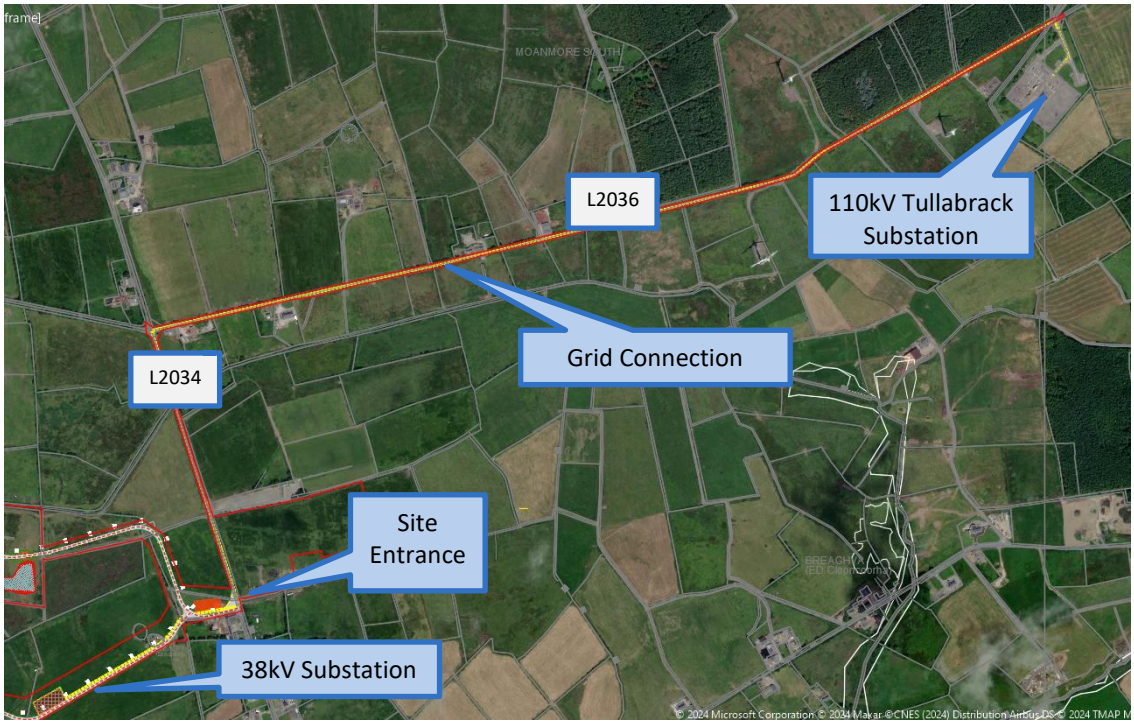


Figure 2: Grid Connection Route

2 EXISTING PUBLIC ROAD NETWORK

2.1 Existing Roads in the Vicinity of the Site

The entrance to the proposed Development will be located on the L2034 local road (Reference Plate 1). The L2034 is a 5.0m wide single carriageway with grass verges. The L2034 runs between the N67 in Kilrush and the L2030 junction to the north of the proposed development. The L2034 local road and has an 80km/h speed limit classification. The L2034 is in good condition and will be the primary access road to the site during the construction, operation and decommissioning of the proposed Development.

Plate 1 – L2034 Local Road

The existing N68 national secondary road (Reference Plate 2) is typically a 6.0m wide two lane single carriageway road in the vicinity of the Site. The road is delineated with road markings and signposted with regulatory and directional signs.

Plate 2 – N68 National Road

The existing N67 national secondary road (Reference Plate 3) is typically a 6.0m wide two lane single carriageway road in the vicinity of the Site. The road is delineated with road markings and signposted with regulatory and directional signs.

Plate 3 – N67 National Road

The existing L6132 (Reference Plate 4) is a 2.8m / 3.0m wide two lane local road with regulatory signs and roadmarkings at junctions. The l6132 will be used during delivery of turbine components.

Plate 4 – L6132 Local Road

The existing L2036 (Reference Plate 5) is a 2.8m / 3.0m wide two lane local road with regulatory signs and roadmarkings at junctions. The L2036 will be used during delivery of turbine components and during grid connection works.

Plate 5 – L2036 Local Road

2.2 Existing Junctions in the Vicinity of the Site

The existing junction between the N67 and the L2034 (Reference plate 6) is a ghost island T-junction with priority for N67 traffic. The junction is located in a 60km/h speed limit zone. The junction is a stop-controlled junction with regulatory road markings and signage. The junction is lit by public lighting.

Plate 6 – N67 / L2034 Junction

The existing junction between the N68 and the L6132 (Reference plate 7) is a staggered crossroads junction with priority for N68 traffic. The junction is located in a 80km/h speed limit zone. The junction is a stop-controlled junction with regulatory road markings and signage. The junction is not lit by public lighting.

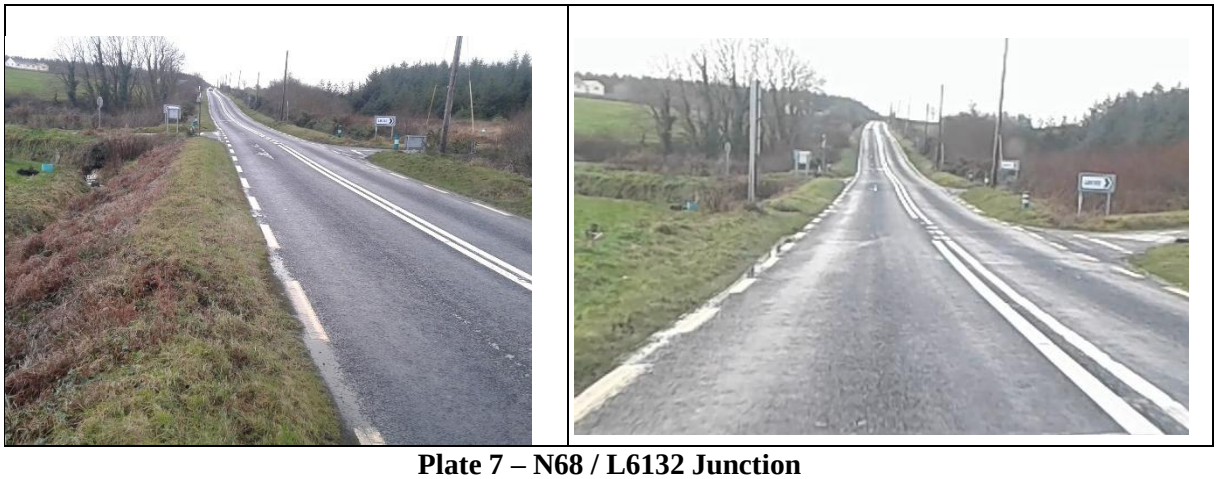


Plate 7 – N68 / L6132 Junction

The existing junction between the R483 and the L6132 at Tullabrack Cross (Reference plate 8) is crossroads junction with priority for R483 traffic. The junction is located in a 80km/h speed limit zone. The junction is a stop-controlled junction with regulatory road markings and signage. The junction is not lit by public lighting.

Plate 8 – R483 / L6132 Tullabrack Cross Junction

The existing junction between the L2034 and the L2036 (Reference plate 9) is crossroads junction with priority for L2034 traffic. The junction is located in a 80km/h speed limit zone. The junction is a stop-controlled junction with regulatory road markings and signage. The junction is not lit by public lighting.

Plate 9 – L2034 / L2036 Junction

3 SITE ACCESS

3.1 Proposed Wind Farm Site Entrances

The location of the site entrance to the proposed Development is shown on **Figure 1.** The site entrance will be constructed on the L2034 local road. The site entrance will consist of a simple T-Junction with priority for L2034 traffic. The junction will be constructed to accommodate HGV vehicles with an extended overrun area to accommodate the swept path and wheel loading from abnormal load vehicles delivering turbine components during the turbine erection phase of the project. During the construction wind farm infrastructure such as roads and hardstands, the overrun area at the junctions for abnormal load vehicles will not be in use and access to the overrun areas will be restricted using temporary traffic barriers. The temporary traffic barriers will be used to channelise traffic at the junctions and to prevent parking in the vicinity of the L2034. The overrun area at the junction will be reinstated following the delivery of turbine components. The site entrance junction will have a dwell area with a gradient of -2.5% at its intersection with the L2034 with drainage falling towards the wind farm site and away from the L2034 carriageway. The site entrance junction will be gated and fenced with stock proof fencing

during the construction period, the access gates will be set back 20m from the L2034 carriageway edge to accommodate HGV vehicles entering the wind farm site and to eliminate the possibility of vehicles blocking the L2034. Wheel cleaning facilities will be provided at site access junctions to prevent the spread of mud and debris onto the L2034 carriageway. The layout of the site entrance is shown on **Figure 3**. Visibility at the junction will be in accordance with Clare County Council Development Plan, Table A1.6.2 and will have visibility splays of 160m measured from a 2.4m setback.

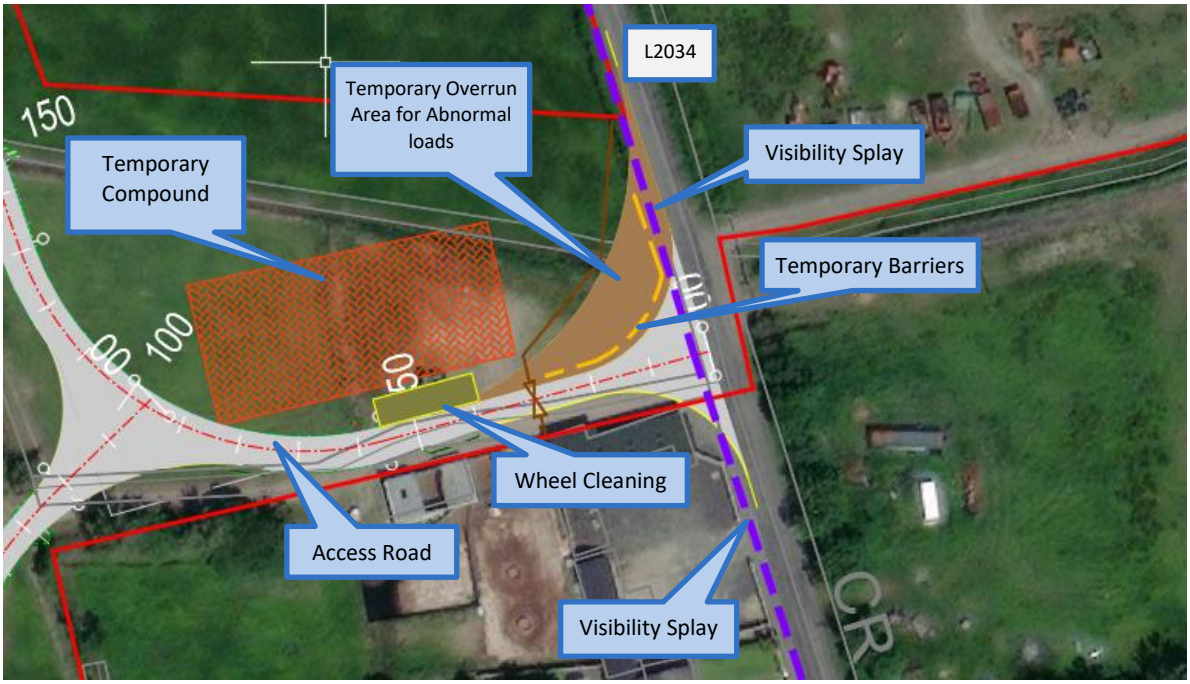


Figure 3: L2034 Site Entrance

3.2 Junction Signage and Traffic Management

The proposed Development site access junctions will be stop controlled junctions and will be signposted and marked in accordance with the Traffic Signs Manual during the operations phase of the wind farm. The junctions will be fitted with a RUS 027 stop sign and markings in accordance with TSM Figure 7.35.

During the construction of the wind farm the site entrance junctions will be signposted with advance warning signs in accordance with Chapter 8 of the Traffic Signs Manual. The layout of site entrance junction advance warning signage is shown on **Figure 7.**

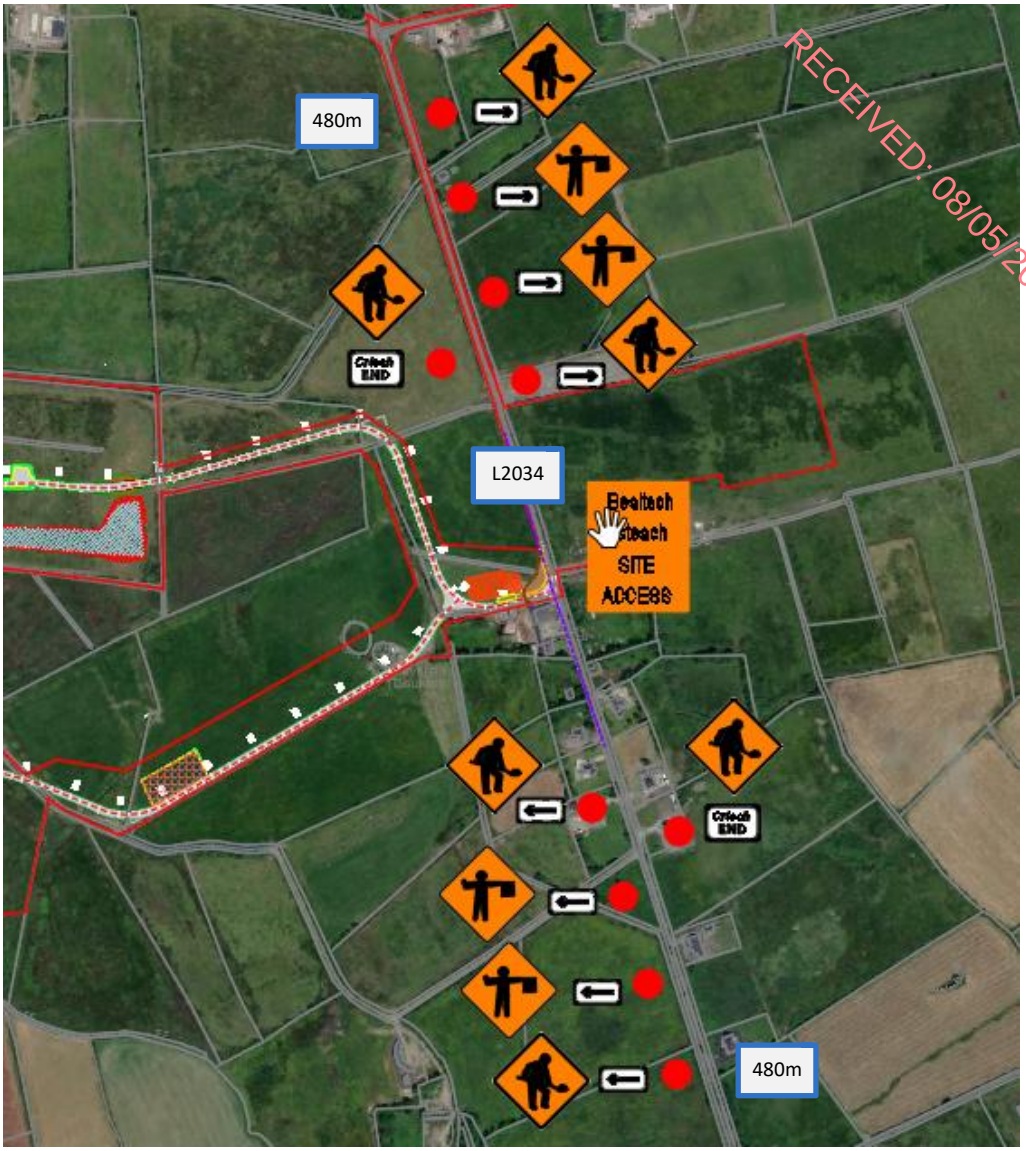
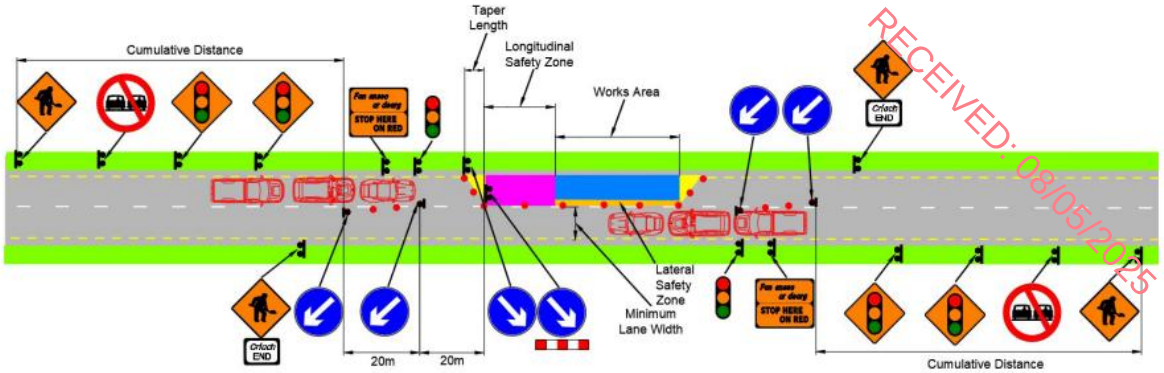
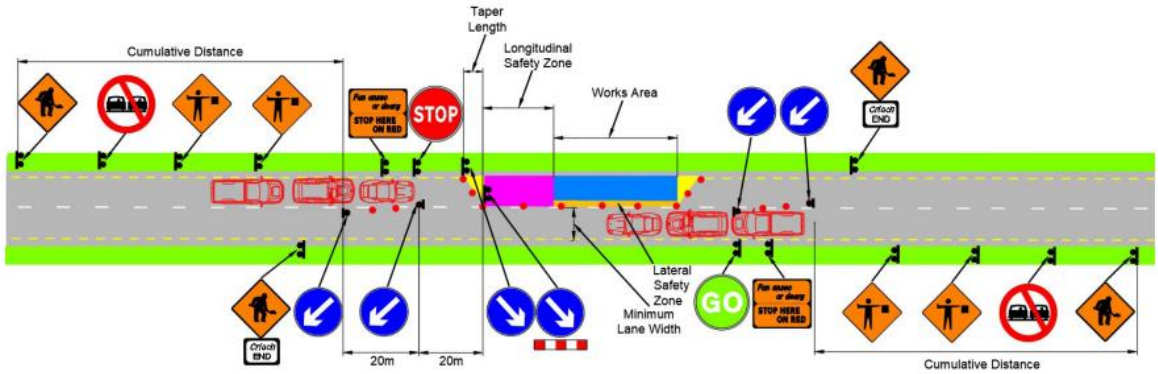


Figure 7: Site Entrance Signage

Traffic management will be required during the construction of site access junction on the L2034 at the junction interface with the local road network. Traffic management will also be required at the site access during the delivery of turbine components. During the construction of the Development site access junction, traffic management will be carried out in accordance with Chapter 8 of the Traffic Signs Manual using temporary traffic signals and flagmen. During the delivery of turbine components traffic management will be carried out using flagmen at the site entrance, traffic management during turbine deliveries will be required for short periods of time during off peak hours on the public road network to allow abnormal load vehicles to access the site. Details of traffic management systems for junction construction and turbine delivery is shown on **Figure 8.**



Temporary Traffic Signals – Site Entrance Construction



Stop & Go – Turbine Delivery

Figure 8: Traffic Management

4 HAUL ROUTES FOR CONSTRUCTION, TURBINE DELIVERY & OPERATIONS TRAFFIC

4.1 Haul Route for Wind Farm Infrastructure Construction HGV Traffic

All HGV traffic associated with the construction of the proposed Development infrastructure, including site access roads, hardstands and onsite substation will use the L2034 site entrance to access the Site from the national road network. Haul routes for wind farm construction traffic are shown in **Figure 9.**

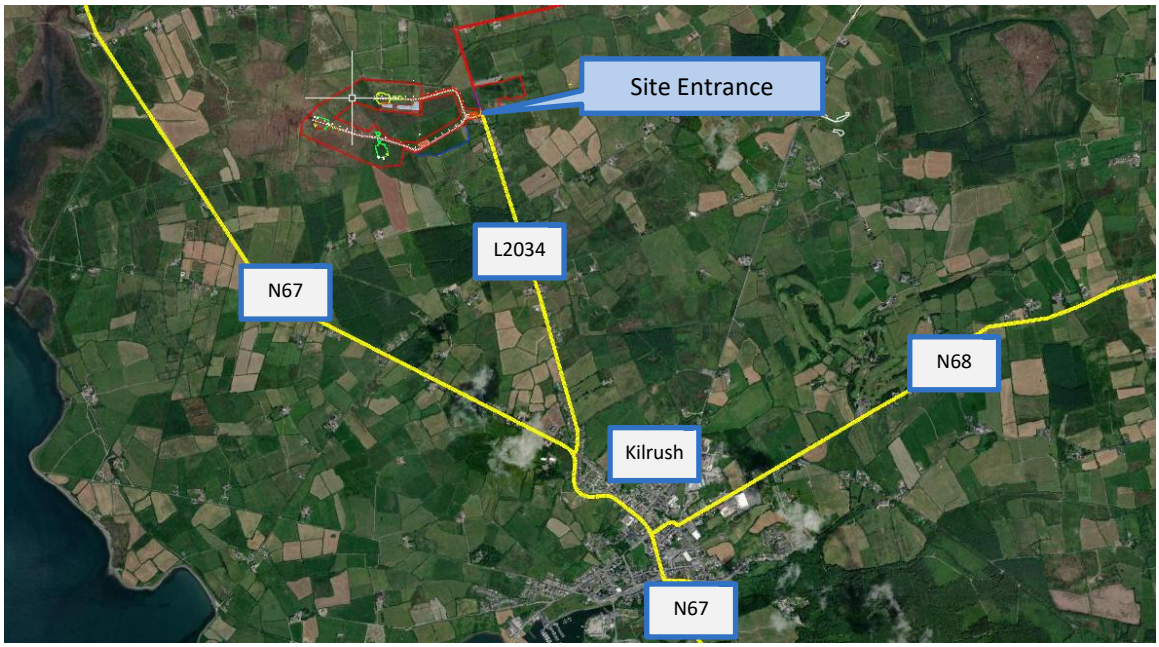


Figure 9: Construction Haul Route

4.2 Material Supplies

Granular materials and ready mix concrete for the construction of site access roads, turbine hardstands, turbine foundations construction and Electrical Substation foundations will be sourced from a local authorised quarry located along the N67, N68 national secondary route and the R483 regional road corridors. The location of aggregate and concrete suppliers in the vicinity of the proposed Development is shown in **Figure 10**. Material suppliers will follow the construction haul routes shown in **Figure 9** to access the site.

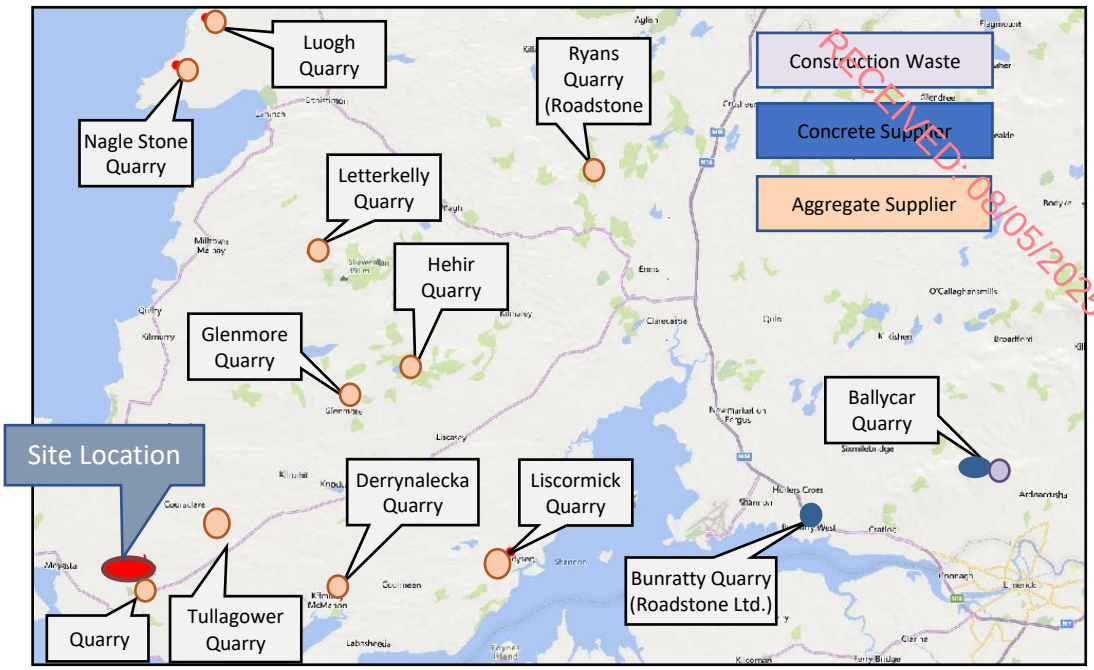


Figure 10: Concrete and Aggregate Suppliers

4.3 Haul Route for Wind Farm Grid Connection Traffic

All HGV traffic associated with the construction of the Grid Connection between the 38kV Onsite Substation and the 110kV substation at Tullabrack will follow the grid connection route and associated diversions to access the works. Construction vehicles will be prohibited from using local roads which are not part of the grid connection works or local diversions. The grid connection route is shown in **Figure 2.**

4.4 Grid Connection Works on the Public Road Network

A summary of the grid connection works on the public road network are listed in **Table 1**, Full details of traffic management systems and diversions during the grid connection works on the public road network are included in **Appendix A.**

Road Number	Works	Crossings
L2034	Cable Trench in Public Road	
L2036	Cable Trench in Public Road	

Table 1: Grid Connection Works

4.5 Haul Route for Turbine Delivery Traffic

The turbine components for the proposed Development will be shipped to Shannon Foynes Port where they will be stored for transportation. The turbine components will be transported on the public road

network using abnormal load vehicles between Shannon Foynes Port and the proposed Development. The proposed Turbine Delivery Route between Shannon Foynes Port and the proposed Development site is shown in **Figure 11.** The Turbine Delivery Route in the vicinity of the proposed Development is shown in **Figure 12.** The turbine components will be delivered to the proposed Development using the following public road network and local authority jurisdiction.

- Exit from Shannon Foynes Port on L6188 – Limerick County Council
- N69 – Limerick County Council / Transport Infrastructure Ireland
- N18 – Limerick County Council / Transport Infrastructure Ireland / DirectRoute (Limerick) Ltd
- N18 – Clare County Council / Transport Infrastructure Ireland
- M18 – Clare County Council / Transport Infrastructure Ireland
- N85 – Clare County Council / Transport Infrastructure Ireland
- N68 – Clare County Council / Transport Infrastructure Ireland
- L6132 – Clare County Council
- L2036 – Clare County Council
- L2034 – Clare County Council

Alternative route for high loads to avoid N18 Limerick Tunnel

- R510 (Junction 2 on the N18)– Limerick County Council
- R527 – Limerick County Council
- R445 (Rejoin N18 at junction 4)– Limerick County Council / Clare County Council

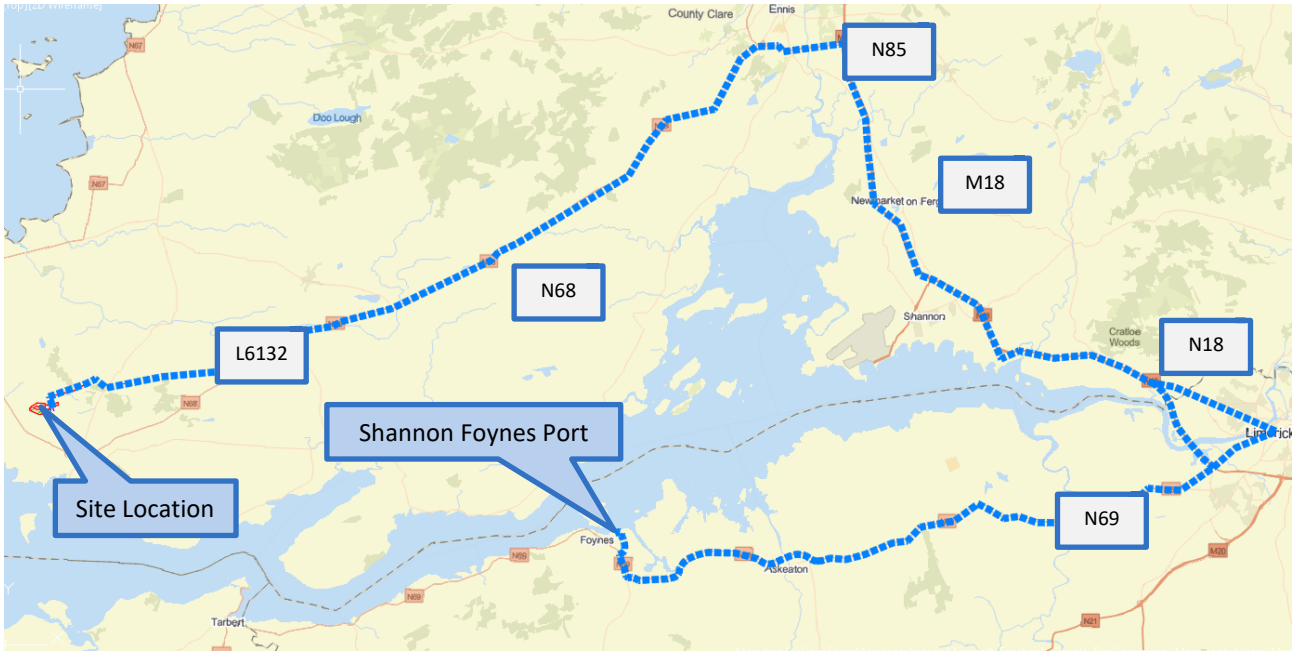


Figure 11: Turbine Delivery Route

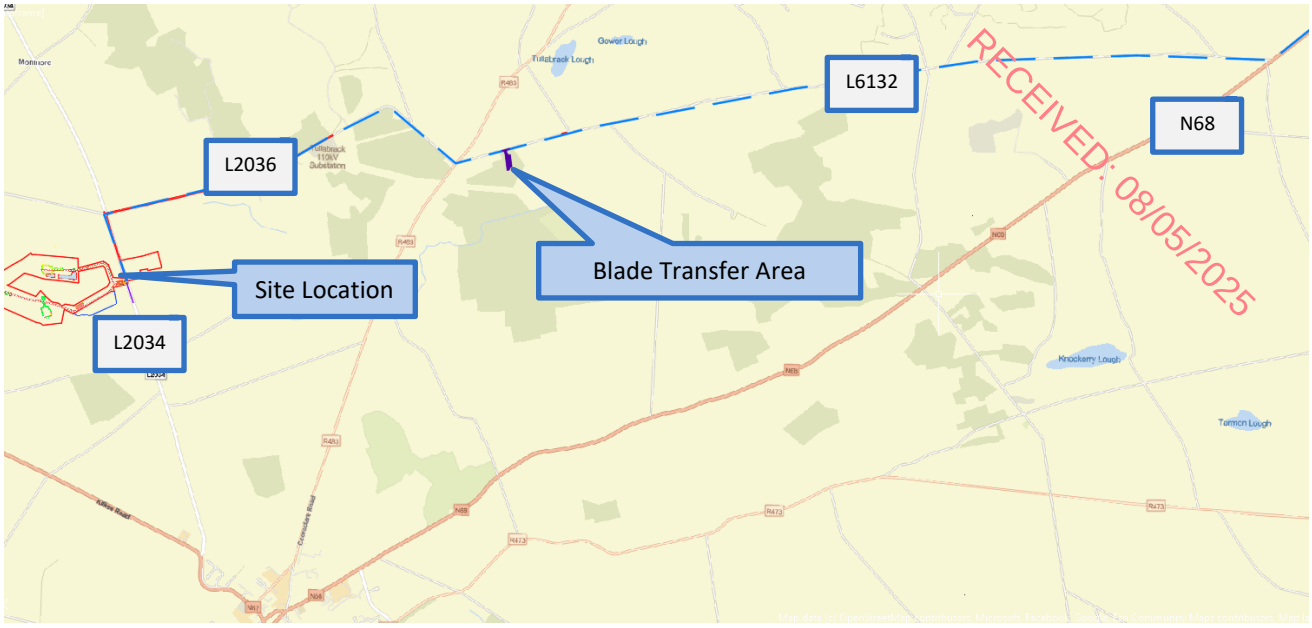


Figure 12: Turbine Delivery Route – N68 to The Proposed Development

4.6 Transportation of Abnormal Load Turbine Components on the Public Road Network

The transportation of turbine components consisting of abnormal loads will be subject to abnormal load permits obtained by the haulage company who will submit details of the transport vehicle, load to be transported and transport route to An Garda Siochana and to the local authority through which the load will pass. As is best industry practice, delivery vehicles will use a combination of trailers and axle configurations based on the weight and dimensions of the load in order to ensure that the maximum axle weight transmitted to the road surface does not exceed the limits set out in the Road traffic Regulations, 2003. Prior to the transportation of turbine components on the national road network. the Developer will submit details of the turbine components to TII bridge management section and determine the requirement for an abnormal load assessment to ensure that structures on the national road network are not adversely affected.

Prior to the transportation of turbine components between the port and the proposed Development, a trial run will be carried out by a delivery vehicle using a retractable load gauge in order to determine that fully loaded vehicles can access the Site. The trial run will be carried out using appropriate permits in consultation with An Garda Siochana, local authority and all relevant road stakeholders.

Transport Infrastructure Ireland and PPP operators shall be included in all correspondence relating to the transportation of turbine components.

4.7 Enabling Works for Turbine Delivery on the Public Road Network

The haul route for the transportation of turbine components between Shannon Foynes Port and the proposed development has been assessed by Jennings O'Donovan & Partners Limited using AutoTRACK software to determine the swept path of abnormal load vehicles delivering turbine components. The assessment has shown that enabling works such as road widening, alterations to junctions, removal and trimming of vegetation, alterations to signs, lighting, traffic signals and street furniture will be required along the haul route between the N68 and the proposed development. A summary of the assessment is listed in **Table 2**. Full details of the works locations on the Turbine Delivery Route are shown in **Appendix B**.

Area	Location	Enabling Works
1	L6132	Temporary road widening in road verge to increase the carriageway width to 4.5m for the transportation of turbine components.
2	L6132	Vertical realignment of an existing crest curve to prevent abnormal vehicles grounding.
3	L6132	Construction of a blade transshipment area with access onto the L6132.
4	L2036	Temporary road widening in road verge to increase the carriageway width to 5.5m for the transportation of turbine components.
5	L2036 / L2034 Junction	Construction of overrun area in third party lands to withstand wheel loading from abnormal load vehicles delivering turbine components.

Table 2: Turbine Delivery Route Enabling Works

4.8 Enabling Works for Turbine Delivery – Materials, Specification and Reinstatement

The enabling works for transportation of turbines and reinstatement of road infrastructure on the public road network will be carried out in consultation with the relevant road stakeholders using an approved road opening licence and agreed traffic management plan which shall be in accordance with Chapter 8 of the Traffic Signs Manual. Transport Infrastructure Ireland shall be included in all correspondence relating to proposed enabling works and transportation of turbine components on the public road network.

Specification of materials and workmanship shall be in accordance with TII publications and agreed with the relevant road stakeholders prior to any works being carried out on site.

All damage to the national road network shall be repaired using materials and workmanship in accordance with TII specifications and shall be agreed prior to any works commencing on site. A pre-

construction condition survey of the road network shall be carried out in order to establish an agreed baseline prior to any works commencing on site. A post construction road condition survey shall be carried out following the completion of construction to determine if deterioration has occurred on the road network.

5 PRE-CONSTRUCTION WORKS REQUIREMENTS

5.1 Location and Diversion of Existing Services

A desk-based study will be carried out to locate existing services at all works locations before work commences on Site. Prior to the commencement of works, the location of existing services shall be confirmed by ground penetrating radar. All service diversions and works to protect existing services which are necessary for the construction of the wind farm shall be agreed with the relevant service provider prior to works commencing on Site.

5.2 Permits to Work on the Public Road Network

Prior to the commencement of works, the contractor shall obtain all necessary road opening licenses and road closure permits to work on the public road network. The contractor shall inform the public in advance of any road closures and provide alternative means of access to properties, businesses and farms.

5.3 Traffic Management Plan

All works carried out on the public road network shall be carried out using a traffic management system in accordance with the requirements of Chapter 8 of the Traffic Signs Manual. The appointed contractor shall compile a detailed Traffic Management Plan for the works which will specify the precise traffic management measures for each works section and submit to relevant authority for approval. The contractor will appoint a competent traffic management coordinator who will be the main point of contact for all traffic management matters during the course of the works. The agreed traffic management systems shall be installed and maintained by operatives with the appropriate training to carry out works on traffic management systems. The TMP shall be submitted to the owners engineer and Developer for review 1 month before scheduled works.

5.4 Site Access Roads

All construction traffic shall access the site from the L2034. Construction HGV traffic shall be prohibited from using local roads which are not directly affected by the works. The location of site access points shall be signposted and assigned a site access number for the duration of the works. Haul Routes for construction and delivery traffic shall be signposted from the national and regional road network.

5.5 Road Condition Survey

A pre-construction road condition survey shall be carried out prior to any works commencing on site. A post-construction condition survey shall be carried out following the completion of the works in consultation with the relevant authority. Reinstatement of defects on the public road network resulting from construction traffic shall be made good to a specification agreed with the relevant local authority / TII. The scope of the road condition survey shall be agreed relevant local authority / TII.

5.6 Public Information and Access

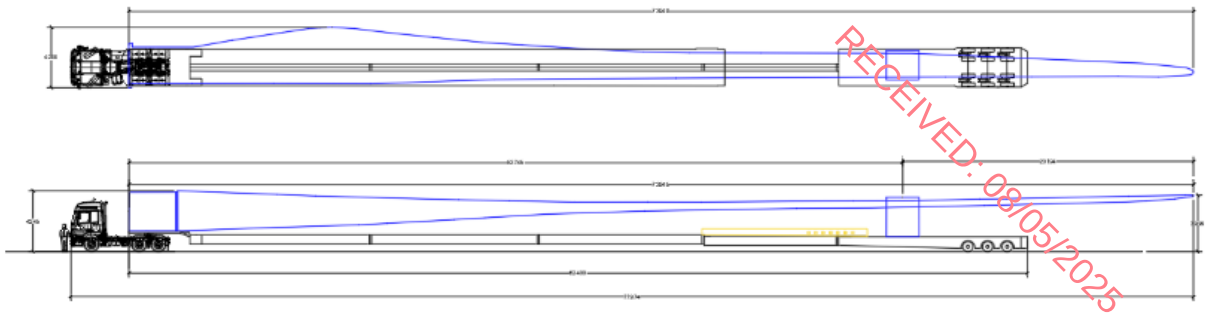
The appointed Contractor shall inform local residents, businesses and emergency services of proposed works and road closures in advance of any works taking place on Site. Access shall be maintained to properties at all times during the course of the works. The Contractor will appoint a project coordinator who will be the main point of contact for matters relating to traffic which will affect the general public, local businesses and emergency services. An out of hours contact number shall also be provided.

5.7 Emergency Access Routes

Emergency access routes shall be provided at all times for emergency service vehicles to access the Site or to bypass the works in the event of an emergency.

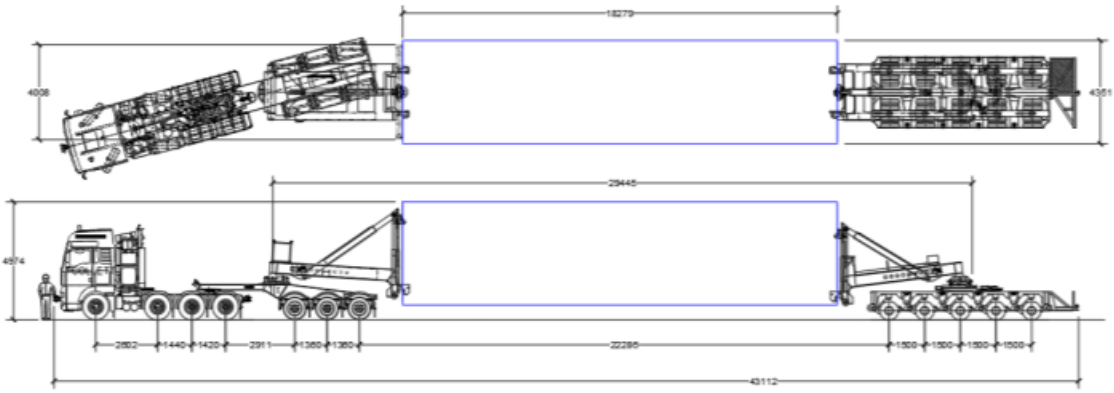
6 DELIVERY VEHICLE SPECIFICATION

Delivery of road construction materials, concrete for Turbine Foundations, building materials, drainage, ducting and cables will be carried out using standard heavy goods vehicles (HGV). Delivery of turbine components will be carried out using specialist abnormal load vehicles. Turbine blades will be delivered on an extendable semi-trailer, one per trailer. The turbine blades will be 68.0m long, approximately 10 of the blade will overhang the rear of the trailer. Following delivery to the Site, the trailer will be retracted for the return trip. Each turbine tower will be delivered to site in three sections on extendable semi-trailers, the tower sections range in length from 30.0m to 23.0m with a maximum width of 4.3m. All material deliveries will have a maximum axle load of up to 12 tonnes per axle, and a maximum total truck weight 63 tonnes approx. The main crane for turbine erection will have a maximum axle loading of 12 tonnes per axle and a maximum total weight of 100 tonnes approx. Vehicles delivering counter-weights for the crane will have a maximum axle loading of up to 12 tonnes per axle. Typical abnormal load vehicles used for the transportation of turbine components are shown below. The transport vehicles used for transportation of components may differ from those shown below depending on the haulage contractor’s preferences.

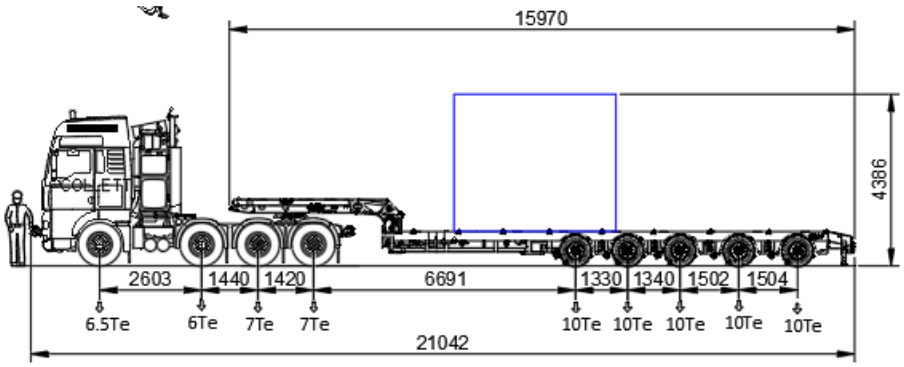


Typical Turbine Blade Transport Vehicle

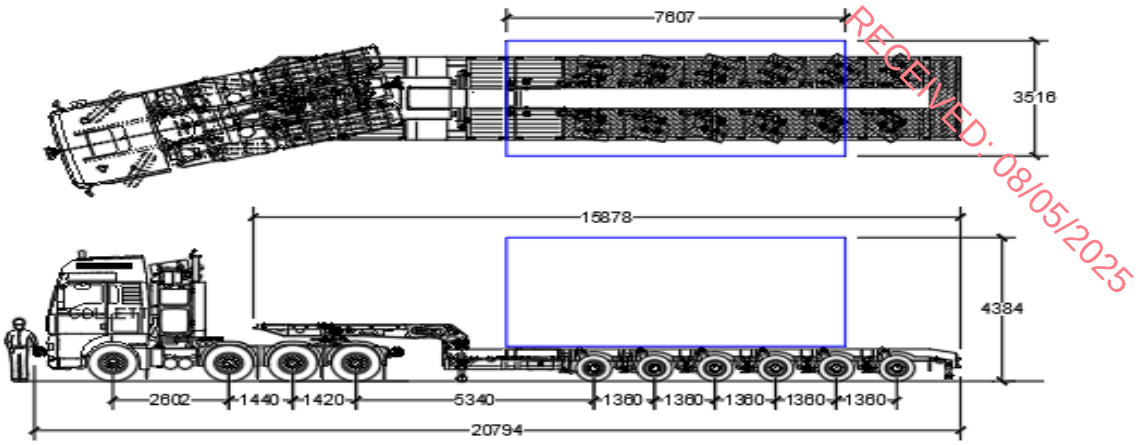
Typical Turbine Tower Transport Vehicle



Typical Nacelle Transport Vehicle



Typical Hub Transport Vehicle



Typical Generator Transport Vehicle

7 CONSTRUCTION, OPERATION & DECOMMISIONING TRAFFIC VOLUMES

7.1 Construction Period

The construction period of the Proposed Development is anticipated to take approximately 10 months with the majority of HGV deliveries to site concluding in month 5. The project timeframe is summarised in **Table 3** below. It is expected that construction hours will be between 07:00 and 19:00 Monday to Friday and 08:00 and 13:00 on Saturday. There may be periods outside normal site working hours when long duration and weather dependent specialist works such turbine foundation construction and turbine installation may be carried. All construction activities outside normal site working hours will be agreed with Clare County Council.

Proposed Works	Timetable (Month No.)
Site Establishment & Fencing	1
Construction of L2034 Site Entrance	1-2
Construction of Temporary Construction Compound	1-2
Construction of Site Access Roads and Internal Junctions	4-16
Construction of Turbine Hardstands and Turning Heads	8-20
Site drainage	4-20
Ready-mix concrete for Turbine Foundations	12-20
Steel reinforcement for Turbine Foundations	8-16
Foundation bolts	8-16
Verge widening at N68 / L6132 Junction Spoil Removal (95m^3) +	8

Proposed Works	Timetable (Month No.)
Granular Material (95m^3)	
Construction of L6132 verge strengthening on Turbine Delivery Route 5.56km (Tullabrack cross to N68) Spoil Removal (4,450m^3) + Granular Material (4,450m^3)	8-20
Vertical realignment of L6132 crest curve on Turbine Delivery Route Spoil Removal (18m^3) + Asphalt Surfacing (12m^3)	8
Removal of Forestry for Blade Transshipment Area (7,450m^2)	8
Construction of Blade Transshipment Area (5,050m^2)	8-20
Construction of L2036 verge strengthening on Turbine Delivery Route (Tullabrack Cross to (20334) Spoil Removal (1,760m^3) + Granular Material (1,760m^3)	8-20
Construction of L2034 verge strengthening on Turbine Delivery Route Spoil Removal (10m^3) + Granular Material (10m^3)	16-20
Substation building materials	8-20
Electrical switchgear	20-34
Electrical cables	20-32
Grid Connection works (2.45km) Excavation (1470m^3) Reinstatement (1470m^3)	8-20
Wind turbine components	20-28
Crane	20
Reinstatement of L6132 verges, Material Removal (1,480m^3) + Imported Topsoil (1,480m^3)	28-38
Reinstatement of L2036 & L2034 verges, Material Removal (585m^3) + Imported Topsoil (585m^3)	28-38
Construction of Flood Compensation Area	28-38
General reinstatement and demobilisation	36-40

Table 3: Project Timeframe

7.2 Construction Period – Trip Generation HGV's

The estimated HGV deliveries to the Site during the construction period are shown in Table 4. The trips generated by the construction of the proposed Development are based on AutoCAD Civil 3D site layout design drawings, site investigation results and turbine suppliers specifications. The calculated volumes of materials are based on the following design criteria,

- All granular materials for road and hardstand structural layers will be imported from local quarries.
- All concrete for turbine foundations will be imported from local ready-mix facilities.
- Topsoil and subsoil material resulting from site clearance will be incorporated into the design and will not be removed from site.
- Material excavated from the spoil compensation area will be deposited in the permanent spoil storage area.
- All material excavated during grid connection trench works will be removed from site and replaced with imported material.
- Material used for the construction of temporary compounds will be incorporated into the access tracks on site at the end of the contract and will not be removed from site.

Materials	Quantity	No. Of Deliveries	Timeframe (Week)	Maximum Loads / Day	Vehicle Type
Site Establishment & Fencing		10	1	5	OGV1
Construction of L2034 Site Entrance	530m^3	53	1-2	10	OGV1
Construction of Temporary Construction Compound	1,000m^3	100	1-2	10	OGV1
Construction of Site Access Roads and Internal Junctions	3,390m^3	339	4-16	10	OGV1
Construction of Turbine Hardstands and Turning Heads	8,340m^3	834	8-20	10	OGV1
Site drainage		20	4-20	2	OGV2
Ready-mix concrete for Turbine Foundations	1,800m^3	245	12-20	81	OGV2
Steel reinforcement for Turbine Foundations	150T	10	8-16	3	OGV2
Foundation bolts	3 Turbines	3	8-16	1	OGV2
Verge widening at N68 / L6132 Junction Spoil Removal (95m^3) + Granular Material (95m^3)	190m^3	20	8	10	OGV1
Construction of L6132 verge strengthening on Turbine Delivery Route 5.56km (Tullabrack cross to N68) Spoil Removal (4,450m^3) + Granular Material (4,450m^3)	8, 900m^3	890	8-20	20	OGV1
Vertical realignment of L6132 crest curve on Turbine Delivery Route Spoil Removal (18m^3) + Asphalt Surfacing (12m^3)	30m^3	5	8	1	OGV1
Removal of Forestry for Blade Transshipment Area (7,450m^2)		8	8	5	OGV1

Materials	Quantity	No. Of Deliveries	Timeframe (Week)	Maximum Loads / Day	Vehicle Type
Construction of Blade Transshipment Area (5,050m^2)	2,275m^3	227	8-20	10	OGV1
Construction of L2036 verge strengthening on Turbine Delivery Route (Tullabrack Cross to (20334) Spoil Removal (1,760m^3) + Granular Material (1,760m^3)	3,520m^3	352	8-20	10	OGV1
Construction of L2034 verge strengthening on Turbine Delivery Route Spoil Removal (10m^3) + Granular Material (10m^3)	20m^3	2	16-20	2	OGV1
Substation building materials		15	8-20	1	OGV2
Electrical switchgear		2	20-34	1	OGV2
Electrical cables		5	20-32	1	OGV2
Grid Connection works (2.45km) Excavation (1470m^3) Reinstatement (1470m^3)	2940m^3	294	8-20	12	OGV2
Wind turbine components	3 Turbines	30	20-28	3	OGV2
Crane		10	20	5	OGV2
Reinstatement of L6132 verges, Material Removal (1,480m^3) + Imported Topsoil (1,480m^3)	2,960m^3	296	28-38	10	OGV1
Reinstatement of L2036 & L2034 verges, Material Removal (585m^3) + Imported Topsoil (585m^3)	1,170m^3	117	28-38	10	OGV1
Construction of Flood Compensation Area	3,200m^3	320	28-38	10	OGV1
General reinstatement and demobilisation		20	36-40	5	OGV2
Total		**4,227**			

Table 4: HGV and Abnormal Load Deliveries to Site During Construction

It is estimated that during the wind farm construction, an approximate total of 4,227 loads of material and building supplies will be delivered and removed from the Site. The majority of HGV movements to and from Site will occur during the first five months of the construction period and will be associated with access track construction, turbine hardstand construction and turbine foundation construction.

A schedule of maximum predicted daily traffic movements to site over a 10-month construction period is shown in **Table 5.**

Activity	1	2	3	4	5	6	7	8	9	10	11	12
Site Establishment & Fencing	5											
Construction of L2034 Site Entrance	10											
Construction of Temporary Construction Compound	10											
Construction of Site Access Roads and Internal Junctions		10	10	10								
Construction of Turbine Hardstands and Turning Heads			10	10	10							
Site drainage		2	2	2	2							
Ready-mix concrete for Turbine Foundations				81	81							
Steel reinforcement for Turbine Foundations			1	1								
Foundation bolts			1	1								
Verge widening at N68 / L6132 Junction Spoil Removal (95m^3) + Granular Material (95m^3)			10									
Construction of L6132 verge strengthening on Turbine Delivery Route 5.56km (Tullabrack cross to N68) Spoil Removal (4,450m^3) + Granular Material (4,450m^3)			20	20	20							
Vertical realignment of L6132 crest curve on Turbine Delivery Route Spoil Removal (18m^3) + Asphalt Surfacing (12m^3)			1									
Removal of Forestry for Blade Transshipment Area (7,450m^2)			5									
Construction of Blade Transshipment Area (5,050m^2)			10	10	10							
Construction of L2036 verge strengthening on Turbine Delivery Route (Tullabrack Cross to (20334) Spoil Removal (1,760m^3) + Granular Material (1,760m^3)			10	10	10							
Construction of L2034 verge strengthening on Turbine Delivery Route Spoil Removal (10m^3) + Granular Material (10m^3)					2							
Substation building materials			2	2	2							
Electrical switchgear						1	1	1				
Electrical cables						1	1	1				
Grid Connection works (2.45km) Excavation (1470m^3) Reinstatement (1470m^3)			12	12	12							
Wind turbine components						3	3					

Activity	1	2	3	4	5	6	7	8	9	10	11	12
Crane						5						
Reinstatement of L6132 verges, Material Removal (1,480m^3) + Imported Topsoil (1,480m^3)							10	10	10			
Reinstatement of L2036 & L2034 verges, Material Removal (585m^3) + Imported Topsoil (585m^3)							10	10	10			
Construction of Flood Compensation Area							10	10	10			
General reinstatement and demobilisation										5		
Total	25	12	94	159	149	10	35	32	30	5	0	0

Table 5: HGV and Abnormal Load Deliveries to Site During Construction

The first month of the construction period will involve deliveries of materials for site access works, site compound, site offices and site security. This period will include deliveries of fencing materials for site boundaries and compounds, temporary fencing to protect trees, hedges and ecological buffer zones, road construction materials for site compounds and site entrances, and delivery of temporary site office units. It is anticipated that a maximum of 25 HGV vehicles (50 HGV movements) will visit the Site on a daily basis during the first month of the contract.

Months 2 to 6 will involve deliveries of materials for turbine hardstands, turbine foundations, site access tracks, electrical substation building and cable / ducting works. This period will include deliveries of road construction materials for access tracks and turbine hardstands, ready mix concrete and steel reinforcement for turbine foundations. It is anticipated that a maximum of 159 HGV vehicles (318 HGV movements) will visit the Site on a daily basis during the period of weeks 8 to 24. The peak traffic of 159 HGV vehicles will occur on 3 days during this 3 month period when turbine foundations are poured. Concrete pours for individual turbine foundations will generate 81 HGV arrivals (162 HGV movements).

Months 6 to 10 will involve HGV movements for works associated with turbine delivery, turbine erection, turbine commissioning, electrical works, grid connection works, road reinstatement, road surfacing, site landscaping and the removal of temporary works materials such as offices and fencing from site. It is anticipated that a maximum of 35 HGV vehicles (70 HGV movements) will visit the Site on a daily basis during this period.

Based on the indicative timetable outlined above the peak times for HGV deliveries to Site will be during months 4 and 5 (78 daily HGV deliveries + 81 additional deliveries during concrete pours which will take place on three separate days during this period). Development traffic will be distributed throughout the day with morning, afternoon and evening peaks. The distribution of Development traffic is shown in Table 15.12 during the construction of Turbine Foundations.

Time	Arrivals		Departures	
	HGV	LGV	HGV	LGV
06.00 – 07.00		20		
07.00 – 08.00	18	15	18	
08.00 – 09.00	14	5	14	2
09.00 – 10.00	14		14	
10.00 – 11.00	14		14	
11.00 – 12.00	17		17	
12.00 – 13.00	14		14	
13.00 – 14.00	10	5	10	5
14.00 – 15.00	17		17	
15.00 – 16.00	12		12	
16.00 – 17.00	10		10	
17.00 – 18.00	8	2	8	5
18.00 – 19.00	5		5	15
19.00 – 20.00				20

Table 6: Development Traffic Profile

7.3 Construction Period – Light Vehicles\Vans and Construction Personnel

The number of staff on site will vary according to the phase of the construction, peaking at approximately 40 at the height of the construction period. It is expected that the majority of workers will arrive on site in mini-buses and crew vehicles which are used to transport teams of workers from different construction disciplines. Labour vehicle sharing will be actively encouraged to reduce vehicular movements.

It is estimated that 35-40 vehicles will visit the site on a daily basis during the peak construction period. Parking for staff will be provided within the Temporary Construction Compound and no parking will be allowed for construction workers on the public road network in the vicinity of the Site. A number of

additional unscheduled visits may be required throughout the construction period for site inspections and unforeseen circumstances.

7.4 Operational Period – Traffic

The vehicle movements associated with the operational period of the proposed Development will be very low. Trips during the operational period would normally be made by vans associated with site monitoring, servicing, cleaning and maintenance operations. During the operational period, parking will be provided within the site and security gates will be set back from the public road to allow operatives to access the site without obstructing the public road network.

Scheduled Site Visits

Weekly maintenance, estimated two visits by two service personnel – 208 trips
Six-month service, estimated of two visits by two service personnel – 4 trips
Annual service, two visits by two service personnel – 4 trips
Monthly visit by Developer or agents to check over the site, grass cutting etc. – 12 trips

Unscheduled Site Visits

Visits which may arise as a result of malfunction, damage or vandalism. – 5 trips

The frequency of vehicle trips associated with servicing, monitoring and upkeep of the Site are expected to be in the region of 230 trips per year.

7.5 Decommissioning Period – Traffic

The vehicle movements associated with the Decommissioning period of the Proposed Development are estimated to be similar to the construction period. The Decommissioning period will take approximately 10 Months, during which time the entire infrastructure will be removed from Site.

8 PROPOSED MITIGATION MEASURES

The impact of the traffic volumes generated by the proposed Development have been identified as being temporary and associated with a 10 month construction and a 5 month decommissioning period. The development will generate low volumes of traffic during the operation of the wind farm.

In order to minimise the impact of development traffic on the local community, roads stakeholders and public road users, the following mitigation measures have been considered:

- HGV movements will generally be limited to 07:00 - 19:00 Monday to Friday and 08:00 - 13:00 on Saturday. Deliveries will be scheduled to avoid peak times around the morning and evening peak hours. This will avoid HGV traffic arriving during the morning peak hour creating conflict with local

residents on their commute/school run. Construction personnel will be encouraged to car-pool, or to travel to site in minibuses.

- Dry wheel cleaning equipment will be used on site to prevent mud and stones being transferred from the Development to the public road network. All drivers will be required to check that their vehicle is free from dirt and stones prior to departure from the construction Site. In addition, any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise dust creation. Finally, loads will be covered into and out of the site where required to ensure that the spillage or deposit of clay, rubble or other debris on the public road network is prevented.
- Construction works on the public road network will be carried out under a road opening licence with an agreed Traffic Management Plan in accordance with Chapter 8 of the Traffic Signs Manual.
- During the construction phase, clear construction warning signs will be placed on the L2034, l2036, N68 and L6132 advising the general public as to the presence of the construction Site. The site entry points will also be appropriately signed. Access to the construction site will be controlled by on site personnel and all visitors will be asked to sign in and out of the site by security / site personnel. Security gates will be sufficiently set back from the road, so that vehicles entering the Site will stop well clear of the public road, thus obviating the queuing of construction traffic on the public road network. Site visitors will all receive a suitable Health and Safety site induction, and Personal Protective Equipment (“PPE”) will be worn.
- Grid Connection works will proceed at a rate of approximately 100m per work shift, the rate will depend on the ground conditions and the number of existing services encountered in the excavation. The works area will be fully enclosed within the traffic management system. Traffic management using temporary traffic lights shall be kept to the minimum length necessary to accommodate the works being undertaken and to minimise delays to the public road users.
- Longitudinal trench excavations in the public road shall be straight and parallel to the centre of the road/footway where practicable. Transverse road or footway crossings shall be at right angles to the kerb or property line. Bituminous and concrete road surfaces and footways be cut using a road saw, concrete saw or equivalent mechanical means to the full depth of the bituminous or concrete material prior to any excavation work. The edges of the road shall be trimmed to provide an overlap for permanent road reinstatement in accordance with chapter 7 of the Managing Openings in Public Roads Specification.
- The Grid Connection cable trench shall be excavated using a rubber tyre excavator on all public roads. The sides of the trench shall be supported to prevent damage to the road. Material arising from trench excavations may be stored at a safe location within the works area and used to backfill trenches, surplus excavated material shall be removed from Site and disposed at licenced landfills.

- All excavated trenches in the public road network are to be reinstated at the end of the work shift, A temporary reinstatement shall be carried out in the event that the works are not completed at the end of the work shift.
- Once construction of the Development is completed, all portacabins, machinery and equipment will be removed and temporary hardstanding's excavated and reinstated. The area will be re-graded with the topsoil to a natural profile and allowed to regenerate from the seed bank within the topsoil.

9 SUMMARY

This TMP has been undertaken to outline the management of traffic movements during the construction, operation and decommissioning phases of the Moanmore Lower Wind Farm.

Increased volumes of traffic will be generated by the proposed Development during the construction and decommissioning periods. Traffic analysis carried out in the Traffic and Transport Assessment (TTA) report for the project shows that traffic generated by the Development during the construction, operation and decommissioning phases of the Moanmore Lower Wind Farm can be accommodated on the existing public road network.

During the operational phase of the project the Site will be accessed by a light vehicle an estimated 230 times per year for routine monitoring, servicing and site maintenance.

Priority at junctions for existing public road users will remain unchanged during the construction, operation and decommissioning phases of the proposed Development.

All traffic accessing and leaving the Site will use the designated Haul Route for construction and decommissioning traffic.

Mitigation measures have been proposed to minimise impacts of construction traffic on the public road network and local road users. Security gates will be provided at the Site access. Gates will be set back from the public road carriageway edge to accommodate articulated vehicles. Wheel cleaning facilities will be provided at the site entrance and at works locations on the public road network to prevent mud and dust spreading to the public road.

Temporary Construction Compounds will be provided on Site and will remain for the duration of the construction period. The compound will be used to store construction materials for the proposed Development and as a parking and turning facility for construction and delivery traffic.

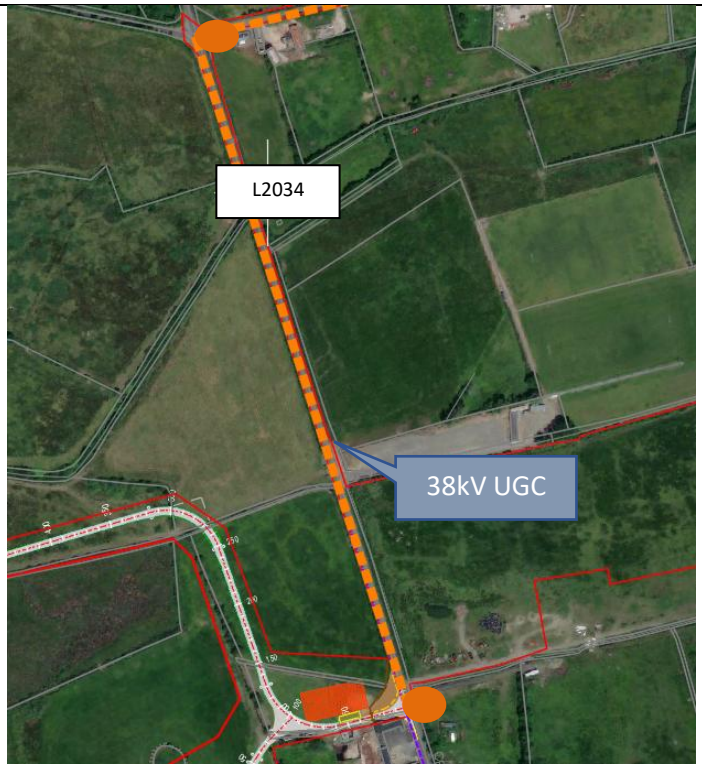
Components for each turbine will be delivered to site in three separate abnormal load convoys over the period of one week. The convoys will travel at times agreed with An Garda Síochána. The haulage contractor will obtain all necessary permits for the transportation of abnormal loads from An Garda Síochána and the relevant County Council through which the load will travel.

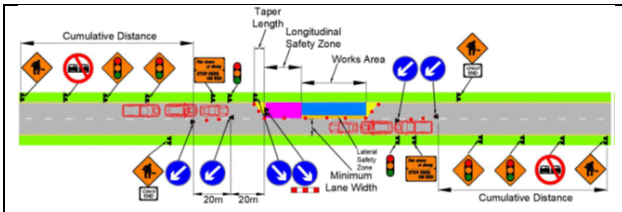
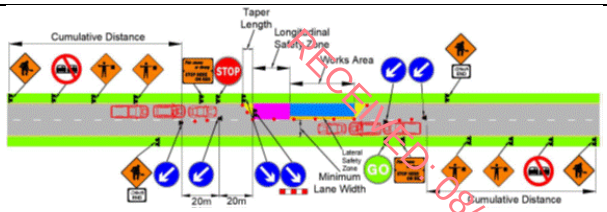
Grid Connection works carried out on the public road network will be fully enclosed within the traffic management system.

APPENDIX A

GRID CONNECTION WORKS

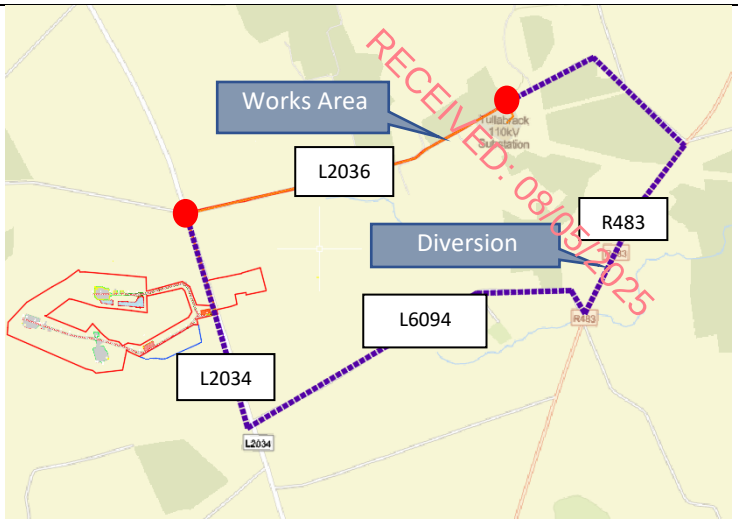
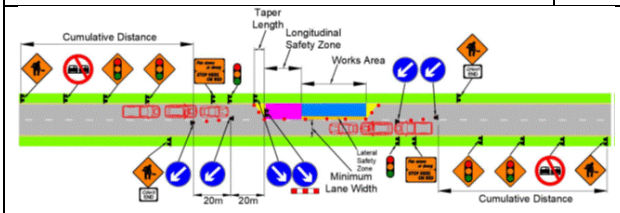
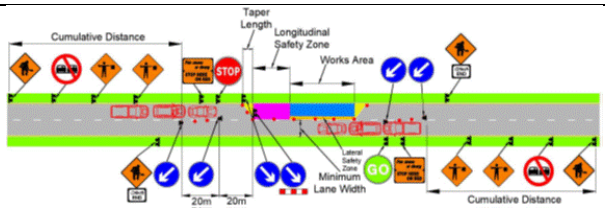
L2034 Grid Connection Works Location

Works Location	L2034 - 38kV Underground Grid Connection (0.56km)
Road Number	L2034
Description of Works to be Undertaken	Construction of 38kV underground grid connection between onsite 38kV Substation and Tullabrack 110kV Substation
Drawing Reference	
Road Width (approximate)	5.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go during trenching works Temporary Traffic Lights / Stop & Go / Flagman during cable pulling and surfacing works.
	
Local Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,
Duration of Works	6 Days Trenching, ducting, reinstatement and temporary surfacing. 2 days 38kV cable installation 2 days surfacing.
Duration of Road Closure	N/A
Diversion	N/A
Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,

 Temporary Traffic Lights	 Stop & Go

L2036 Grid Connection Works Location

Works Location	L2036 38kV Underground Grid Connection (2.0km)
Road Number	L2036
Description of Works to be Undertaken	Construction of 38kV underground grid connection between onsite 38kV Substation and Tullabrack 110kV Substation
Drawing Reference	
Road Width (approximate)	3.0m carriageway with grass verges (varying Width)
Traffic Management System	Road Closure during trenching works Temporary Traffic Lights / Stop & Go / Flagman during cable pulling and surfacing works.
	
Local Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,
Duration of Works	20 Days Trenching, ducting, reinstatement and temporary surfacing. 5 days 38kV cable installation 3 days surfacing.
Duration of Road Closure	20 days during trenching works

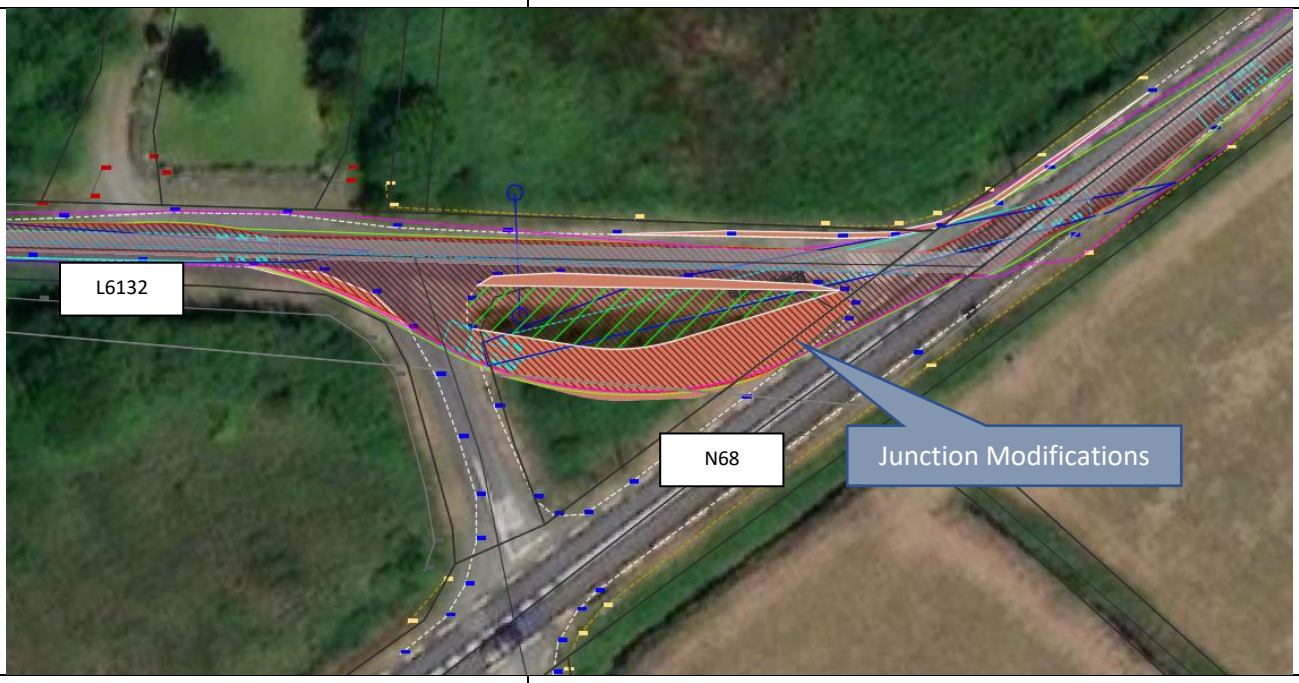
Diversion	
Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,
 Temporary Traffic Lights	 Stop & Go

APPENDIX B

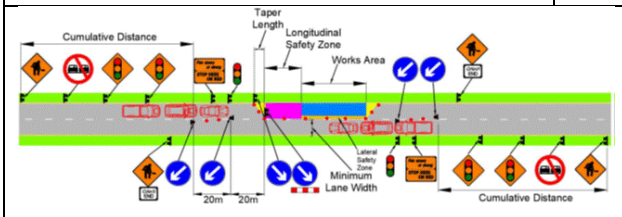
TURBINE DELIVERY ROUTE – ENABLING WORKS

N68 / L6132 Junction

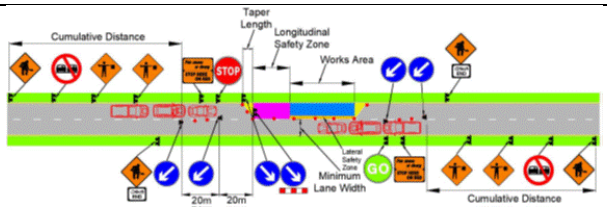
Works Location	N68 / L6132 Junction
Road Number	N68 / L6132
Description of Works to be Undertaken	Road widening and strengthening at junction to withstand wheel loading from abnormal load vehicles. relocation of telegraph poles, traffic signs and street furniture.
Drawing Reference	
Road Width (approximate)	4.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go / Flagman / Lane Closure



Local Access	To be maintained through the works at all times using steel plates
Duration of Works	2 Days construction, 2 days reinstatement
Duration of Road Closure	N/A
Diversion	N/A
Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,



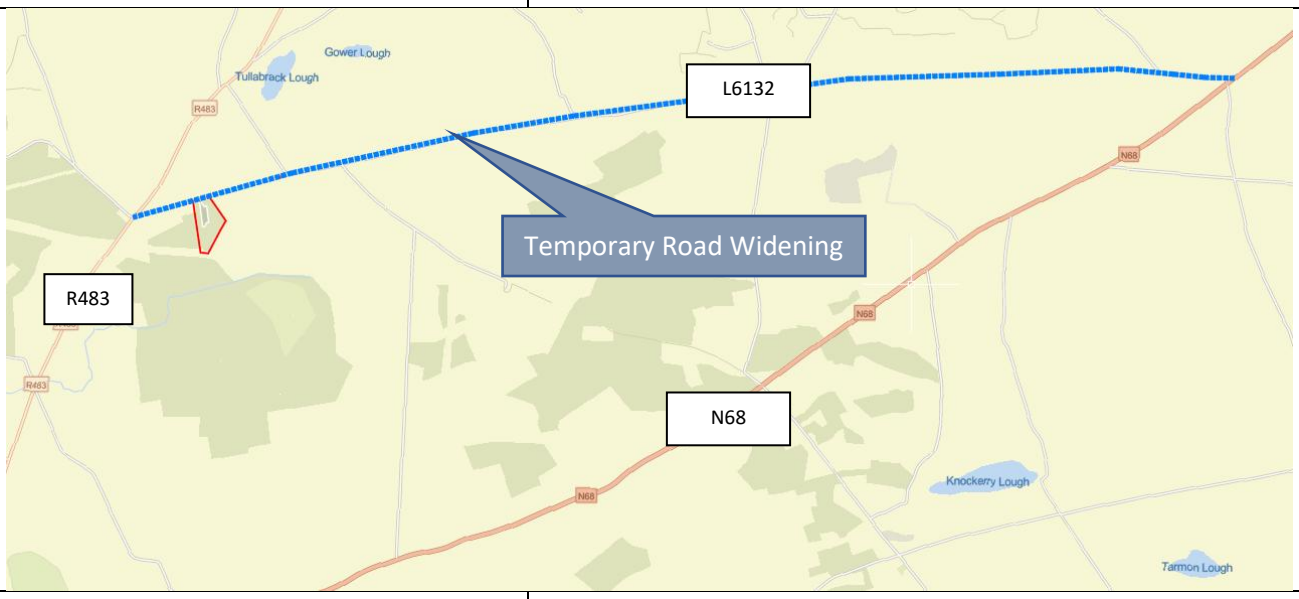
Temporary Traffic Lights



Stop & Go

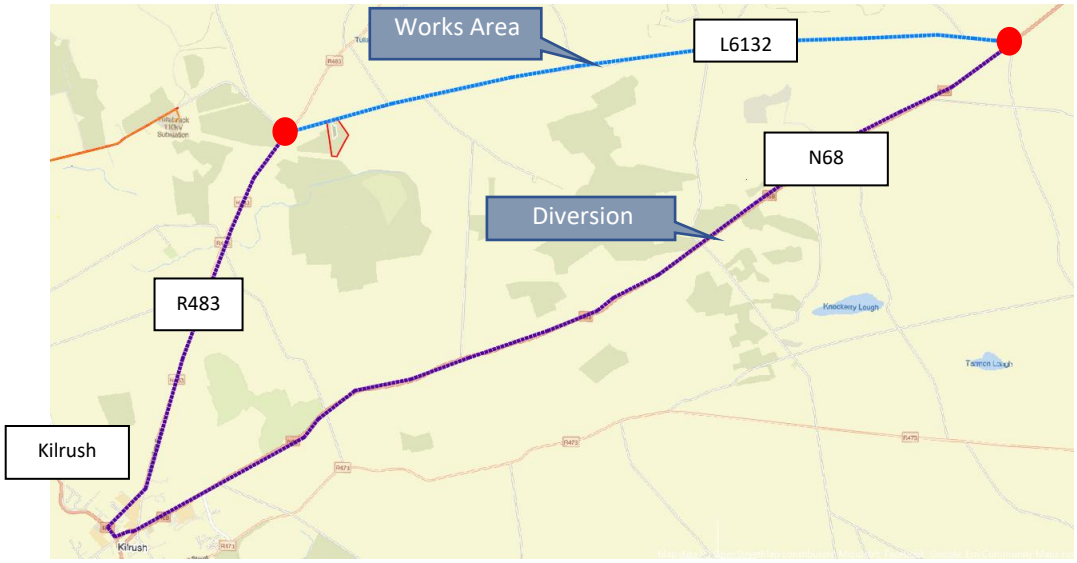
L6132 Local Road

Works Location	L6132
Road Number	L6132
Description of Works to be Undertaken	Verge strengthening to withstand wheel loading from abnormal load vehicles and removal of vegetation.
Drawing Reference	
Road Width (approximate)	3.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go / Flagman / Road closure

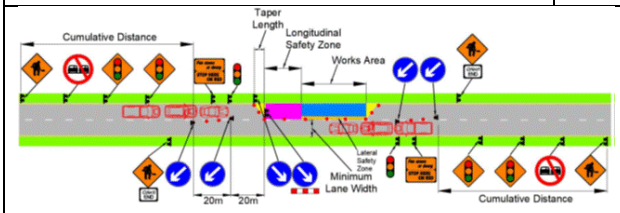
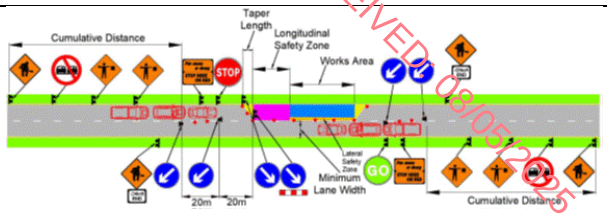


Local Access	To be maintained through the works at all times using steel plates
Duration of Works	15 Days construction, 5 days reinstatement
Duration of Road Closure	15 Days

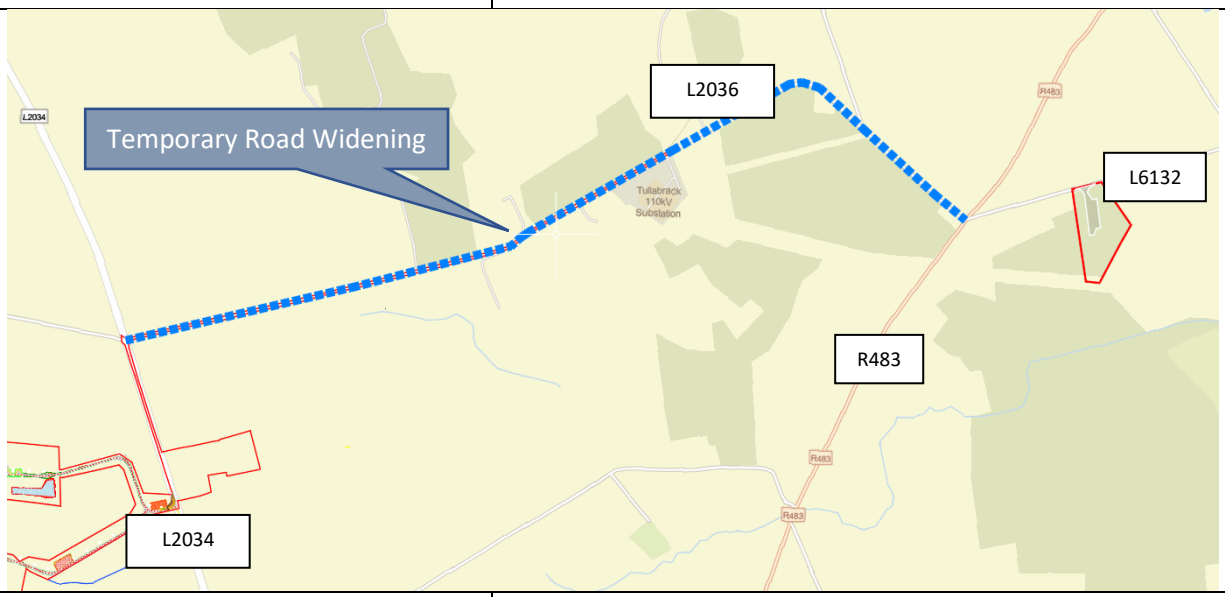
Diversion

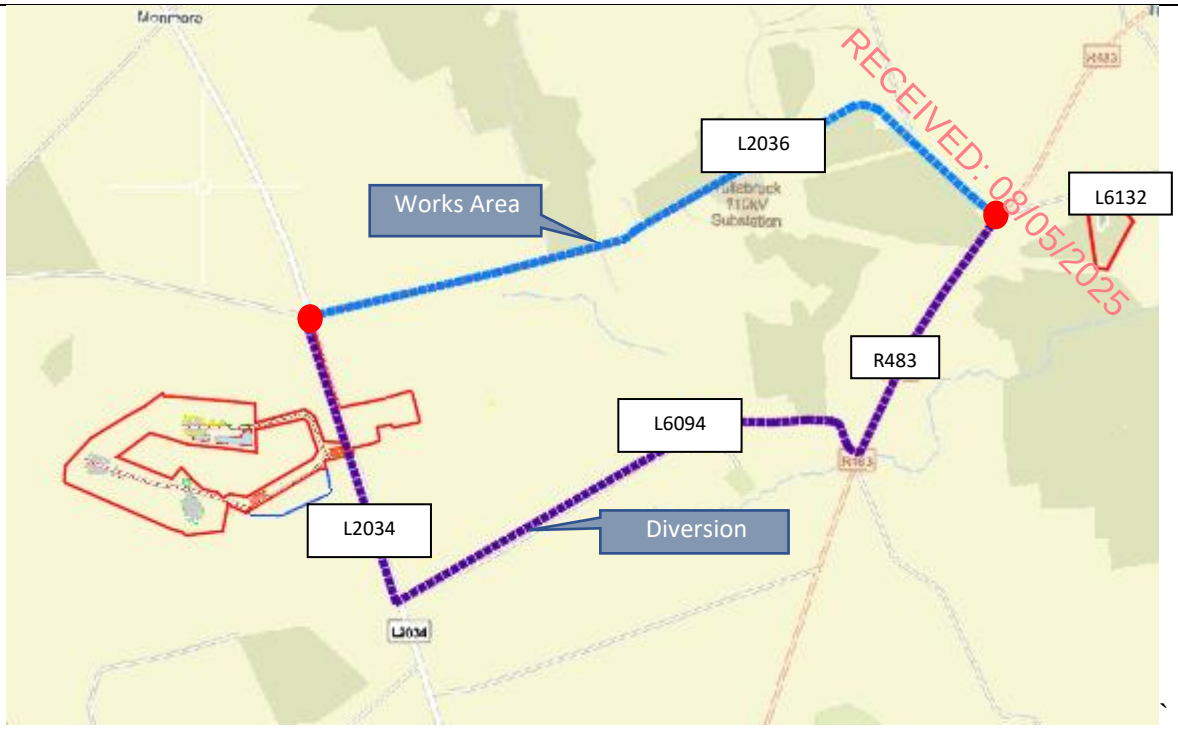


Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,

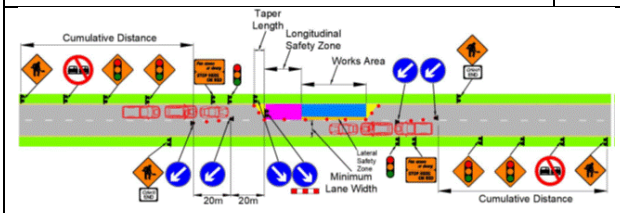
 Temporary Traffic Lights	 Stop & Go

L2036 Local Road

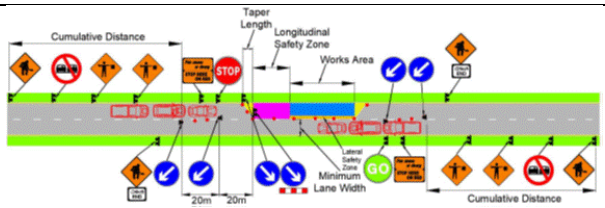
Works Location	L2036
Road Number	L2036
Description of Works to be Undertaken	Verge strengthening to withstand wheel loading from abnormal load vehicles and removal of vegetation.
Drawing Reference	
Road Width (approximate)	3.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go / Flagman / Road closure
	
Local Access	To be maintained through the works at all times using steel plates
Duration of Works	8 Days construction, 4 days reinstatement
Duration of Road Closure	8 Days
Diversion	



Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,



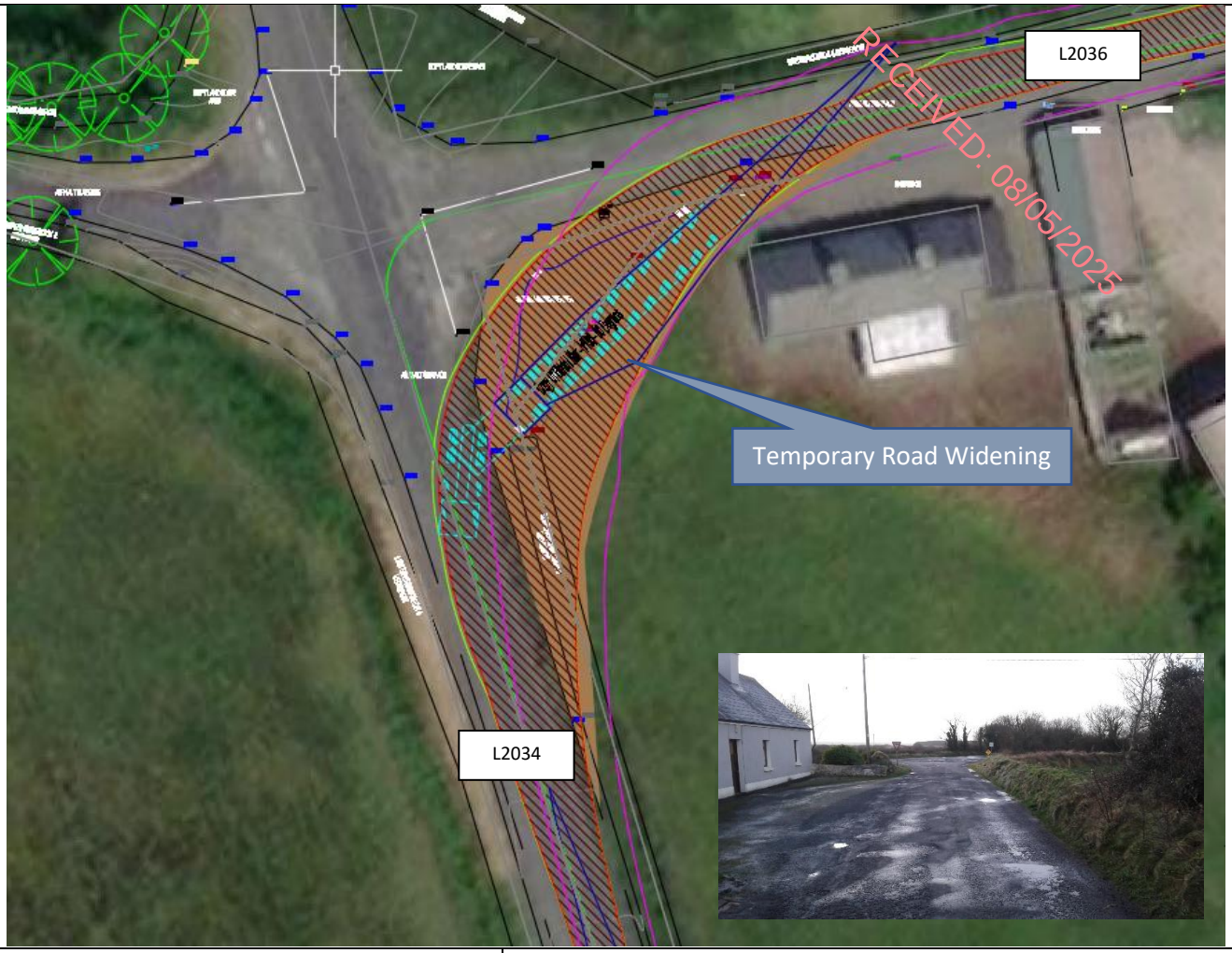
Temporary Traffic Lights



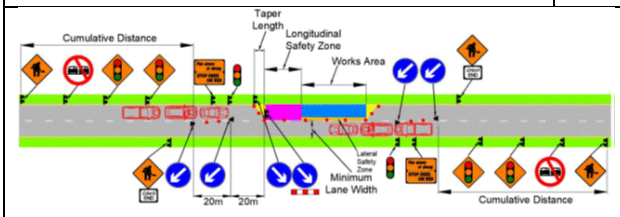
Stop & Go

L2034 / L2036 Junction

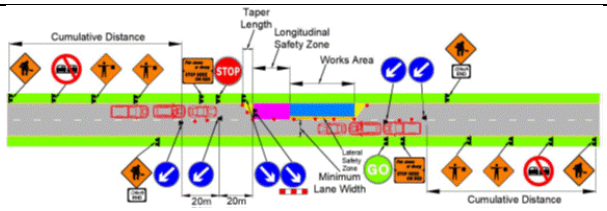
Works Location	L2034 / L2036 Junction
Road Number	L2034, L2036
Description of Works to be Undertaken	Verge strengthening to withstand wheel loading from abnormal load vehicles and removal of vegetation in third party lands at the l2034 / L2036 Junction.
Drawing Reference	
Road Width (approximate)	L2034 - 5.0m carriageway with grass verges L2036 - 3.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go / Flagman



Local Access	To be maintained through the works at all times using steel plates
Duration of Works	4 Days construction, 2 days reinstatement
Duration of Road Closure	N/A
Diversion	
Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,



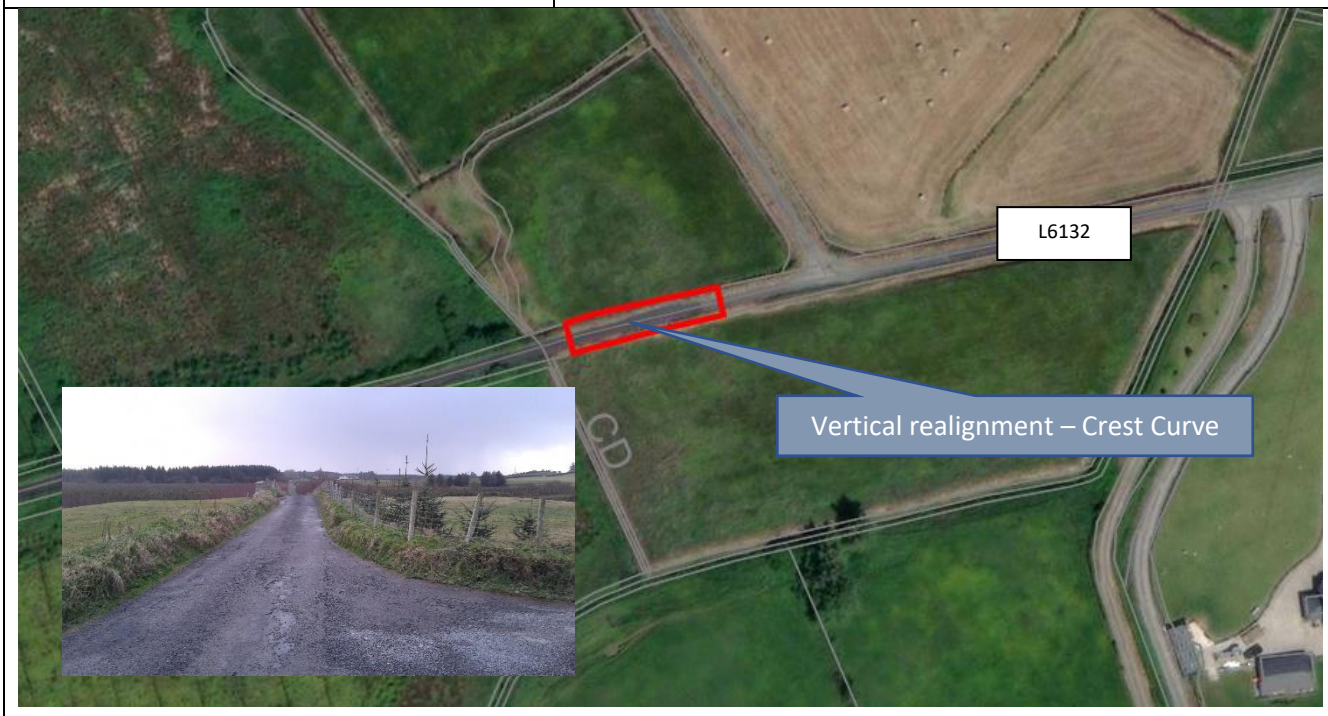
Temporary Traffic Lights



Stop & Go

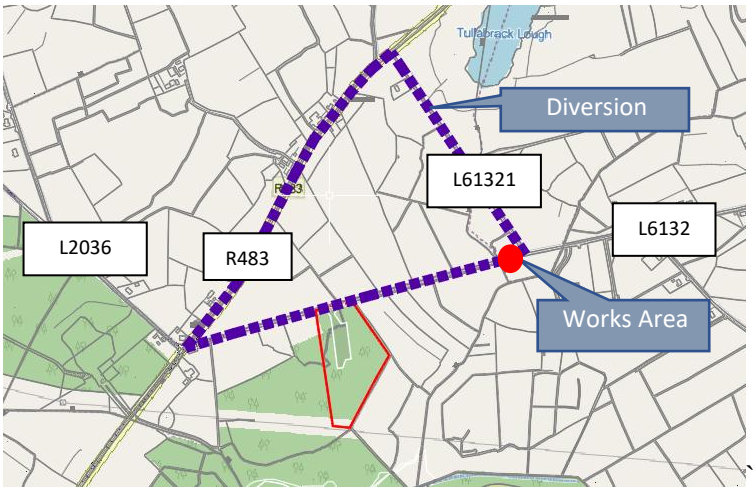
L6132

Works Location	L6132 Vertical Alignment
Road Number	L6132
Description of Works to be Undertaken	Vertical alignment of existing crest curve
Drawing Reference	
Road Width (approximate)	L6132 - 3.0m carriageway with grass verges
Traffic Management System	Road closure

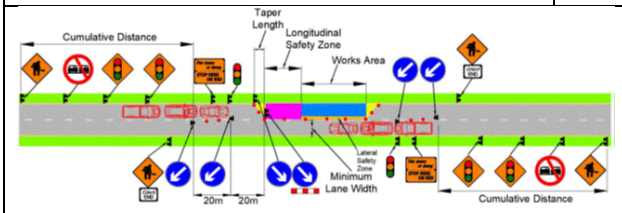
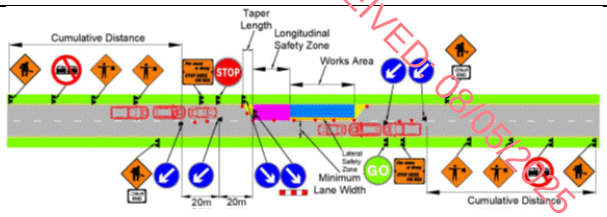


Local Access	To be maintained through the works at all times using steel plates
Duration of Works	4 Days construction,
Duration of Road Closure	N/A

Diversion

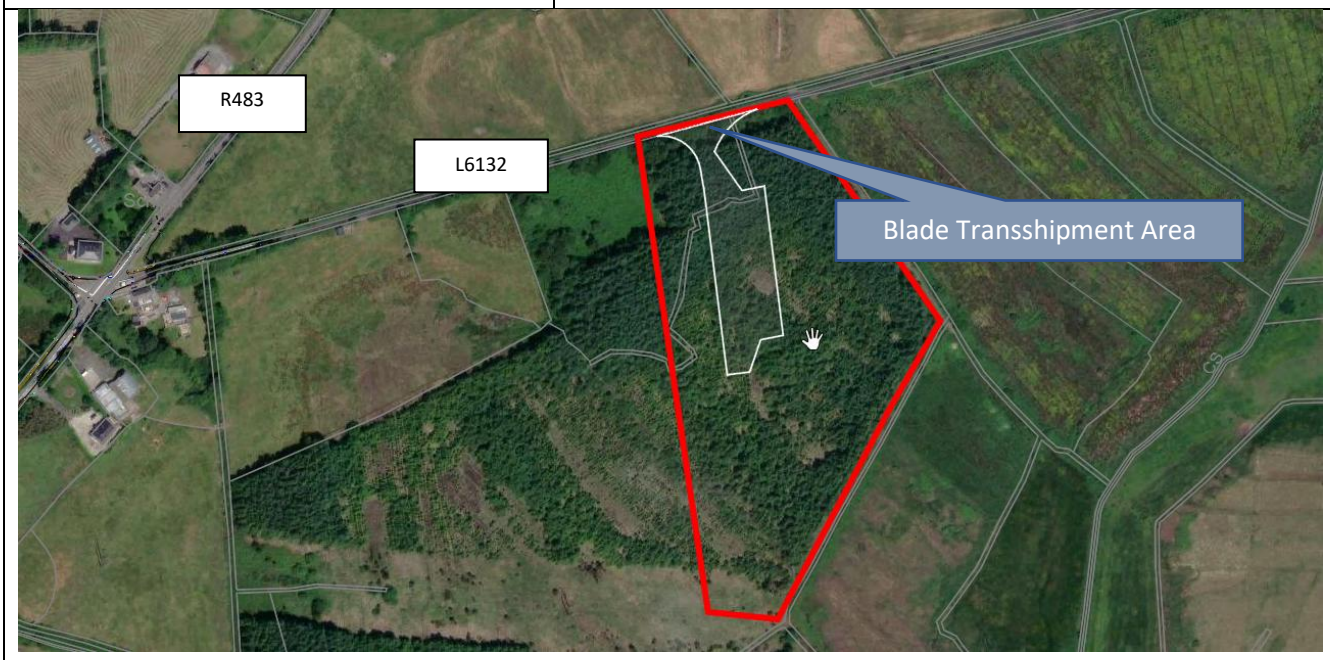


Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,

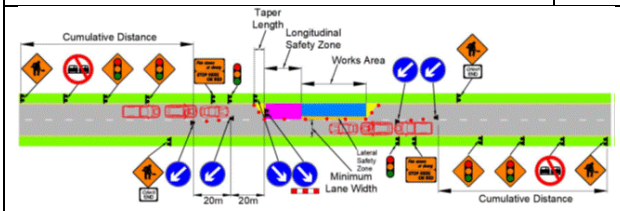
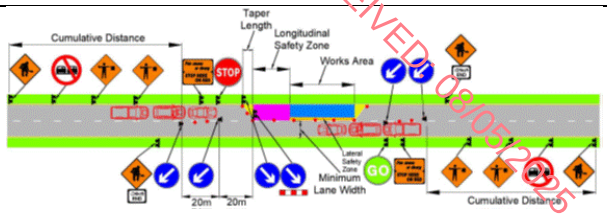
 Temporary Traffic Lights	 Stop & Go

L6132

Works Location	L6132 Blade Transshipment Area
Road Number	L6132
Description of Works to be Undertaken	Construction of blade transshipment area with access onto L6132
Drawing Reference	
Road Width (approximate)	L6132 - 3.0m carriageway with grass verges
Traffic Management System	Temporary Traffic Lights / Stop & Go / Flagman



Local Access	To be maintained through the works at all times using steel plates
Duration of Works	3 Days – site entrance construction,
Duration of Road Closure	N/A
Diversion	

Emergency Access	To be maintained through the works at all times using steel plates / temporary backfilling of trenches,
 Temporary Traffic Lights	 Stop & Go