FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

Appendix 14.1

Traffic Management Plan

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

ENVIROMENTAL IMPACT ASSESSMENT REPORT (EIAR) PROPOSED SHANCLOON WIND FARM, CO. GALWAY

Traffic Management Plan

Prepared for:

RWE Renewables Ireland Ltd

RWE

Date: **August 2025**

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1. INTRODUCTION

This preliminary traffic management plan outlines the procedures to be implemented during the construction, operation and decommissioning stages for traffic management at the Proposed Development.

In this report the proposed haul routes to the Proposed Development, used for engineering material, equipment deliveries and the turbine delivery route (TDR) (used for the delivery of oversized turbine components during construction) are assessed.

Prior to works commencing, a detailed traffic management plan, which complies with the requirements set out in this plan unless otherwise required by the local planning authority, will be produced by the appointed contractor.

2. METHODOLOGY

This assessment has been undertaken using a combination of desktop studies, field surveys and consultation with statutory agencies and local authority representatives in line with current best practice and policy advice. The assessment considers traffic management associated with the Proposed Development.

The following guidance has been adhered to in this plan:

- Traffic and Transport Assessment Guidelines – May 2014, Transport Infrastructure Ireland (TII);
- DN-GEO-03060: Geometric Design of Junctions, May 2023, TII;
- DN-GEO-03031: Rural Road Link Design, May 2023, TII;
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022, EPA.

The potential for soiling or damage to public road infrastructure through poor construction practices as well as potential health and safety hazards through poor traffic management are also identified where applicable.

2.1 Traffic Management Objectives

There are two main objectives when planning, developing, and implementing transport management proposals for wind farm developments which are:

- To maximise the safety of the workforce and public road users.
- To keep traffic flowing as freely as possible and minimise the impact of the construction traffic and road works through appropriate mitigation.

To ensure that there is minimal effect on the commercial and socio-economic life of the surrounding areas, the appointed contractor will implement all mitigation measures mentioned to achieve the above objectives. The appointed contractor shall endeavour to meet these objectives by proper planning and by compliance with the relevant procedures as outlined in Section 6.

The appointed contractor will liaise with An Garda Síochána and Galway City and County Council to avoid cumulative effects with other consented and proposed construction schemes in the area. The appointed contractor will recognise that other external factors such as severe weather events can affect traffic flow close to the Proposed Development and will endeavour to minimise the effect of the works on traffic in the planning and programming of the works at construction stage.

3. EXISTING ENVIRONMENT

3.1 Existing Road Network

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of roads throughout Ireland is outlined in Table 3-1.

Table 3-1: Road Categories

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120kmph) road predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageway, with some that are dual carriageway. Generally high speed (100kmph) roads that facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting towns, serving medium to large geographical areas and link to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These roads generally receive more frequent maintenance criteria than Local Roads and therefore tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.

A detailed description of the roads impacted by the Proposed Development is provided in section 14.3.1 of the EIAR.

3.2 Schools

Table 3-2 lists the schools within 10km of the Proposed Development. The proposed works at the Site are not expected to significantly impact any school due to their distance from the main site entrance.

Table 3-2: Schools Located near Wind Farm Site

Name of School	Distance From Wind Farm Site Entrance (km)
Kilconly N.S.	3.7
Tiny Tots Preschool	3.7
St. Benin's Primary School	5.4
Gardenfield National School	9.7

3.3 Other Transport Network Infrastructure Within the Study Area

There are no active railway lines, greenways or waterways within 20km of the Proposed Development.

The site location and existing road network is shown in Figure 14.1, Volume IV.

3.4 Parking

It is not anticipated that works for the Proposed Development will have a significant effect on any parking facilities in the surrounding area due to the isolated location of the Site. The usual practice for site and plant operatives is to park close to their work area within the wind farm at the crane hardstands or areas along the internal access roads. In addition, sufficient parking facilities will be made available for operatives and visitors at the temporary site compounds within the site during the construction of the wind farm and substation compound. Operatives will be prohibited from parking on any public road outside of the site throughout the construction phase with the exception of the grid connection operatives. The works area for the grid connection operatives will include parking for one LGV, one HGV and one excavator.

Parking restrictions will be required on public roads in order to facilitate the delivery of wind turbine components along the TDR, as outlined in the route assessment report by Pell Frischmann. These parking restrictions will only be required during turbine deliveries and will be communicated in advance with the local community through letter drops, local notice boards and door to door meetings with local residents.

3.5 Construction Working Hours

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between:

- 7.00am – 7.00pm* (Monday – Friday)
- 7.00am – 1.00pm* (Saturday)

* The working day may extend occasionally when critical elements of work need to be advanced.

It should be noted that it will be necessary to commence turbine base concrete pours earlier due to time constraints incurred by the concrete curing process. Foundation pours will likely extend beyond normal working hours. Turbine component deliveries will be carried out at night to minimise traffic disruption. Consultation will be carried out with the local community in advance of out of hours working. Additional emergency works may also be required outside of normal working hours as noted above which will be notified to the local authority. Work on Sundays or public holidays will only be conducted in exceptional circumstances and subject to prior consultation and notification insofar as possible with the local community.

4. CONSTRUCTION WORKS

4.1 Wind Farm

The proposed wind farm will consist of 11 no. wind turbine generators (WTG's), a 110 m meteorological mast, peat and spoil management areas, 3 no. temporary construction compounds, wheel wash facilities and 1 no. 110kV substation compound along with ancillary civil, drainage and electrical infrastructure.

The main site entrance is located on the L2234 local road. The main site entrance will serve all construction traffic entering the site to construct wind farm infrastructure. It will also be used for maintenance of T5 to T11 for the operational phase of the development.

Access for the Met Mast is via the main Site entrance along proposed internal access tracks.

Access for the proposed substation compound will be via the L6100 local road.

Construction of the Proposed Development will result in an increase in traffic on the N83, N84 and N17 national roads, the R332 and R345 regional roads, the L2234, L6483, L22202, L2220, L-1613, L-2112, L6100, L6225, and the L22204 local roads as all traffic entering and exiting the Site will do so via the main Site entrance.

4.1.1 Construction Traffic

The different categories of construction related traffic that will travel to the Proposed Development Site during the construction phase are as follows:

- Specialist delivery vehicles transporting turbine components and an electrical transformer.
- HGVs importing construction materials, including concrete, aggregate stone, timber logs, building materials, drainage/ducting materials, reinforcing steel, cabling, steel lattice tower sections, site boundary fencing, electrical switchgear, etc.
- HGVs delivering plant/cranes and fuel.
- LGV Traffic for on-site construction personnel.

4.1.2 Haul Route for Construction Traffic

The Site is surrounded by a comprehensive road network with routing options available via the main Site entrance to the east of the Site. The proposed haul route for the delivery of materials associated with the construction of the Proposed Development are outlined in Figure 14.3, Volume IV.

Construction deliveries from Mortimer's Quarry to the south will use the N83 and N17, the R333 and R332, and the L2112, L6483, L2234 local roads as the designated delivery route to the main site entrance. Deliveries from the north will be from Harrington's quarry near Kilkelly and Cong quarry. Harrington's haul route will utilise the N17 for the majority of the route to reach the R332, the L6483 and the L2234 as the designated haul route. The prescribed route from Cong quarry utilises the N84, R345, R332, L1613, L6483 and the L2234.

The haul routes are primarily along national secondary and regional roads, with additional local roads leading to the Site. It is anticipated that a succession of 20T and/or 8m³ trucks will transport the material at a peak frequency of 10 to 13 HGVs/hour. Peaks in construction traffic are typically associated with the pouring of turbine foundations. Specialist vehicles will be used for the delivery of the wind turbine components and substation transformer. These components will follow the Turbine Delivery Route outlined in section 4.2 and in the Route Survey Report completed by Pell Frischmann. Other materials are expected to be delivered on flatbed trucks (40ft or smaller depending on size of deliveries). Hours of operation will be limited for HGV movements in order to allow for residents to avoid conflict with commuter traffic during the morning and evening peak hours, during local school start and finish times.

4.1.3 Quarries

Material required for the construction of the wind farm tracks, crane hardstands, substation compound and grid connection options are expected to come from local quarries. Material to be delivered to site will mainly consist of stone aggregate for the construction of access roads and hardstands, limestone capping material for roads and hardstands, and concrete for the construction of the 11 no. turbine bases and substation infrastructure. There are currently three licensed quarry facilities in the surrounding 40km likely to be used, including, but not limited to, Harrington's Quarry located c. 34km to the northeast (straight line distance), Cong Quarry located c. 22km west (straight line distance) and Mortimer's Quarry located c. 13.2km south (straight line distance) of the Site. These quarries are shown in Figure 14.3, Volume IV.

4.2 Turbine Delivery Route

The components for the 11 no. turbines will likely be delivered to the Port of Galway. The components for each turbine will be delivered in convoy as separate loads, some of which are abnormal in terms of their width and length. The components will be transported from the Port of Galway to the Site along motorway, national, regional and local road network.

Pre- and post-construction surveys will be carried out to ensure the structural integrity of the structures and pavement along the selected haulage and delivery routes. Maintenance will be carried out on the public road network during the construction phase, as necessary, to ensure that the condition does not deteriorate below the standard documented prior to construction. All roads and structures along the TDR, GCR and haulage routes will be reinstated to their pre-works condition or better post-construction. A permit for transporting abnormal loads to the Site will be sought from An Garda Síochána and the applicable local authorities on the selected TDR and haulage route with a transportation plan for the time of deliveries established at construction stage.

Large components associated with the wind farm construction will be transported to Site via the identified TDR. The proposed TDR is presented in Figure 2.3, Volume IV. A Delivery Route Selection and Assessment was carried out to identify the optimum delivery route to Site and is presented as Appendix 2.2 of this EIAR.

The turbine delivery route to Site is as follows:

- Loads will depart the Port of Entry and navigate to the M17 motorway;
- Depart the M17 at the roundabout at junction 20 by continuing straight onto the N17;
- Continue on the N17 for c. 2.2km and take a left onto the R332;
- Continue straight through the roundabout to stay on the R332;
- After the roundabout continue along the R332 for c. 6.7km;
- Turn left onto the L6483;
- At the crossroads turn left onto the L2234 and continue for c. 1km. The site entrance is located on the right.

A substation transformer unit will be transported to the on-site substation which will be categorised as an abnormal load. As a result, an abnormal load permit will be sought for this movement. Multiple transformers have already been delivered to ESBN substations in the area without any impact on the structures along the road network. Minor accommodation works to third party lands along the L6100 road are required for transformer delivery, as shown in Appendix 14.1, Volume III of the EIAR. Please refer to Swept Path Drawing References SK16 and SK17 for the transformer delivery assessment.

There will be an objective to maintain the strategic capacity and safety of the M6, M17, N83 and N17 carriageways at all times, cognisant of the National Development Plan, 2021 - 2030, with key sectoral priorities for maintaining the N83 and N17 national road network to a robust and safe standard for users. The detailed design will be carried out with full stakeholder engagement and all concerns that may arise will be addressed through this process.

In some cases, accommodation works are required along the TDR such as hedge or tree cutting, relocation of powerlines/poles, lampposts, signage and local road widening. Any accommodation works within the public road corridor will be carried out in advance of the turbine deliveries in agreement with the local authority and subject to a road opening license.

The development will be constructed to ensure that all temporary/permanent works within the road curtilage of the national roads (N83, N17) will be as per the Purple Book (Guidelines for Managing Openings in Public Roads, 2017). If any damage to existing footpaths or cycle lanes occurs during the delivery of components, these sections will be replaced by the awarded civils contractor as per The Purple Book (Guidelines for Managing Openings in Public Roads 2017 (SD12 Footways: Concrete Permanent Reinstatement).

The delivery of turbine components normally takes place overnight due to the oversized nature of some of the components such as tower sections and blades. As mentioned above deliveries are done under a permit system from An Garda Síochána and are fully escorted for the entire delivery. Turbine delivery normally consists of three trucks in convoy with their escorts. The convoy will proceed along the local access roads at speeds less than 25km/h but such that they will not cause any undue delay to any encountered resident.

Operational Phase

Replacement components may be required to be delivered to the Site in the unlikely event of turbine component failure or malfunction. This will involve additional use of the TDR to deliver the necessary parts to facilitate maintenance and repair works at the Site.

Decommissioning Phase

It is anticipated that when the Proposed Development reaches end of life stage that the access tracks, underground cabling and hardstand areas will be left in situ to revegetate naturally. The substation building and met mast will be dismantled and materials transported to the nearest licensed waste facility. Turbine blades and tower sections may be dismantled on site or remain intact and transported off site to be repurposed for alternative uses. During the decommissioning works the TDR may be required to transport turbine components off-site.

4.3 Grid Connection Route

As described in Chapter 2, electricity generated from wind turbines will be collected at medium voltage (33 kV) by an internal circuit of buried cables which primarily will follow on-site access tracks. These circuits will be directed to the proposed 110kV Substation within the Site. This will provide a connection point between the wind farm and the proposed loop-in grid connection point to the existing Cashla-Dalton 110 kV overhead line.

The underground grid route connection works to the onsite substation will involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables predominantly within agricultural lands. These works will be progressive with short sections of trench open for short periods before moving onto the next section. This will require delivery of plant and construction materials to the sections along the route, followed by excavation, laying of cables and subsequent reinstatement of trenches and road surfaces. The Project's trenching requirements within public roads is less than 495m in total to facilitate cabling works and uses private lands for cable trenches and joint bays where possible. This length of public road trenching is much shorter than other wind farm projects of similar scale across the county, which shows the applicant has made every effort to keep the connection cables within private lands where possible.

The development will be constructed to ensure that all temporary/permanent works within the road curtilage of the national roads will be as per the Purple Book (Guidelines for Managing Openings in Public Roads April 2017). All temporary works within the road curtilage of the national roads to install the cable ducts will be subject to National Roads Guidelines, ensuring all trenching and reinstatements will be as per SD2 (Temporary Reinstatements) and SD6 (Permanent Reinstatement) along heavy trafficked carriageway. If any damage to existing footpaths or cycle lanes occurs during the build, these sections will be replaced by the awarded civils contractor as per the Guidelines for Managing Openings in Public Roads 2017 (SD12 Footways: Concrete Permanent Reinstatement).

If any temporary maintenance works are required to cabling, ducting or joint bays during the operational phase of the Proposed Development will also adhere to the above National Roads and Footways guidelines and standards.

5. MITIGATION - TRAFFIC MANAGEMENT PLAN

5.1 Wind Farm - Mitigation Measures

5.1.1 Road Safety

A road safety and courtesy procedure will be implemented for the duration of the construction of the Proposed Development. All companies delivering to site will have to sign up to this protocol as part of their supply contract. The protocol will consist of restricted delivery hours, speed limits along public roads and within the Site. Fundamental to the procedure is courtesy for local road users. Construction vehicles will always give way to oncoming residential traffic and will always slow down or stop as appropriate for pedestrians and cyclists.

5.1.2 Road Cleanliness

The construction phase of the Proposed Development will require the delivery of turbine components, concrete, steel and aggregate to the site via the public road network. The nuisance of dirt on the local road network during wet weather and dust during dry weather is an area of identified concern where the primary mitigation measure for this impact will be in the form of a wheel wash facility to be installed near the exit of the wind farm site as illustrated in Figure 5-1.

In addition, a road sweeper will operate on the local road network at Shancloon including the L2234, L6483, L22202, L2220, L-1613, L-2112, L22204 and the L6100 on a full time basis for the duration of the importation of aggregates and concrete and at regular intervals for the duration of the construction phase.

A water bowser will be employed to spray the local roads with water during dry periods when there is a risk of dust nuisance. Appropriate signage will be maintained for the duration of the construction and operation phases with clear warning signage at the site entrance along the local road network.

Figure 5-1: Typical Wheel Wash System

5.1.3 Construction Traffic Staging

The stages of the proposed development can be summarised in terms of traffic management in the following four stages:

1. Access roads, crane hardstands, and substation construction
2. Turbine base construction
3. Turbine erection
4. Cabling Works

Access Roads, Crane Hardstands, and Substation Construction

All construction transport including deliveries of quarry and building materials will use the R332, the L-6483 and the L-2234 local road near the main wind farm site entrance as the designated delivery routes for the wind farm which will likely be accessed via the N17 National road and the N83 and N84 National secondary roads.

During the construction of the access roads, crane hardstands and substation buildings, a conservative scenario (assumes all construction aggregate and fill material is imported, no soils, pile arisings, etc. are exported, and no site won material is used) estimates that the maximum number of loads to be delivered to the wind farm work area would be approximately 46,096 as shown in Table 14.8, Chapter 14 of the EIAR. This includes loads of aggregate, stone and capping material, concrete, reinforcing steel, geo-textiles, electrical cabling, timber logs and general building materials. It is proposed to source stone and capping aggregate from local quarries in the vicinity of the Site. Structural fill will also be sourced from local quarries due to the site being primarily underlain with peat.

As described in Section 4.2.1, a construction traffic safety and courtesy procedure will be implemented to manage the traffic for delivery of materials. Construction traffic will be limited to an appropriate speed limit to be set by the appointed contractor along local roads. A traffic coordinator will be employed full time during the construction period to implement the construction traffic safety courtesy protocol and speed limitations.

Turbine Base Construction

A wind turbine with a ground bearing concrete foundation will require a concrete pour of circa 800m^3 during its construction. Assuming each truck has a capacity of 8m^3 of concrete, this volume of concrete will require approximately 100 loads of concrete in one day to complete. There will be 11 of these pours within the wind farm. The pours would generally start early in the morning and be complete in early afternoon. Normal deliveries will be curtailed during concrete pours until the base pour is completed. Concrete pours are weather dependant but are normally planned and scheduled in advance and written notice of each base pour can be hand posted to residents along the local access roads a day in advance. During pours a second escort vehicle will be utilised to maintain construction traffic safety and courtesy.

Turbine Erection

Abnormal Load Transportation Plans

Detailed Route Surveys & Swept Path Analysis have been completed by an independent specialist haulage consultant. Please refer to Appendix 2.2 of the Traffic and Transport Chapter of the EIAR for further details.

Before any components arrive, the entire transport route (from port to site) is meticulously surveyed. Swept path analysis is used to identify any pinch points, required temporary road widenings, removal of street furniture (signs, lights, barriers), and potential blade oversail (where the blade protrudes beyond the road corridor).

Permits and Notifications

Abnormal load permits are required from local authorities and An Garda Síochána for abnormal loads. Public notification strategies will commence 1-2 weeks before the intended delivery date to inform local residents and businesses of delivery schedules and potential delays.

Escorts

Turbine component convoys will be accompanied by specialist escorts (front and rear) to manage traffic, alert other road users, and ensure safe passage.

Off-Peak Deliveries

Deliveries of large components (especially blades and tower sections) are scheduled for off-peak hours, such as night-time or early mornings, when traffic volumes are lowest, to minimise disruption.

On-Site Traffic Management for Erection

A each turbine location there will be dedicated turbine erection zones. These are specific areas designated for the turbine erection process. This includes the crane pad, laydown areas for components, and exclusion zones around the working area.

Restricted Access

During actual lifting operations (tower sections, hub, blades), access to the immediate turbine erection zone and wider exclusion zone around it will be restricted to essential personnel and vehicles directly involved in the lift.

Stop/Go Systems & Flagmen

On internal site roads or public roads directly adjacent to the erection site, "stop/go" traffic control or manual flag persons will be used to manage the flow of all vehicles during critical lifting operations or when large components are being moved within the site.

Communication Protocols

Clear communication protocols are established between the crane crew, transport teams, site management, and traffic management personnel to ensure all movements are coordinated and safe.

Turbine erection is entirely weather dependant with the scheduling of component delivery being entirely subject to wind conditions. Advance notice of delivery to residents is difficult in this circumstance but component delivery is a highly controlled low impact activity of very short duration to any residential property it passes. Once turbine components have been delivered delivery vehicles will exit the Site via the main entrance on the L-2234 Local road.

<u>Cabling Works</u>

Excavation and Backfill - Machinery (excavators and dump trucks) will be actively involved in digging trenches, laying cables, and backfilling trenches. These are dynamic progressive work areas with clear demarcation using traffic cones to cordon off the area, fencing, hoarding, and advanced warning signage where necessary.

Spoil, Ducting, and Bedding Aggregate Management

Trenches generate spoil which needs to be transported to designated storage and disposal areas within the nearest temporary construction compound or peat storage area. Aggregate (sand, fine gravel, ducting material) also needs to be delivered to the trenches.

Cable Pulling and Laying

Large cable drums are transported by specialist vehicles (often trucks with large trailers or drum stands) along the internal haul roads. These drums are then unspooled along the trench corridor, requiring a slow-moving convoy or specialised cable-laying equipment.

Joint Bays

Work around joint bay pits requires space for vehicles, equipment, and personnel to lift the precast joint bay into place, pull cables, and backfill trenches.

Controlled Access Points

Specific entry and exit points will be designated for active cabling zones to manage cable crew traffic flow.

5.2 Public Road Temporary Crossing Points - Traffic Management

There are three main crossing points across the site which traverse the public road. These crossing points are necessary to reach different parts of the site for construction vehicles and cabling works.

Crossing Point 1 traverses the L-2220 local road and provides a linkage between the east of the site where T1-T4 are located and the centre of the site where T5, T8, T9 and T10 are located. During the construction phase, traffic at this junction will be managed by flagmen. All construction traffic will access the site via internal access tracks, ensuring the L2220 local road is not utilised. Traffic on the L2220 will maintain priority over construction vehicles, as the L2220 will function as the major road at this intersection.

For the operational phase of the development, LGVs undertaking maintenance for Turbines T1 to T4 will access internal wind farm tracks by turning left from the L2220. Maintenance for Turbine T5 to T11 will be conducted via the main wind farm entrance to the east, meaning no maintenance vehicles will use the internal track east of this junction during the operational phase. The eastern junction onto the L2220 will be decommissioned during this phase.

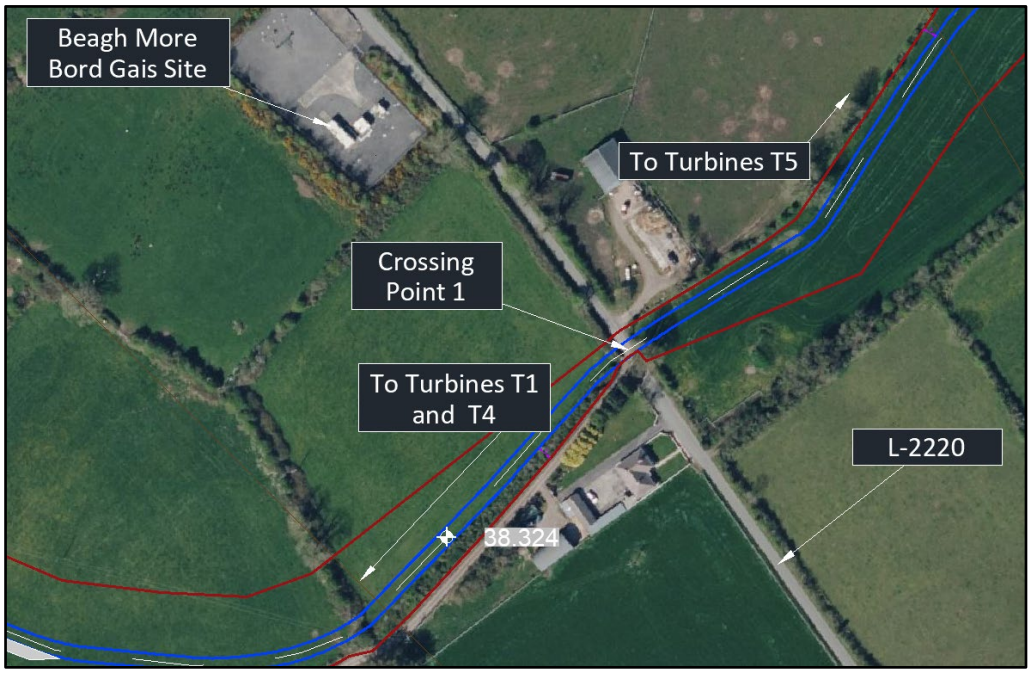

Figure 5-2: Crossing Point 1

Crossing Point 2 traverses the L-22202 local road and provides a linkage between T5 and T8 - T10 located centrally within the site.

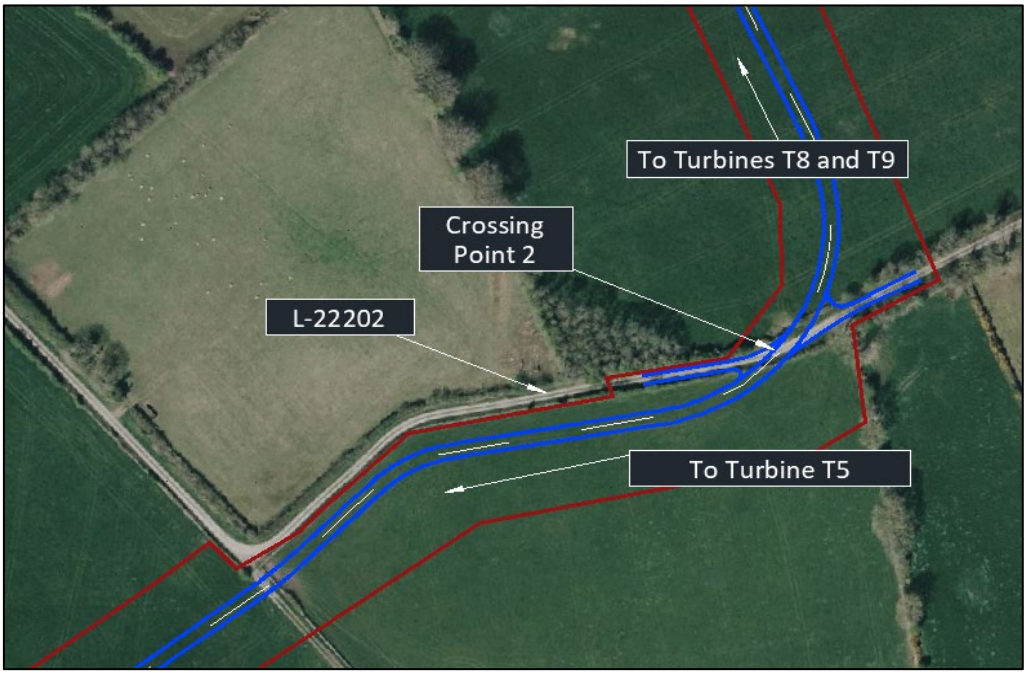

Figure 5-3: Crossing Point 2

Crossing Point 3 also traverses the L-22202 local road and provides a linkage between T6 and T7 with T8 - T10 located centrally within the site.

Figure 5-4: Crossing Point 3

5.2.1 Crossing Point Mitigation

- The proposed crossing points will be managed appropriately to allow the safe passage of construction vehicles in, out and across the public road. Priority will be maintained for public traffic.
- At the site crossing point, a single operator may be used to control the traffic using a double-sided Stop disc. The operator stops both flows of traffic to allow the construction vehicle to cross the public road and then leaves the carriageway and signals to the traffic to proceed.
- A concrete apron will be provided on both sides of the crossing point during the construction phase, constructed 40mm below road level and overlaid with surface course material.
- Stop and Go discs will be used to control the crossing point. See Figure 5-5 for acceptable type in accordance with Chapter 8 of the Traffic Signs Manual. If it is required to stop both streams of traffic at the one time, then a disc displaying Stop on both sides shall be used.

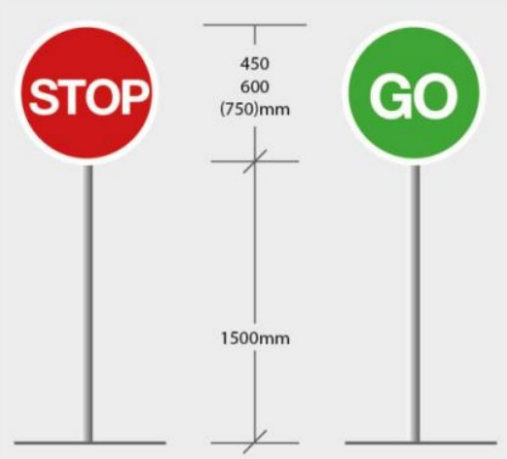

Figure 5-5: Acceptable Stop-Go Discs

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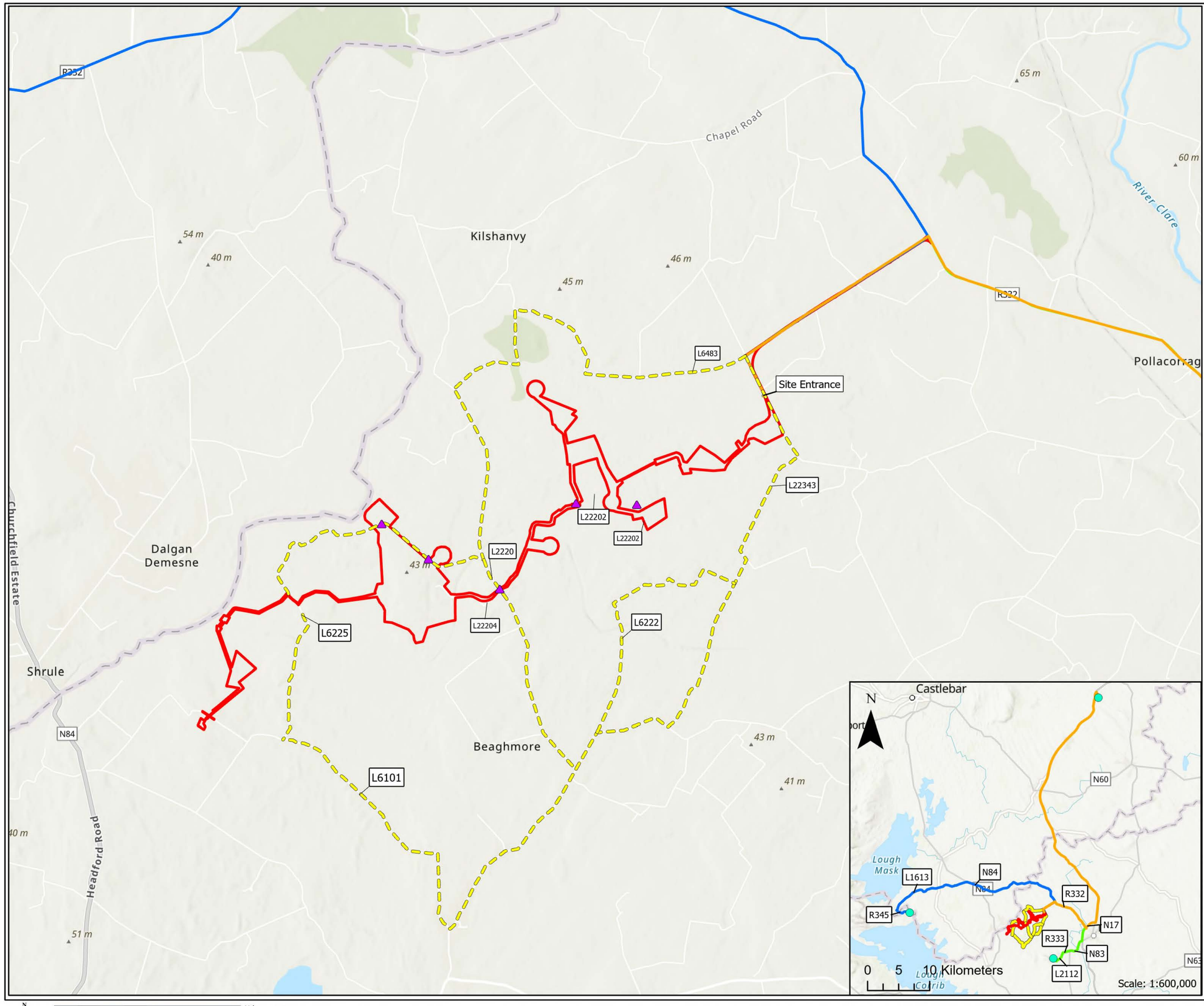

Legend

- Proposed Development Boundary
- Crossing Points
- Diversions

Haul Routes

- Route A
- Route B
- Route C

TITLE:	Potential Road and Lane Closures and Alternative Access and Egress		
PROJECT:	Shancloon Windfarm EIS		
FIGURE NO:	5-6		
CLIENT:	RWE Renewables Ireland Ltd		
SCALE:	1:40,000	**REVISION:**	0
DATE:	27/01/2025	**PAGE SIZE:**	A3

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5.3 Turbine Delivery Route - Traffic Management

5.3.1 Turbine Component Delivery Mitigation

- **Programme of Deliveries –** As agreed with Galway City and County Council, a programme of deliveries will be submitted to Galway City and County Council in advance of deliveries of turbine components to Site. The programme will include details of the dates and times of each turbine component delivery along with the weight of each load, the TDR and details on support vehicles. Turbine component deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company.
- **Unloaded Trial Run:** vehicles with similar dimensions of the abnormal load vehicles will complete an unloaded run of the route to ensure all temporary accommodation works are suitable for the loaded convoy.
- **Garda Escort -** Turbine deliveries will be escorted by An Garda Siochána. This will ensure the impacts of the turbine deliveries on the existing road network are minimised.
- **Consultation** with the local authorities will be included in the contractor's traffic management plan to manage turbine component deliveries where necessary.
- **Reinstatement –** Any areas affected by the works to facilitate turbine delivery will be fully reinstated to their original condition.
- **Detailed Structural Surveys of Crossings -** Visual inspections indicate that all existing crossings along the TDR between the N17 and the proposed site entrance are capable of safely carrying the expected loads. A program of structural surveys of crossings along the TDR will be agreed with Galway County Council prior to commencement of construction.

5.3.2 Public Road Works to Facilitate Turbine Delivery and Construction Traffic

R332

Turbine delivery loads will overrun the roundabout at the N17/R332 junction where a temporary load bearing surface will be laid and street furniture will be removed. Blades will also oversail two lighting columns which will require temporary removal.

L-6483

Loads will overrun forestry lands at the R332/L6483 junction during a left turn manoeuvre. A load bearing surface will be laid at the overrun area, a ditch will also require culverting. Trees and vegetation within the forestry lands will be removed along with one utility pole.

After the junction, the L6483 will require localised widening within the public road corridor to bring the carriageway width to 4.5m minimum throughout the road section up to the L6483/L2234 junction. This is to facilitate turbine tower deliveries. In advance of construction, a trial run of the proposed delivery route will be carried out by the appointed haulage specialist to determine if any further localised road widening is required with the agreement of Galway County Council. Additionally, there are 4 no. passing bays proposed along the L6483 with a maximum spacing of 500 metres to assist HGV traffic movements during the construction stage. The carriageway width will extend to 6m at these locations for a length of 40m.

L-2234

Loads will overrun forestry lands at the L6483/L2234 junction during a left turn manoeuvre. A load bearing surface will be laid at the overrun area. Trees and vegetation within the forestry lands will be removed along with two road signs.

This road will also require widening from the L6482/L2234 junction up to the main site entrance. Localised widening within the public road corridor will be completed to bring the carriageway width to 4.5m minimum for this road section. One passing bay is also proposed approximately half way between the junction and the main site entrance to assist with traffic movements.

Site Entrance

The site entrance to the wind farm on the L-2234 Local road will require widening and vegetation clearance to allow the long turbine component loads turn southwest at this point and to avoid oversail of lands to the northeast. The widened area of the entrance will be cleared and a load bearing surface will be laid in preparation for turbine deliveries. Following completion of the construction phase, the widened area will remain in place by cordoning off the area with a permanent fence installed to a 10m junction radius behind the visibility envelope. This area will only be made available for any turbine component transport during the operational and decommissioning phases. The design of the widened junction for the turning movement of the longest load, which is the turbine blade truck and trailer, has been verified using swept path analysis software. Permanent access to the wind farm and permanent met mast during the operational phase will only be from the main Site entrance. Entry to the onsite substation will be facilitated along the L6100 local road entrance only.

The majority of the TDR will follow motorway, National Primary, National Secondary and Regional roads as described in Section 4.2.4. There may be a requirement, pending final confirmation of the transport delivery configuration at construction stage, for the temporary removal of road signage and/or temporary widening of grass road verges in order to cater for the swept path of these abnormal delivery vehicles. The developer will consult with the Road / Area Engineers of the relevant local authorities to temporarily remove any road signage and provide temporary grass verge widening where this may be required.

The location of accommodation works are shown in Figure 2.3, Appendix IV and identified as “Points of Interest” (POI’s).

Key elements of the temporary accommodation works for the delivery of turbines are summarised in Chapter 14. A full list of proposed temporary accommodation works are presented in Chapter 2.

Additional details are also contained in the Route Survey Report (RSR) in Appendix 2.2.

5.3.2.1 Methodology - Road Improvement Design and Construction

Following a meeting with Galway CoCo on site it was decided to construct 3 no. additional passing bays along the L6483 local road. There are a number of existing passing locations within the road corridor and it is intended to utilise these during the construction period. Further to the existing passing locations it is proposed to construct 3 new passing locations along this road. This will ensure that there is a clear line of sight between the passing locations with a maximum spacing of approximately 500 metres between bays (see planning drawing P20-306-0300-0023 for details).

It is proposed that any road widening works will be designed with consideration for the expected vehicles, existing road widths and in accordance with TII design standards, in particular, DN-GEO-03030-01: Guidance on Minor Improvements to National Roads, March 2013 and DN-GEO-03046: The Location and Layout of Laybys and Location Markers, December 2010. The proposal more than adequately meets the objective to allow safe passing of vehicles required for the construction of the development. The road widening will be designed to provide passing locations with adequate capacity to accommodate a standard typical dumper truck. A 10m long large tipper truck has been assumed for worst case design purposes for this exercise as shown in Image 5-2 below. It has been assumed that truck widths will not exceed 2.8m, this results in a minimum passing width requirement of 6m to allow for two trucks to pass each other safely.

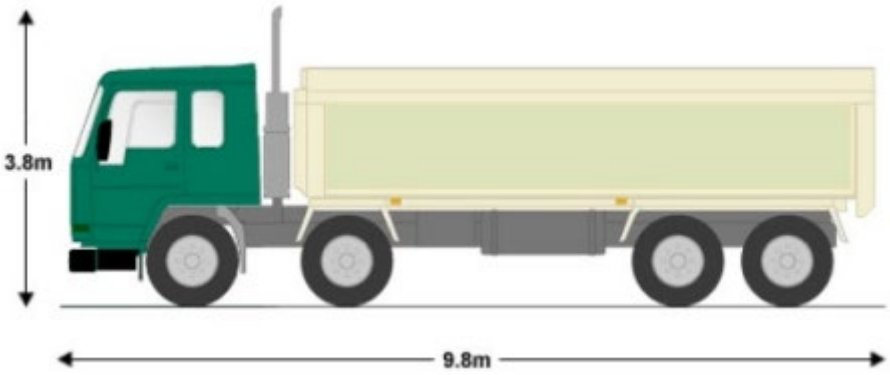


Figure 5-6: Proposed Dimensions of Large Tipper Truck

The proposed road improvement design will provide adequate passing space for two large tipper trucks, ensuring a minimum total carriageway width of 6m for a minimum length of 10m, excluding entry and exit tapers which will also measure 10m. Passing opportunities identified as part of the survey are located to avoid interaction with existing roadside drains however all existing roadside drainage patterns will be maintained, in particular where roadside drains, water cuts and surface ditches are present. The crossfall and finished levels of proposed new road widening works will match the crossfall of the mainline carriageway to maintain existing sheet flow patterns and to ensure the surface water drainage of the public road is not compromised. The locations of passing opportunities were chosen with consideration for existing roadside drainage and in all cases, locations were chosen with sufficient verge width to accommodate the extension to the existing carriageway and to avoid existing roadside surface drains. Should interaction occur, existing surface drains will be re-directed to maintain hydrological connectivity and any such works will be carried out in accordance with the surface water management measures set out in the CEMP submitted with the EIAR.

Prior to construction commencement, the applicant will submit detailed designs for approval to Galway County Council showing information on road improvement construction build-up, road layer and surfacing construction details, and all drainage information on sectional detailed drawings that are site specific for each location. All works associated with road widening build up specification and surface treatment will comply with up to date TII design standards including but not limited to DN-PAV-03058: Specifications for Road Works Series 900 and DN-PAV-03074: Design of Bituminous Mixtures, Surface Treatments, and Miscellaneous Products and Processes, June 2017 or as required by Galway County Council. Reinstatement will be undertaken in consultation with Galway County Council. If removal of road widening is requested, verges will be reinstated with topsoil and re-seeded to their original condition following construction of the proposed development but this is not considered likely. Any re-directed small roadside drains will be stoned and seeded to match the existing channel, the cross-sectional area of which will also be matched. Following construction of the road improvement works, the opportunities for road users to pass safely along the L-6483 and L-2234 local roads will allow construction and public vehicles meeting head-on to pass one another safely without damaging road verges.

5.3.2.2 Proposed Passing Locations

The proposed passing locations have been designed and located so they can be accommodated within the existing road verge as much as possible with minimum impact on existing roadside drainage and hedgerows to provide adequate spacing between passing locations for vehicles.

Proposed passing locations are shown in Figure 5-7 below.

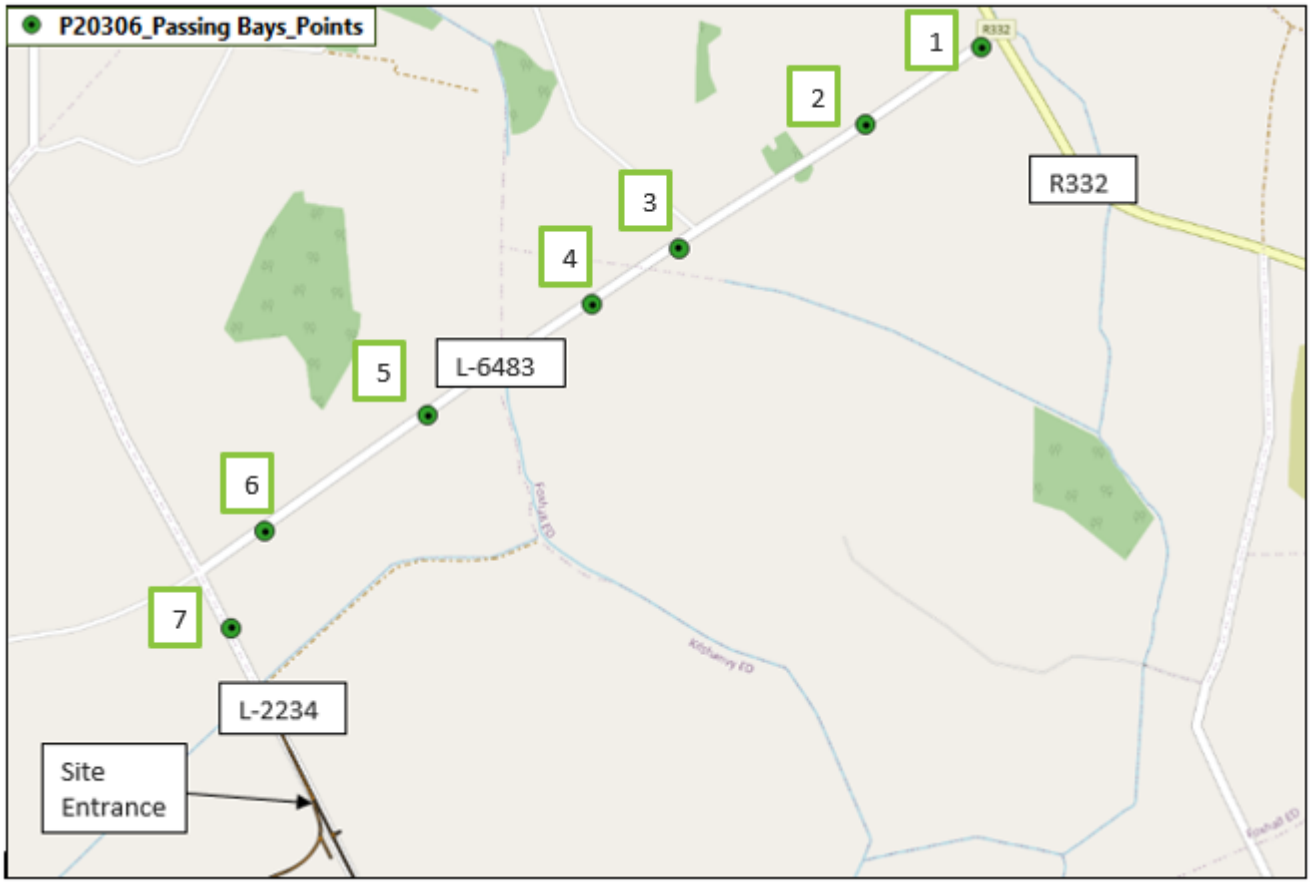


Figure 5-7: Proposed Passing Bay Locations

Table 5-1: Passing Opportunities and Improvement Works on L-6483 and L-2234 Local Roads

Travelling Southwest from R332/L-6483 Junction to L-6483/L-2234 Junction							
Chainage (m)	**Passing Location**	**Location**		**Existing average Road Width**	**Min. Depth of PB to Provide 6m Passing Width (m)**	**Passing Bay Spacing**	**Passing Bay Design Description**
		X_ITM	**Y_ITM**				
55	P1	537303	757459	3.7	2.3	N/A	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
393	P2	537020	757275	3.7	2.3	338	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
923	P3	536559	756985	3.7	2.3	530	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
1143	P4	536350	756850	3.7	2.3	220	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
1593	P5	535946	756587	3.7	2.3	450	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
2048	P6	535549	756312	3.7	2.3	455	Widening required southern side of L6483. Load bearing surface to be laid. 6m minimum carriageway width.
Travelling Southeast from L-6483/L-2234 Junction to Main Site Entrance							

Travelling Southwest from R332/L-6483 Junction to L-6483/L-2234 Junction							
Chainage (m)	**Passing Location**	**Location**		**Existing average Road Width**	**Min. Depth of PB to Provide 6m Passing Width (m)**	**Passing Bay Spacing**	**Passing Bay Design Description**
Chainage (m)	Passing Location	Location		Ext. Road Width (m)	Min. Depth of PB to Provide 6m Passing Width (m)	Passing Bay Spacing	Passing Bay Design Description
		X_ITM	**Y_ITM**				
150	P7	535462	756079	3.5	2.5	N/A	Widening required eastern side of L2234. Load bearing surface to be laid. 6m minimum carriageway width.

5.3.2.3 Spacing of Passing Locations

The proposed passing locations have been sited to provide adequate distance between them and consideration for inter-visibility between each location and changes in road alignment to allow construction vehicles and public traffic meeting head on, to pass one another safely without damaging road verges. The distances between passing locations, based on the September 2023 survey are outlined in Table 5-2.

5.4 Grid Connection Route & Substation - Traffic Management

A careful approach will be taken to planning the works to ensure minimal impacts on road users and the general public.

The road network around the substation was assessed for two-way flow of traffic during the construction stage of the development.

5.4.1 Existing Passing Locations

A site visit was completed by FT Engineers on the 29th of August 2024 to assess the substation entrance and the suitability of the L6100 for construction traffic. There are 11 no. existing passing opportunities identified on the L6100 where the carriageway width extends to at least 6-metres providing adequate space for vehicles to safely pass each other. It is intended that all traffic will be managed by a one-way system along the L6100 for the duration of the substation construction, anticipated to last 12 months. The passing locations and traffic management measures are shown in Figure 5-8 below.

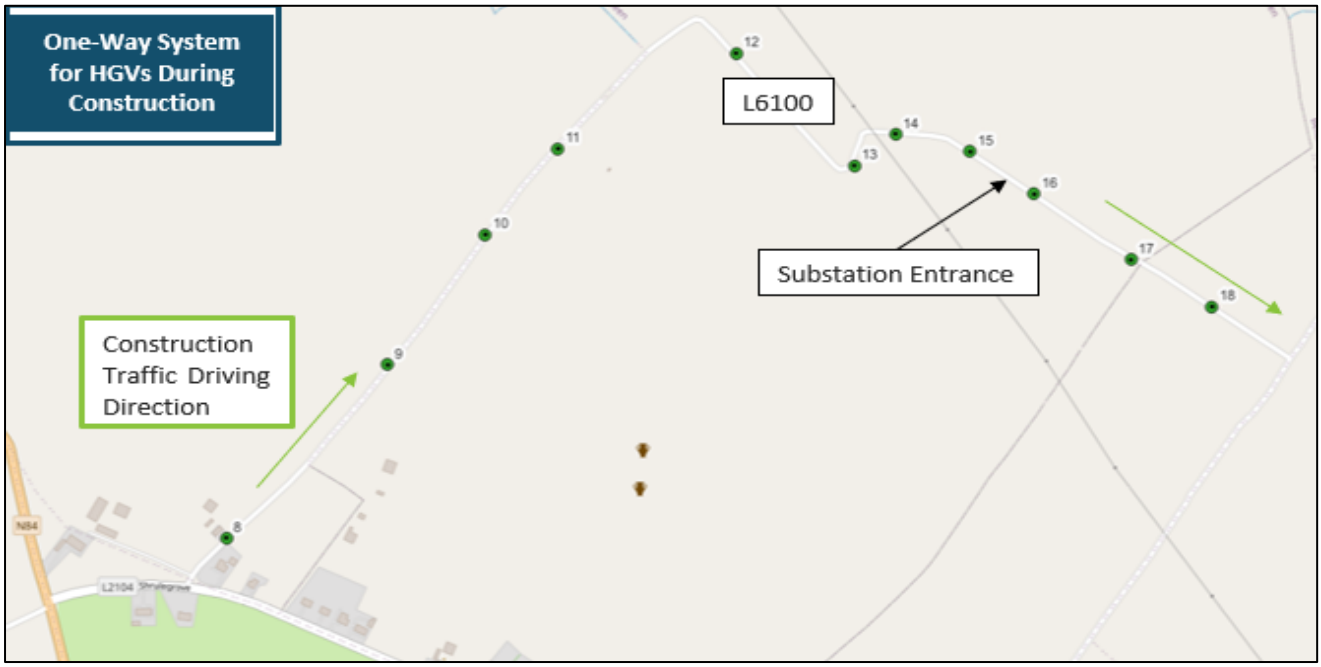


Figure 5-8: Existing Passing Locations and Traffic Management on L6100

5.4.2 Temporary Road Works

It is proposed that cabling works within the public road will be completed by small crews of 2-3 staff traffic management measures such as and stop/go systems will be put in place where the grid connection corridor is within the public road. The connection route to the substation is relatively short, totalling approximately 2.8km, of which only 158m is within the L-6225 public road corridor. The L-6225 and affected road sections northwest of the L-6225 will require road trenching and cabling works for approximately 2 days. During this time, local access to the 6 no. dwellings and farms will be maintained and these residences will be notified in advance of the trenching works. This will enable the works to be completed as quickly and as safely as possible, with minimal disruption time for residents of the area. Off-line sections of the proposed grid connection through private lands will not generate an impact to existing traffic flows. It is proposed that public road traffic flow will be maintained during the works through the use of trench covers and completing intrusive works during off-peak hours where possible.

Figure 5-9: Grid Connection Cable Route - Public Road Works

The majority of the 33kV internal cabling works are within grass or peatlands off of the public road. However, there are 6 no. locations where the cable route must cross the public road to connect specific turbines onto the circuit. Road works at these locations are anticipated to be completed in less than 1 day, namely the L-6225, L-22202, L-2220, L-22204 and a private road near T01 and T02 used for turbary activity. As these roads are utilised for turbary activities, the road works will be scheduled to avoid turbary cutting season to reduce the impact on local traffic.

The procedures to be implemented by the appointed contractor will include the provision of facilities for the safe passage of pedestrian and vehicular traffic and measures to separate them from the construction work. The appointed contractor will ensure traffic management controls are in accordance with Chapter 8 of the Traffic Signs Manual 2019 and the Temporary Traffic Management Design Guidance, Third Edition 2019. This traffic management plan is for planning purposes only and a final traffic management plan will be produced at construction stage by the appointed contractor pending final selection of the grid connection option.

The appointed contractor will outline local diversions whilst always maintaining local access for residents, farms and businesses.

Enforcement of traffic management procedures will include temporary traffic lights/ flag men in place during proposed cabling works. Should the need for weekend or night works be required this will be adhered to by the build contractor and agreed with in writing prior to such works taking place.

- Prior to works commencing, the area where excavations are planned will be surveyed and all existing services will be identified by a CAT (Cable Avoidance Tool) survey. All relevant bodies i.e. ESB Networks, EirGrid, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and drawings for all existing services sought. A road opening licence will be obtained where required from Galway County Council for the relevant road sections.
- All plant operators and general operatives will be inducted and informed as to the location of any services.

- Prior to works commencing the route will be inspected and marked out on the ground. Standard good practice preparatory measures are then put in place along the extent of the route. This would include any required warning notices, temporary works signage, temporary barriers, etc.
- Prior to works commencing a detailed traffic management plan will be prepared by the appointed contractor and agreed with Galway County Council.

5.4.3 Traffic Diversions

Where traffic diversions may be necessary due to temporary road closures associated with the wind farm works, the appointed contractor will advise Galway County Council of the following details:

- Location of proposed diversion.
- Reasons for specific traffic diversion.
- Duration of proposed diversion.
- Plan of diversion routes.
- Details for management and control of proposed method of diversion route traffic, including sign posting layouts and locations.
- Details of proposed system of diversion route maintenance and repair, including existing carriageway and street furniture etc.
- Details of proposed system of public communications and public liaison.

5.4.4 Joint Bays

There are no joint bays proposed within local roads. All joint bays are proposed on private lands and will be delivered to the site on flatbed trucks. Safety barriers or fencing will be erected around each open joint bay until cables are pulled and trenches backfilled to ensure vehicles and personnel can safely traverse the site.

5.4.5 Substation Entrance

The substation requires a new entrance onto the L-6100 local road. This entrance location was assessed by FT Engineers on the 29th of August 2024. It was determined that a one-way construction traffic system for both construction and public road traffic should be put in place on this local road for the 12 month duration of the substation construction phase for HGVs travelling to and from the substation site. All traffic will travel from the west at the L2104/L6100 junction to the east as shown in Figure 5-8. This entrance will operate as left-in and left-out only during construction.

Figure 5-10: View from Substation Entrance Looking West

There is an estimated 942 HGV trips required for the substation over the 12 month construction programme. This equates to an average of 3 HGV trips per day and a peak of 10 HGVs per day (1 HGV/Hour) expected in months 10-12 of the overall construction programme, assuming a 6-day working week. Due to the relatively low construction traffic volumes, the number of existing passing locations available and good intervisibility between these passing locations it is expected that the impact to local traffic will be short term in duration and not significant. Therefore no road upgrade works are considered necessary near the substation site other than restoring the road surface to the pre-works condition or better based on pre- and post-road condition surveys.

The majority of the deliveries to the substation site will take place during the first 3 months of the substation construction programme (months 10-12 of the overall windfarm programme) when activities such as the road, compound, and hardstanding construction tasks are taking place. During this period, construction HGV deliveries will be scheduled to avoid peak rush hours between 08:30 - 09:30 and 16:00 - 17:00. Abnormal load deliveries such as the HV transformer component will be scheduled at off-peak times under escort to avoid local traffic disruption. Please refer to Appendix 14.2, Volume III of the EIAR for further details on the Transformer Delivery swept path.

During operation, the substation will be monitored remotely and will only require approximately 50 LGV visits per year on average. The visits include inspections from the grid operator, regional supervisor, civil maintenance engineer and OEM engineer.

5.4.6 Contractor Staff Parking for Underground Grid Connection Works

All traffic arising from personnel (appointed contractors, sub-appointed contractors, site operatives etc.) working on the underground grid connection option will park their vehicles at the appointed contractors site compound within the Site. This will be done so as to prevent traffic disruption to local residents and construction activities along the local road network.

5.4.7 Public Notices

Public notices in respect of any required road closures or other traffic management tools are the responsibility of the Roads Authority (Galway County Council) who will undertake to publish such notices.

5.4.8 Signage

The appointed contractor shall undertake consultation with Galway City and County Council for the purpose of identifying and agreeing signage requirements. Such signage shall be installed prior to works commencing on site. Proposed signage will include warning signs to provide warning to road users of the work access / egress locations and the presence of construction traffic. All signage shall be provided in accordance with Chapter 8 of the Traffic Signs Manual 2019 as shown in Appendix 1.

The appointed contractor will ensure that:

- All sign faces are to be retro-reflective material to Class Ref 2 of EN 12899. The colours, chromaticity and luminance factors shall be as specified in Specification TS4.
- Signage shall be inspected at least once daily by the appointed contractor to ensure that it is in place, secure and appropriately fitted with warning lights as required.
- Signage will include but not be limited to advanced warnings for site accesses and overhead utility lines, unauthorised access, necessary PPE to be worn on site, CCTV & security in operation.

5.4.9 Operator Training

The appointed contractor will provide training to operatives in the traffic control systems being used on site. The importance of transport management, the safety of motorists, pedestrians and site staff will be emphasised to all construction staff. There must always be at least one competent person with a valid Construction Skills Registration Card on site when work is being carried out on roads.

5.4.10 Pedestrian Safety & Access to Residential, Commercial Properties

The appointed contractor will make provision for safe access to residential, commercial and business premises for local residents, employees, customers, the general public and for deliveries should this requirement be necessary at construction stage. The appointed contractor will ensure that throughout the course of the works its operations do not put pedestrians at risk.

5.4.11 Emergency Crew

The appointed contractor's emergency contact telephone number will be displayed at the appointed contractor's site office and will be notified to the Local Authority Roads Engineer, Utility companies and the Emergency Services Providers. This telephone will be manned by the appointed contractor's Project Manager or by an authorised deputy capable of making decisions in an emergency. The appointed contractor will set up an emergency crew, led by an experienced foreman or an engineer, for dealing with emergencies arising as a result of the works. The emergency crew will be available to respond to an event seven days a week.

The appointed contractor will issue the emergency crew with contact details for the emergency services and the utility companies if they are required. The appointed contractor will report all callouts and events, both orally and in writing, to the client on the first working day following the event. The report will include details such as, inter alia, the nature of the event, the time it occurred, the extent and duration of event, the cause of the event and the actions taken.

- The Proposed Development will operate remotely during the operational phase. It is proposed that maintenance crews will inspect the site approximately once to twice per month to conduct regular maintenance checks and repair works. A security company will be commissioned for the duration of the operational and decommissioning phases of the Proposed Development to ensure the Site is secure.
- The site will also be visited by the grid operator and regional supervisor for routine inspections at the substation and electrical control buildings.

Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the existing road network including:

- Delay and disruption to road users.
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

6. GENERAL TRAFFIC MANAGEMENT

6.1 Wind Farm General Mitigation Measures

- **Traffic Management Plan (including restricted use of public roads) -** This TMP will be revised as necessary to include any planning condition requirements or any other requirements of the roads authority and An Garda Síochána. The TMP will include the measures set out in this document, including:
- **Traffic Management Coordinator -** A dedicated competent Traffic Management Coordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management on the project.
- **Roads to be used and not used -** The TMP will clearly identify those roads that will be used to access this project and those roads that are not to be used. In some cases, An Garda Síochána and the roads authority may direct/agree that certain roads cannot be used for laden HGV's but can be used for LGV's or unladen HGV's. Please refer to Figure 14.4 for proposed road diversions.
- **Proposed Passing Locations** - A total of 4 no. permanent passing locations are proposed along the L6483 and L2234 local roads. These road upgrades will remain in place after construction is completed and will improve the safety of these roads by reducing collision risk. Please see section 5.3.2 and figure 5-7 for details. Please refer to Drawing References: P20-306-0100-0009 and P20-306-0100-0010 for location details.
- **Proposals for one way systems on local roads –** in acknowledgement of the fact that some of the local roads are relatively narrow and generally not conducive to 2-way construction traffic movements, a system of one way construction traffic movements will be implemented for sub-sections of the 110kV substation construction works which will temporarily use the local road network. Confirmatory details of these traffic plans will be agreed in advance of construction of these sub-sections of the wind farm with the roads authority.
- **Road Pre-and Post-Construction Condition Survey -** A pre-condition survey will be carried out on all public roads that will be used in connection with the proposed haul routes and cabling routes to record the condition of the road before the works commence. A post construction survey will also be carried out after the works are completed. The specification and timing of the surveys will be agreed with the roads authority. Joint surveys shall be undertaken at the local roads department request.
- **Road Reinstatement –** As agreed with Galway County Council, all roads will, upon completion of the construction works, be expeditiously reinstated to their pre-works condition or better and to the satisfaction of the relevant roads authority. If, during the course of the construction works, some of the roads used in connection with the development are damaged then these roads will be made good to the satisfaction of the roads authority without delay.
- **Site Inductions -** All workers will receive a comprehensive site induction which will include, as appropriate, a section on traffic management and clear guidance on the routes to be used/not used.
- **24 Hour Emergency Phone Number -** A 24-hour emergency phone number will be maintained for the duration of the construction works and the number will be noted on temporary signage at each works area (for cable works) and at the main Site entrance and borrow pit road crossing at a minimum.
- **Orderly Traffic Management -** All necessary temporary traffic management will be planned and executed in accordance with best practice, including Chapter 8 of the Traffic Signs Manual as published by the NRA/Department of Transport.

- **Letter Drops -** Subject to agreement with the planning authority, a letter drop will be carried out to notify members of the public living near the proposed site/route/roadworks where necessary, to advise them of any particularly significant upcoming traffic related matters e.g. temporary lane/road closure (if required) or delivery of turbine components at night.
- **Clear signage -** A system of clear signage relating to the project, both temporary and permanent will be agreed with the planning authority. These signs will also identify those roads to be used (and not to be used) for accessing the site in line with the objectives of the TMP.
- **Wheel washing facilities -** temporary wheel washing facilities will be located at the site entrance, subject to agreement with the planning authority, to prevent soil/dirt from being transported onto the public road network.

Road sweepers will be utilised where required to maintain the public roads in a clear condition, and this will apply especially during the earthworks stages of the Proposed Development.

The Site entrance will be secured and locked when not in use. Where required, the entrance will be controlled by flagmen to assist traffic movements.

6.2 Grid Connection Cable Mitigation Measures

- **Road Opening Licence -** The road works associated with the cabling will be undertaken in line with the requirements of a road opening licence and in accordance with the Guidelines for Managing Openings in Public Roads, 2017, as agreed with Galway County Council.
- **Route Proofing –** in advance of the main cabling works 'route proving' will be carried out to define the precise alignment of the cables to be laid. This route proving process will include slit trenching with the aim of avoiding, where possible, existing services in the road. This step will allow for the cabling works to be carried out as expeditiously as possible thereby minimising the impact on road users.
- **Maintain local access during diversions and Cabling Works –** access to local dwellings, farms and businesses will be maintained at all times during any road works associated with the wind farm cabling. The network of local roads in the area will also be used to offer traffic diversions for local traffic in order to expedite the works and limit the duration of the impact owing to the cabling works. Where local roads are too narrow for single lane closures, trenching will take place at off-peak times to limit traffic disruption. Steel trench covers will be used to cover open trenches at these locations along the grid connection route to maintain access for local residents.
- **Road Cleanliness -** Appropriate steps will be taken to prevent soil/dirt generated during the trenching works from being transported on the public road. Road sweeping vehicles will be used to ensure that the public road network remains free of soil/dirt from the site.
- **Temporary Trench Reinstatement -** Trenches on public roads, once backfilled, will be temporarily reinstated without delay to the satisfaction of the roads authority.
- **Surface Overlay after Trench Reinstatement –** Following temporary reinstatement of trenches on public roads, and subject to agreement with the roads authority, sections of public roads along which the cable route travels will receive a surface overlay.
- **Haul Route Interface -** Aggregate imported to the wind farm site from indicative quarry locations would be managed where possible to not coincide with the grid connection works.

- Prior to works commencing a **dilapidation survey** will be carried out photographing and noting any existing damage or defects to structures or road surfaces. A copy of this survey will be submitted to Galway County Council prior to works commencing.
- During construction works, the trench will be excavated down through the existing stone in the road using an excavator. As stone fill is removed it is temporarily stockpiled adjacent to the trench for re-use in backfilling. In some instances some soil or unsuitable material may be encountered in the trench and this is removed from site and brought to an appropriate licensed facility for disposal.
- The trench is then prepared to receive concrete bedding and surround for the ducts. The ducts are surrounded by concrete with adequate cover over the duct.
- Once the concrete is suitability set, appropriate imported stone material is placed over the concrete surround and filled back up to the top of trench. Suitable warning tapes will also be installed in the trench. Once the trench is filled, the trenching and ducting process will move along the road in planned stages.
- The trench surface receives a temporary surface dressing of either spray and chip or macadam. Once the overall scheme is completed, the underground grid connection route and associated road areas will receive a new permanent macadam finish as agreed with Galway County Council.
- The as-built location of the ducting will be surveyed using a total station / GPS. Marker posts will be installed along the grid connection route to also denote the location of ducting on the ground.
- A condition survey will be carried out on the roads impacted by the underground grid connection route, both pre and post construction. This will include a video survey of the road extent with any significant dilapidations further recorded by photography and local surveying as required.

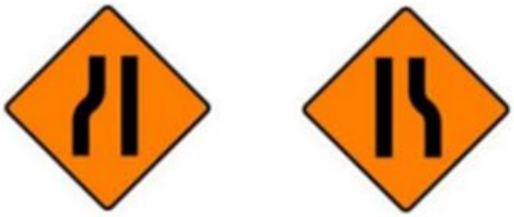
FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 1

Example Schedule of Traffic Management Signage

WK 001 - Roadworks Ahead / End



WK 032 / 033 - Road Narrows on Left / Right

WK 052 / 053 - Site Access on Left / Right

WK 091 - Diverted Traffic

WK 061 - Flagman Ahead

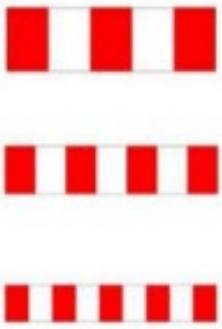
WK 060 - Temporary Traffic Signals

WK 090 - Detour

WK 092 - End of Detour

WK 094 - Road Closed

WK 095 - Stop Here on Red



W 183 / 184 / 185 - Barrier Boards

RUS 060 / 061- Stop and Go

RUS 001 - Keep Left

RUS 002 - Keep Right

RUS 014 - No Overtaking / End

WK 071 - Uneven Surface

WK 073 - Loose Chippings

WK 052 - Site Access

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 2

Example Schedule of Traffic Management Signage

PLANNED WORKS TRAFFIC MANAGEMENT DESIGN SHEETS

SITE SPECIFIC SHEET _____ OF _____

HEALTH, SAFETY AND RISK ASSESSMENT MASTER SHEET

Works Name:

TDRAM -

Job Location	
PSDP (CMO)	
PSCS (CMO)	
Job Code	
Budget Holder	
Budget	
Total No. Work Days	
Tot. No. Person Days	
Work Days > 30 or Person Days > 500 then Notify HSA	

Works	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12

Physical Data

Brief Description of Works:	
Road Classification	
Road ID (incl. Seg)	
Road Width	
Works Length	
Roadside Development:	

Traffic Data

AADT	
% HCV	
Speed Limit	
Operating Speed	

Traffic Management Items

Accident History	
Pedestrians	
Schools	
Shops	
Cyclists	
Equestrian/Rail Crossing	
Vulnerable Road Users	
Bus Route/School Route	

Particular Risk Items

Burial	☐	Underground works	☐
Fall from height	☐	Diving	☐
Chemical/Biological	☐	Compressed air	☐
Radiation	☐	Explosives	☐
HV Power Lines	☐	Heavy components	☐
Drowning	☐	Other	☐

Identified Items (For Map Reference see overleaf)

Map Ref.	Item	Hazard	Risk Hi	Risk Med	Risk Lw	Control	Residual Risk Hi	Residual Risk Med	Residual Risk Lw

Design Prepared By: _____

PLANNED WORKS TRAFFIC MANAGEMENT DESIGN SHEETS

SITE SPECIFIC SHEET _____ OF _____

TRAFFIC MANAGEMENT DESIGN CIVIL WORKS SHEET

Works Name:

TDC -

Traffic Management Selection

Road Closure: 24/7 - Working Hours		
Detour		
Two Way		
Shuttle:	Give & Take	
	Priority	
	Stop/Go	
	Traffic Lights	
Marshall		
Convoy		
Semi-Static Roadworks		
Roadworks Speedlimit		
Cautionary Speed Plate		
All Stop		

Notes

Layout Parameters

Advance Distance	
Number of Advance Signs	
Min. Advance Sign Visibility	
Size of Signs	
Height of Cones	
Taper Length	
Sideways Safety Zone	
Longways Safety Zone	
Lane Width/ Carriageway Width	
Longitudinal Cone/ Lamp Spacing	
Taper Cone/ Lamp Spacing	
Maximum Length of Shuttle	
Repeater Sign Distances	

Inspections

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Consultation

Buses/School Buses ☐ Milk Lorries ☐
Local Residents ☐ Emergency Services ☐
Gardaí for Roadworks Speedlimit ☐ /or Positive TM ☐

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 001	Roadworks Ahead		km/h / m	
RUS 014	No Overtaking			
RUS 039-044	Roadworks Speedlimit		Specify Speed Both Sides	
WK 032	Road Narrows Left		m	
WK 033	Road Narrows Right		m	
WK 034	Road Narrows Both		m	
WK 060	Temporary Traffic Signal		m	
WK 061	Flagman Ahead		m	
WK 062	Queues Likely		m / m	
WK 094	Road Closed			

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 071	Uneven Surface		Go Rail SLOW / km/h	
RUS 001	Keep Left			
RUS 002	Keep Right			
W 062L	Chevron Left			
W 062R	Chevron Right			
W183 W184 W185	Barrier Board			
RUS 060/ 061	Stop and Go		SG-M=Manned Stop/Go SG-A=Auto/Controlled Stop/Go delete as appropriate	
TL	Temporary Traffic Signal			
WK 095	Stop Here on Red			
WK 030	Single Lane Shuttle			

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 070	Hump or Ramp		m	
WK 050	Side Road Left		Oscoil Cheile CONCEALED ENTRANCE	
WK 051	Side Road Right		Oscoil Cheile CONCEALED ENTRANCE	
WK 052	Site Access Left		Oscoil Cheile CONCEALED ENTRANCE	
WK 053	Site Access Right		Oscoil Cheile CONCEALED ENTRANCE	
WK 074	Soft Verge			
WK 080	Pedestrians Cross Left			
WK 081	Pedestrians Cross Right			
PB	Pedestrain Barrier			
PF	Herace Style Fencing			

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 001 P010	Roadworks End			
RUS 014 P010	No Overtaking End			
C	Cone			
WB	Workman Barrier			
LS	Steady State Lamp			
LF	Flashing Warning Lamp			
RR	Rotating Reflector			
RUS 026	Priority Signage			

Design Prepared By: _____

PLANNED WORKS TRAFFIC MANAGEMENT DESIGN SHEETS

SITE SPECIFIC SHEET _____ OF _____

TRAFFIC MANAGEMENT DESIGN DETOUR SHEET

Works Name:

TDD -

Traffic Management Selection

Road Closure: 24/7 - Working Hours	
Detour	
Roadworks Speedlimit	
Cautionary Speed Plate	

Notes

Layout Parameters

Advance Distance	
Number of Advance Signs	
Min. Sign Visibility	
Size of Signs	
Height of Cones	
Diversion Width	
Repeater Sign Distances	

Inspections

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Detour Risk Assessment

Length	Shops
Capacity	Cyclists
Speed > Limit	Equestrian
Accident History	Rail
Pedestrians	Vulnerable Users
Schools	Bus/School Route

Consultation

Buses/School Buses ☐ Milk Lorries ☐
Local Residents ☐ Emergency Services ☐
Gardai for Roadworks Speedlimit ☐ /or Positive TM ☐

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 001	Roadworks Ahead		km/h m	
RUS 014	No Overtaking			
RUS 039-044	Roadworks Speedlimit		Specify Speed Both Sides	
WK 090	Detour Ahead			
WK 061	Flagman Ahead		m	
WK 094	Road Closed			
MB	Manned Road Block			
WK 091S	Diverted Traffic Straight			
WK 091 L	Diverted Traffic Left			

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 091 KL	Diverted Traffic Keep Left			
WK 091 R	Diverted Traffic Right			
WK 091 KR	Diverted Traffic Keep Right			
WK 092	End of Detour			
RUS 001	Keep Left			
RUS 002	Keep Right			
W 062L	Chevron Left			
W 062 R	Chevron Right			
W183 W184 W185	Barrier Board			
WK 080	Pedestrian Cross Left			

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 081	Pedestrians Cross Right			
W 647	Slippery Road		km/h	
W 644	Hump or Ramp		m	
W 645	Hollow		m	
W 620 L	Dangerous Corner Left		km/h	
W 620 R	Dangerous Corner Right		km/h	
W 622	Series Dangerous Corners		km/h	
W 626L	Road Narrows Left			
W 626 B	Road Narrows Both			
W 603 L	Side Road Left		m	

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
W 603 R	Side Road Right		m	
W 652	Caution Children			
PB	Pedestrian Barrier			
PF	Herace Style Fending			
WK 001 P010	Roadworks Ends			
RUS 014 P010	No Overtaking Ends			
C	Cone			
LS	Steady State Lamp			
LF	Flashing Lamp			

Design Prepared By:_____

PLANNED WORKS TRAFFIC MANAGEMENT SITE INSPECTION SHEET

PROJECT NAME:		Phase:	
Date:		Time:	1). 2).

1) TRAFFIC MANAGEMENT SET-UP/ MODIFICATION, INSPECTIONS

1-1) Installation Checks

Does the Traffic Management conform to the Design Layout and Parameters?		
Have all hazards been addressed in the Traffic Management Plan?		
Has allowance been made for the delivery and removal of materials?		
Have Gardaí been informed of any Traffic Lights/ Stop-Go Boards in use?		
Have Gardaí been informed of Roadworks Speed Limits being introduced?		

2) TRAFFIC MANAGEMENT OPERATION INSPECTIONS

2-1) Operation Checks

	1	2
Are Safety Zones being kept clear of operatives, plant and materials?		
Are all the signs in good condition/ are all cones in good condition with sleeves?		
Are sign vision lines free from bends, hills/dips in the road, parked vehicles, hedges etc?		
Will the site be safe at night or in wind, fog, snow or rain? (delete as appropriate)		
Are all misleading permanent signs and road markings covered?		
Is the carriageway/footway being kept clear of mud and surplus equipment?		
Are materials/ plant that are left on verges or lay-bys being properly guarded and lit?		

2-2) Traffic Checks

Is there safe access to adjacent premises?		
Does Signing and Guarding meet the (changing) conditions?		
Are traffic control arrangements working at the optimum level to reduce traffic delays?		
If present, are the needs of cyclists or horse riders incorporated into the layout?		

2-3) Pedestrian and Vulnerable Road User Checks

Have the needs of pedestrians and vulnerable road users been addressed in the layout?		
If pedestrian route blocked, has a suitable alternative route been provided?		
Are pedestrian routes clearly evident/ indicated?		
If a footway in the road is to be used, are ramps to the kerb provided?		
Are pedestrian hazards sufficiently GUARDED at night?		

3) TRAFFIC MANAGEMENT CESSATION INPECTIONS

3-1) Works Complete Checks

Have all signs, cones, barriers, and lamps been removed?	
Have any covered permanent signs been restored?	
Have Gardaí been informed that Speedlimits/ Traffic Signals/ Stop-Go removed?	

4) EXCEPTIONS REPORT

(Append attachments as necessary)

Check Completed By:	

SAFE SYSTEM OF WORK PLAN (SSWP)

WORKING ON ROADS

HEALTH AND SAFETY AUTHORITY

Plan No. ☐

PART 1

Job Details

Employer Name: _____

Responsible Person/Supervisor: _____

Number of Workers: _____

Specific Location: _____

Description of Works: _____

_____

_____

_____

Start Date: _____

NOTE: A new SSWP must be completed when the task or the environment changes.

Resources Required

Worker Skills: _____

_____

_____

_____

Plant/Equipment: _____

_____

_____

_____

Hazardous Materials: _____

_____

_____

Emergency Details

Contact Names & Tel No.

1. _____

2. _____

3. _____

First Aider: _____

_____

Location of First Aid Box: _____

WORK PERMITS REQUIRED

Hot ☐ Electricity ☐ Excavation ☐

Confined Space ☐ Other ☐

Method Statement Yes ☐ No ☐

Before Works Starts the following MUST be in place Tick the ☑ circle when confirmed

PART 2

SELECT HAZARD OR ACTIVITY | **SELECT CONTROL**

All controls identified below must be in place before work starts

Tick the ☑ box to identify controls required; Tick the ☑ circle when control is in place.

PART 2

HAZARD OR ACTIVITY	CONTROL — Tick the ☑ box to identify controls required; Tick the ✔ circle when control is in place.									
Excavation	Batter Back	Trench Box	Sheet Piling	Shoring	Environment Risk Assess	Back Fill	Spoil Rack	Chock	No Undermining	Ladder/ Access/Egress
	Exclusion Zone	Barriers	Covers	Pumping	Safe Stacking	Propping	Lighting	Examination & Inspection	Weather	Warning Signs
Falls and Falling Objects	Risk Assess	Scaffolding	Working Platform	Trestle Platform	Edge Protection	MEWP	Safe Ladder	Tie Ladder	Open Holes	Propping
Sewers/Culverts/ Mains/Services (Gas, Electricity)	Service Supplier	Divert / Off	Survey Map	Detect & Mark	Permit to Work (STOP)	Hand Dig	Overhead Lines	Barriers	No Flames	Gas Bottle Storage
Working Close to Water	Edge Protection	Working Platform	Safety Line/Grab Line	Personal Flotation Device	Life Ring	Boat	Fall Arrest & Rescue	Diving	Coffer Dam	Platform & Crane
Substances	Storage/Labels	Safety Data Sheet	Hand Wash	No Eating	Biological Agents	Survey/Risk Assess	Permit to Work (STOP)	Litter Picker	Cover Cuts	Wash Hands
Asbestos Cement Water Pipes	Identify/Survey	Risk Assess	Procedure	Dust/Wetting	Waste Removal	Examination & Inspection	Confined Space	Risk Assess	Survey	Permit to Work (STOP)
Other Items	Housekeeping	Lighting	Ground Conditions	Degassing/Purging	Steel Structures/ Drawings	Fire Control/Assembly	Emergency Procedures	Detect/Monitor	Tripod	Communication
Health	Asbestos Health Effects	Health Surveillance	Manual Handling	Risk Assess	Mechanical Aids	Work Organisation	Training	Identify	Other	Other
PPE	Safety Helmet	Safety Boot/Hi-Vis	Eye Protection	Safety Gloves	Ear Protection	Dust Mask	Respiratory Equipment	Face Protection	Safety Harness	Other

PART 3

Hazards, activities and controls on this SSWP identified by: _____ Date: _____ Time: _____

Controls put in place by: _____ Date: _____ Time: _____

I have been made aware of the hazards & controls for this activity. Signed by Team:

NOTE: This list of Hazards and Controls is not exhaustive and is in no particular order.

IF IT'S NOT SAFE DON'T DO IT AND INFORM SITE MANAGEMENT

Site Specific Record for Standard Traffic Management Plan

Job Name/ID: | Location:

Date: | SLG Cardholder:

Step 1: Record Road Details

Visibility

≥ 25m ≥ 35m

≥ 50m ≥ 60m

≥ 90m ≥ 120m

≥ 160m

A B — tick

A B C — tick

A B — tick

A B C — tick

A B C D — tick

A B C D — tick

Width — value (m)

Speed — value (km/h)

Urban — tick

Rural — tick

3 min traffic count — value (no.)

Road Type — N R L

Step 2: Record Work Site Details

Time needed — value (hh:mm)

Unobstructed width left open — value (m)

Works length — value (m)

Step 3: Record Traffic Management Selection

Diversion — tick

Semi-Static — tick

2-way — tick

All Stop — tick

Stop-Go — tick

Traffic Signal — tick

Marshall — tick

Priority — tick

Give & Take — tick

Convoy — tick

If using standard plan, ID reference

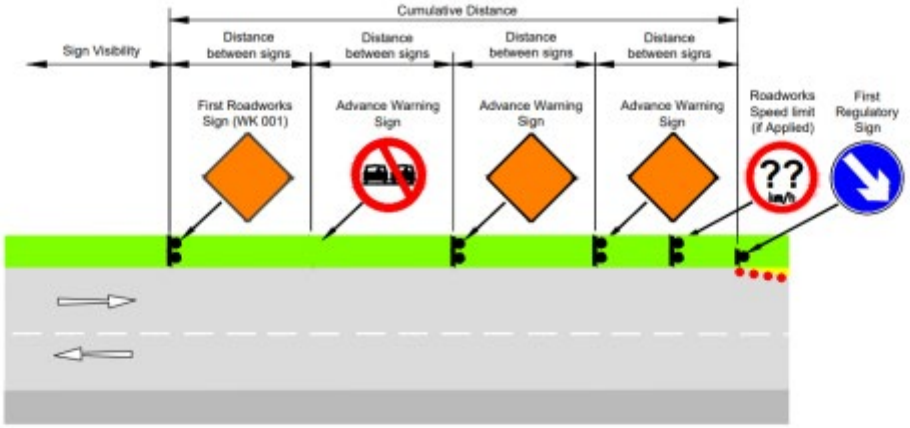
Step 4: Record Traffic Management Devices Implemented

Warn → Inform → Direct → End

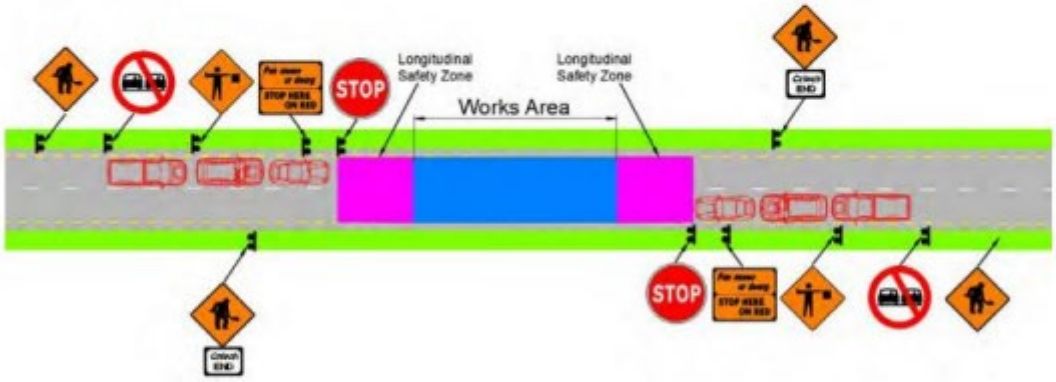
	no.	tick	no.	no.	no.	no.	no.
A							
B							
C							
D							

Are all required cones (lamps & beacons) in place (& operating) — Yes / No

If using traffic signals/Stop-Go have Gardaí been notified — Yes / No

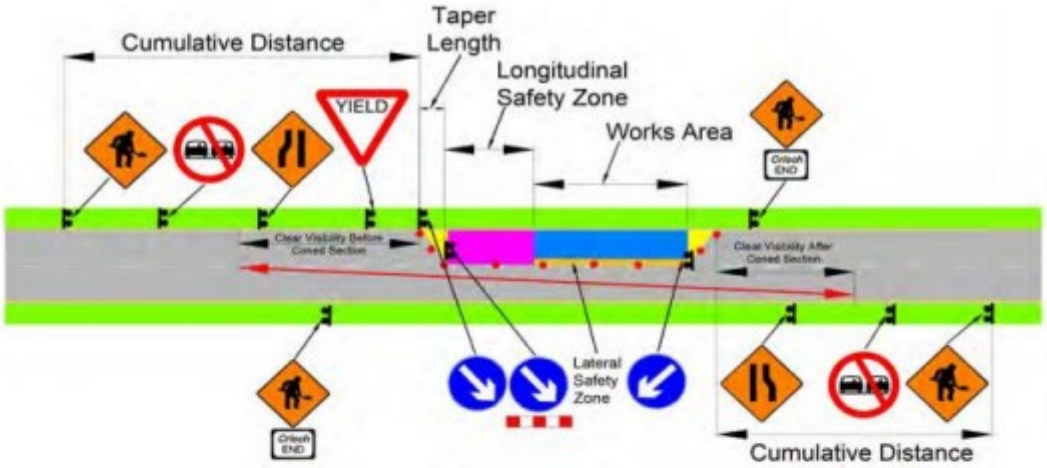


Required Locations for Advance Warning Signs to Roadworks



Level	Longitudinal Safety Zone (m)
2(i)	45
2(ii)	60

Example Layout of an "All Stop" Traffic Operation



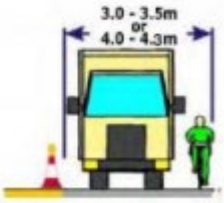
Roadworks Type	Speed (km/h)	No. Adv. Warning Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24
Level 2 (ii) B	100	3	600	120	60	1.2	12 / 24

Summary Criteria

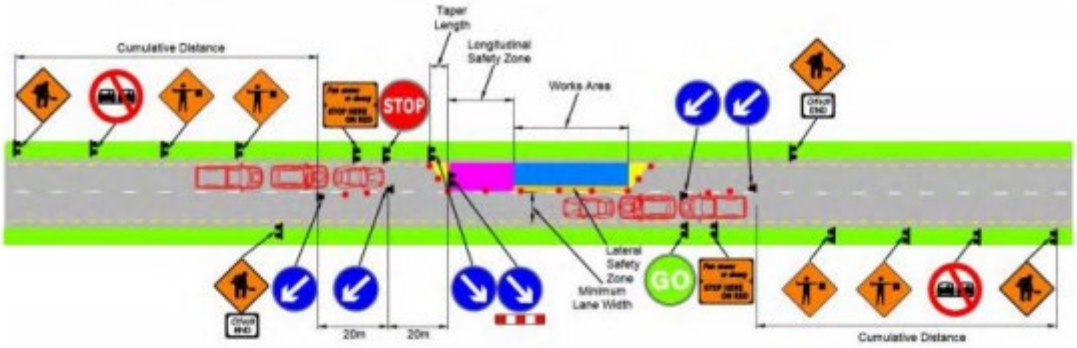
Speed (km/h)	Coned Area Length	Max Traffic Flow (3 min count)	Clear Visibility Before and After Coned Area (m)
80	80m maximum	40 vehicles	80
100			100

Lane Widths

Cars only	≥ 2.5m
HGVs present	≥ 3.0m
Preferred width	3.3m
Preferred (with cyclists)	4.0 - 4.3m



Example Layout of a Priority Yield Operation



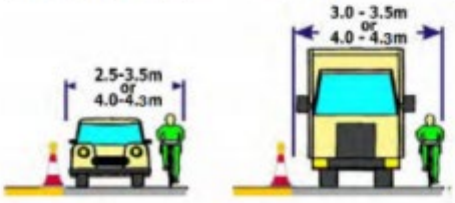
Roadworks Type	Speed (km/h)	No. Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24
Level 2 (ii) B	100	3	600	120	60	1.2	12 / 24

Summary Criteria

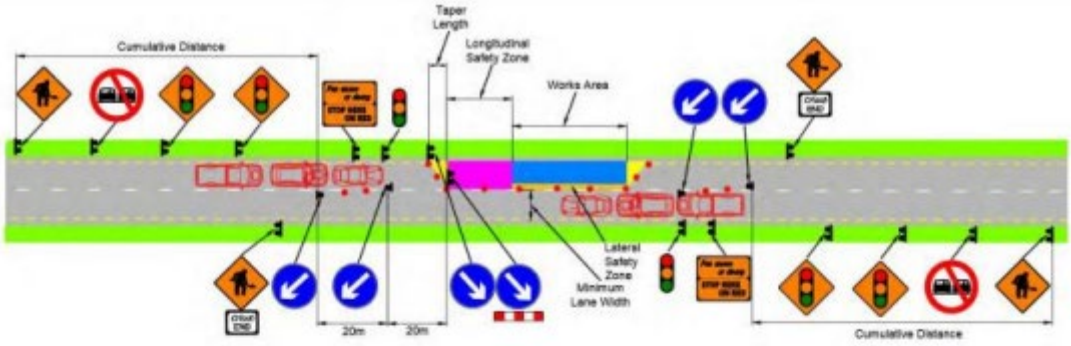
Shuttle Length	Maximum Traffic / 3 mins	Notes
500m	45	Shall be 2 operators, 2 discs when ≥ 200m
400m	50	
300m	55	
200m	60	May be 1 operator with remote discs. Operator must be ≤ 100m from each disc and have clear view of each
100m	70	
20m	25	May be 1 operator, 1 disc

Lane Widths

Cars only	≥ 2.5m
HGVs present	≥ 3.0m
Preferred width	3.3m
Preferred (with cyclists)	4.0 - 4.3m



Example Layout of a Stop and Go Operation



Roadworks Type	Speed (km/h)	No. Adv. Warning Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24
Level 2 (ii) B	100	3	600	120	60	1.2	12 / 24

Signal Checks

- Batteries
- Bulb / LEDs operating
- Signals communicating with each other
- Housing is in good condition

Signal Heights

Signal Sequence

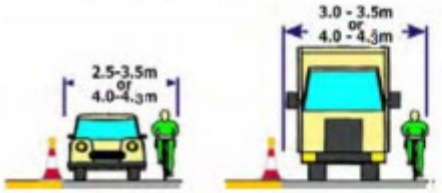
- Red - time is set by Operative
- Green - time is set by Operative
- Amber - 3 seconds

Summary Criteria

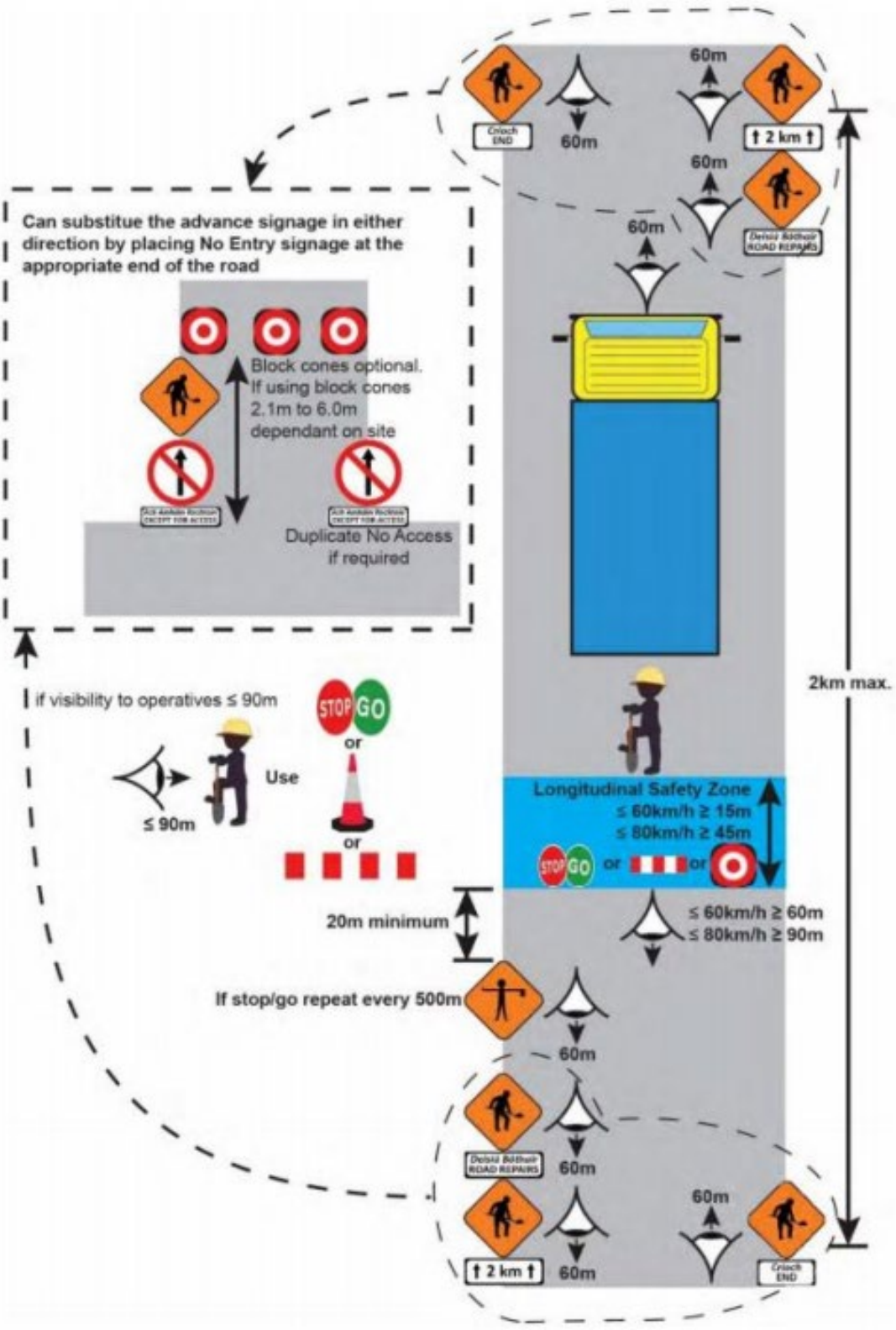
Max Speed Limit (km/h)	Max Coned Area Length (m)	Max Traffic Flow
60	500	No Restrictions

Lane Widths

Cars only	≥ 2.5m
HGVs present	≥ 3.0m
Preferred width	3.3m
Preferred (with cyclists)	4.0 - 4.3m



Example Layout for a Temporary Traffic Signals Operation



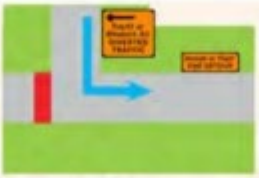
Example of a Road Opening Works Operation

Road Closed & Detour Start

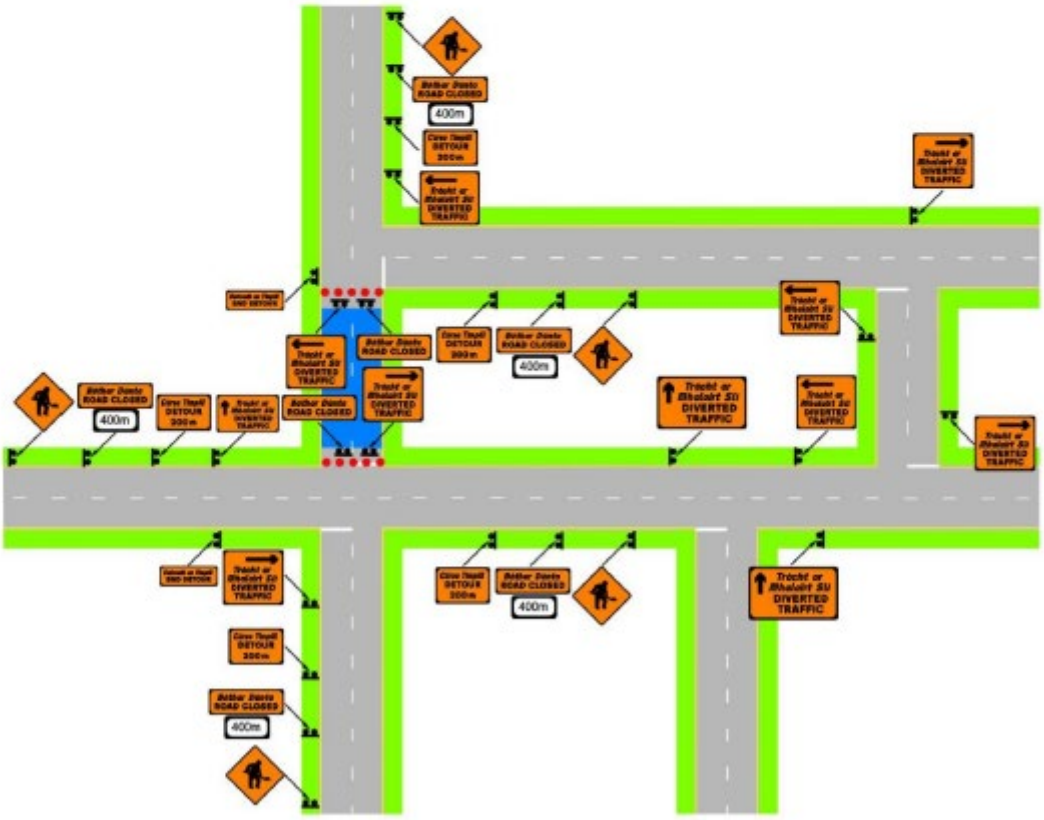
Diverted traffic turn right/ left

Diverted traffic straight ahead

- Before junctions along route
- Reassure driver over long lengths



End of Detour



Example of a Road Detour and Signage Operation

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