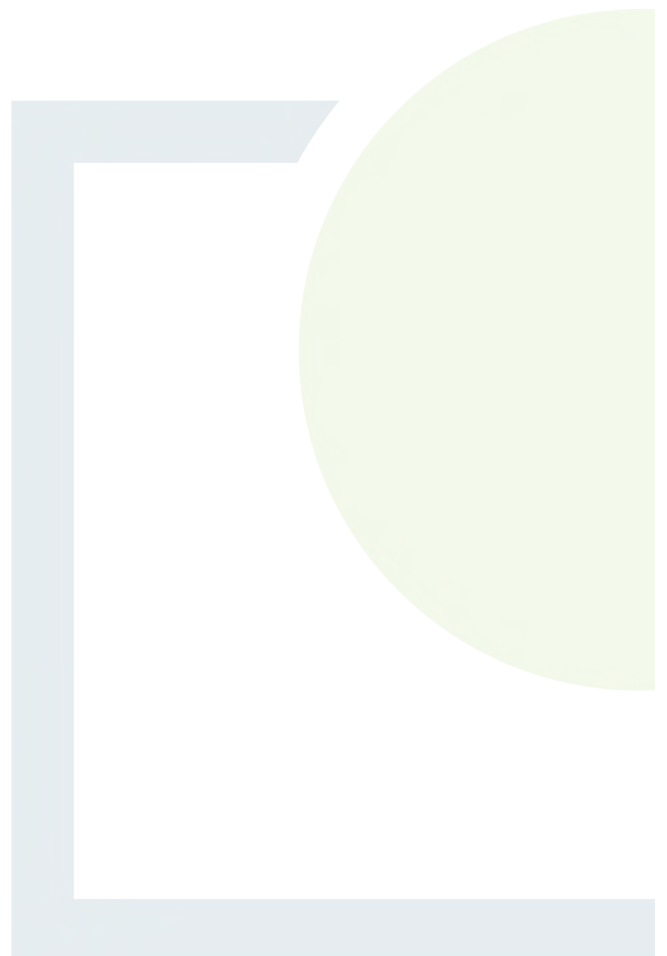




DESIGNING AND DELIVERING  
A SUSTAINABLE FUTURE

## Appendix 14.1

Traffic  
Management Plan



# ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DERRYNADARRAGH WIND FARM, CO. KILDARE, OFFALY & LAOIS

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## Volume III – Appendices

### Appendix 14.1 - Traffic Management Plan (TMP)

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**Prepared for:**  
Dara Energy Limited



**Date:** January 2026

Unit 3/4, Northwood House, Northwood Crescent,  
Northwood, Dublin, D09 X899, Ireland

T: +353 21 496 4133 | E: [info@ftco.ie](mailto:info@ftco.ie)

**CORK | DUBLIN | CARLOW**

[www.fehilytimoney.ie](http://www.fehilytimoney.ie)

# CONTENTS

1.	INTRODUCTION .....	1
1.1	General Introduction and Purpose .....	1
2.	METHODOLOGY .....	2
2.1	Traffic Management Objectives .....	2
3.	EXISTING ENVIRONMENT .....	3
3.1	Existing Road Network .....	3
3.2	Schools .....	3
3.3	Other Transport Network Infrastructure Within the Study Area .....	4
3.4	Parking .....	4
3.5	Construction Working Hours .....	5
4.	CONSTRUCTION WORKS .....	6
4.1	Wind Farm .....	6
4.1.1	Construction Traffic .....	6
4.1.2	Quarries .....	6
4.1.3	Haul Route for Construction Traffic .....	6
4.2	Turbine Delivery Route .....	7
4.2.1	Proposed Structures along the TDR .....	8
4.3	Grid Connection Route .....	9
5.	MITIGATION - TRAFFIC MANAGEMENT PLAN .....	11
5.1	Wind Farm - Mitigation Measures .....	11
5.1.1	Road Safety .....	11
5.1.2	Road Cleanliness .....	11
5.1.3	Construction Traffic Staging .....	12
5.2	Turbine Delivery Route - Traffic Management .....	14
5.2.1	Turbine Component Delivery Mitigation .....	14
5.2.2	Accommodation Works to Facilitate Turbine Delivery and Construction Traffic .....	15
5.2.3	Proposed Structures along the TDR .....	16
5.2.4	Site Entrance .....	16
5.3	Grid Connection Route & Substation - Traffic Management .....	17
5.3.1	Temporary Road Works .....	17
5.3.2	Joint Bays .....	18

5.3.3	Substation Entrance.....	18
5.3.4	Contractor Staff Parking for Underground Grid Connection Works.....	18
5.3.5	Public Notices.....	19
5.3.6	Signage .....	19
5.3.7	Operator Training.....	19
5.3.8	Pedestrian Safety & Access to Residential, Commercial Properties.....	19
5.3.9	Emergency Crew .....	19
6.	GENERAL TRAFFIC MANAGEMENT.....	21
6.1	Wind Farm General Mitigation Measures.....	21
6.2	Grid Connection Cable Mitigation Measures .....	22

## LIST OF APPENDICES

Appendix 1 – Example Schedule of Traffic Management Signage

Appendix 2 – Example Schedule of Traffic Management Signage

## LIST OF FIGURES

	<u>Page</u>
Figure 5-1: Typical Wheel Wash System .....	11
Figure 5-2: Acceptable Stop-Go Discs.....	12

## LIST OF TABLES

	<u>Page</u>
Table 3-1: Road Categories .....	3
Table 3-2: Schools Located near Wind Farm Site.....	4
Table 5-1: Accommodation Works for Turbine Delivery Route .....	15



## 1. INTRODUCTION

### 1.1 General Introduction and Purpose

This preliminary Traffic Management Plan (TMP) outlines the procedures to be implemented during the construction, operation and decommissioning stages for traffic management at the Proposed Development.

A construction stage TMP shall be finalised in accordance with this plan following the appointment of the Contractor for the construction works and the turbine supply contract. The appointed contractor will prepare a site-specific TMP prior to the construction works commencing.

Some items in this plan can only be finalised with appropriate input from the contractor who will be appointed to carry out and schedule the works. Furthermore, it is appropriate that the Project Supervisor Construction Stage (PSCS), when appointed, should have an active role in the preparation/review of the Traffic Management Plan.

This plan should be read with reference to Chapter 14, Volume II of the EIAR.

The contractor is required to prepare the necessary Site-Specific Traffic Management Plans prior to the construction works commencing in accordance with the Traffic Signs Manual 2021 and subject to load permits.

The contractor will be responsible for the implementation of all agreements between the developer and the County Councils and local residents with the objective that the transportation needs for the proposed project will have a minimal impact on the road network and local communities.

Construction traffic will require regular access to the site at varying times throughout the construction phase. The aim of this TMP is to put in place procedures to manage traffic effectively on site and in the immediate vicinity of the proposed project, to ensure the continued movement of traffic on the public roads and to minimise disturbance during transportation of materials particularly oversize loads. The correct implementation of this TMP will ensure that appropriate procedures are in place to minimise any effects on the safety and movement of the general public.

Prior to the commencement of construction, the TMP will be reviewed by the main contractor (and any sub-contractors) and will be updated as necessary.



## 2. METHODOLOGY

This document 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 document 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, Laois County Council, Kildare County Council and Offaly 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) roads predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageways, with some that are dual carriageways. 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 linking 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 Chapter 14, Volume II 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)
St Broghan's National School	4.3
Saint Patrick's National School	5.6
Sandy Lane National School	6.0
Presentation Primary School Portarlinton	6.3
Just 4 Kids Creche & Montessori School	7.0
Naomh Mhuire National School	8.8

### 3.3 Other Transport Network Infrastructure Within the Study Area

The site is situated approximately 5.7 km from the Dublin - Cork InterCity railway line with several stations located nearby including Monasterevin, Portarlinton, and Kildare station.

The Monasterevin station in County Kildare is located approximately 5.8 km to the southeast (straight line distance) from the site and serves as a key stop on the Dublin - Cork InterCity line.

The Portarlinton station in County Laois is located approximately 6.9 km to the southwest (straight line distance) from the site and serves as a key interchange between the Dublin - Cork InterCity line and the routes to Galway, Ballina, and Westport.

The Kildare station in County Kildare is located approximately 13.7 km to the southeast (straight line distance) from the site and serves the Dublin - Cork InterCity railway line acting as a major interchange for passengers traveling between Dublin and the south and west of Ireland.

The Barrow River located approximately 4.5km south-east of the site, forms part of the Barrow Navigation, a navigable waterway managed by Waterways Ireland.

The Grand Canal Way greenway is located 14.5km to the north-west of the site (straight line distance), in Daingean, Co. Offaly. This greenway traverses Leinster from Ringsend in Dublin City to the River Shannon at Shannon Harbour in County Offaly.

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

The site location is shown in Figure 2.1, Volume IV of the EIAR.

### 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 except for 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 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 for the Proposed Development will be limited to avoid unsociable hours as per Section 8.5 (d) of the code of practice for BS 5228: Part 1: 1997. Construction operations will generally be restricted to between 07:00 hours and 19:00 hours Monday to Friday, and 08:00 hours and 14:00 hours on Saturday. It should be noted that it may be necessary to commence turbine base concrete pours earlier due to time constraints incurred by the concrete curing process. Work on Sundays or public holidays will only be conducted in exceptional circumstances or in an emergency. Additional emergency works may also be required outside of normal working hours as quoted above. Further details on working hours and restrictions of same are provided in the CEMP in Appendix 2.1, Volume III of the EIAR.



## 4. CONSTRUCTION WORKS

### 4.1 Wind Farm

The Proposed Development consists of a 9 no. turbine wind farm and associated infrastructure including internal access tracks, hard standings, onsite 110 kV substation and associated grid connection infrastructure, internal electrical and communications cabling, temporary construction compounds, drainage infrastructure, biodiversity enhancement measures, accommodation works along the Proposed Turbine Delivery Route and all associated works related to the construction of the Proposed Development.

The Proposed Wind Farm will include a new site entrance along the R419 Regional Road to serve as construction and operation access to the proposed wind farm and onsite 110kV substation, an additional access from L-70481 will be used for construction on the south of the river Cushina, prior to completion of the bridge crossing.

Construction of the Proposed Development will result in an increase in traffic on the M6 motorway, the N52 national road, the R419, R400, R420, R424, and R402 regional roads and the L-70481, L-71764, L-7050, L-7051, L-7176, and L-71761 local roads.

#### 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 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 9 no. turbine bases and substation infrastructure.

The nearest suppliers of quarry stone (TII Class 6 products) and concrete are Kilmurray Sand and Gravel Quarry, (c. 29.4km N from the site) and Roadstone Quarry Tullamore (c. 32.7km NW from the site). These quarries are shown in Figure 14.2, Volume IV. Two other quarries near Allen, Co. Kildare (Roadstone Allen and Arkil) are in the vicinity of the site. These are not preferred due to their routes through Rathangan and Bracknagh.

#### 4.1.3 Haul Route for Construction Traffic

The Site is surrounded by a comprehensive road network with routing options available via the main Site entrance. The proposed haul routes for the delivery of materials associated with the construction of the Proposed Development are outlined in Figure 14.2, Volume IV of the EIAR.



Construction deliveries from Kilmurray Sand and Gravel Quarry will use the R400, M6, N52, R420, and the R419 as the designated delivery route to the main site entrance. Construction deliveries from Roadstone Quarry Tullamore will use the R443, N52, R420 and R419 as the designated delivery route to the main site entrance.

The haul routes are primarily along regional roads, with one motorway and one national road. The local road network does not form part of the haul routes.

It is anticipated that a succession of 20T and/or 8m<sup>3</sup> trucks will transport the material at a peak frequency of 7 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 below and in the Route Survey Review Report completed by Pell Frischmann (refer to Appendix 2.3 in Volume III of this EIAR for more details).

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 to allow for residents to avoid conflict with commuter traffic during the morning and evening peak hours, during local school start and finish times.

## 4.2 Turbine Delivery Route

A Delivery Route Selection and Assessment was carried out by Pell Frischmann Consulting to identify the optimum delivery route to site and is presented as Appendix 2.3 in Volume III of this EIAR.

An updated swept path assessment on 5 no. TDR nodes was carried out by Dara Energy Limited to take account of topographical surveys and change of approach following engagement with landowners. Please refer to Appendix 2.4, EIAR Volume III, for the Dara Energy Ltd. Amended Turbine Delivery Route Assessment Report.

Refer to Chapter 2, Volume II of the EIAR for more details on the TDR.

For the purpose of this EIAR, the following transport route has been selected and assessed to facilitate turbine delivery to the Site:

- The Turbine components will be delivered to the Galway Port and travel to the M6.
- At Junction 5, depart the M6 and continue south on the N52.
- Depart the N52 to the east of Tullamore and turn left onto the R420, eastbound.
- Turn left onto the R402 northbound.
- Continue north and then east on the R402 through Ballinager and Daingean.
- Turn right from the R402 onto the R400 travelling south.
- Remain on the R400 until reaching R419.
- Turn left from to join the R419 then proceed northeast towards the site entrance.

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.



There will be an objective to always maintain the strategic capacity and safety of the M6 and N52 carriageways, cognisant of the National Development Plan, 2021 - 2030, with key sectoral priorities for maintaining the 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.

Accommodation works will be required at selected locations along the TDR to facilitate the delivery of large components to the site. Any road widening and junction accommodation works required along the TDR will be temporary and will be removed and reinstated to their original condition following completion of deliveries. Some temporary hardcore surfacing will be required at roundabouts or areas of over sail. All temporary accommodation works associated with the TDR will be fully reinstated following the construction stage. 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.

At TDR Node 19, accommodation works will be required to facilitate turbine delivery vehicles making a left turn from the R420 onto the R402 at the R420/R402 junction. The proposed works include the installation of a load-bearing surface on the inside of the left turn to accommodate the swept path of the abnormal loads. The temporary track will have its entry point located on the R420 and will rejoin the public road network at an exit point on the R402. During the use of this temporary track, traffic on both the R420 and R402 will retain priority over construction vehicles merging onto these routes. This access route will be designated exclusively for turbine delivery traffic, and public access will be restricted at all times. Appropriate traffic warning signage for the management of public and construction traffic will be required in accordance with the Traffic Signs Manual 2021 and is presented in Drawing Reference: P22-145-0300-0011.

At TDR Node 35/36, located on the R400 south of Enaghan, accommodation works are required to facilitate the delivery of turbine components. Delivery vehicles will cross an existing bridge and, instead of following the right-hand bend on the R400, will proceed straight through an adjacent field before rejoining the R400 beyond the bend. To enable this, a new offline temporary track will be constructed to bypass the existing bend in the road.

This temporary track will be used exclusively for turbine delivery traffic, with public access restricted at all times. Traffic on the R400 will maintain priority over any construction or delivery vehicles entering or exiting the temporary track. Appropriate traffic warning signage for the management of public and construction traffic will be implemented in accordance with the Traffic Signs Manual 2021. Please refer to Drawing Number P22-145-0300-0012 for the traffic management at this TDR Node.

The development will be constructed to ensure that all temporary/permanent works within the road curtilage of the national roads (N52) 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.

#### 4.2.1 Proposed Structures along the TDR

As part of the TDR accommodation works, it is proposed to install a new bridge crossing along the TDR at Node 29/30. This will involve the construction of 1 no. single span bridge crossing the Daingean River at Philipstown Bridge to facilitate the safe and efficient delivery of turbine components.



In addition, a temporary access track will be constructed through private lands and drainage infrastructure alongside the track. The entry point for this track will be located on the R402, with the exit point rejoining the public road network at the R400. Traffic on the R402 and R400 public roads will maintain priority over construction vehicles merging onto these roads during the construction of the temporary track and bridge crossing.

This route is designated exclusively for turbine delivery traffic and public access will be restricted at all times. Appropriate traffic warning signage for the management of public and construction traffic will be required in accordance with the Traffic Signs Manual 2021 and is presented in Drawing Reference: P22-145-0300-0010.

Key elements of the accommodation works for the delivery of turbines are summarised in Chapter 14, Volume II of the EIAR. Their details are also contained in the Pell Frischmann Route Survey Review (RSR) in Appendix 2.3 and the Dara Energy Ltd. Amended Turbine Delivery Route Assessment Report in Appendix 2.4, EIAR Volume III.

#### Turbine Erection

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 R419 regional road.

#### 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 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 of the EIAR, 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 onsite Control Building and from here will be routed to the proposed 110 kV electricity substation within the Site. This will provide a connection point between the wind farm and the existing 110kV GIS Bracklone Substation.

The proposed grid route commences at the proposed Derrynadarragh 110kV Substation and travels along proposed wind farm access roads, before following the public road network to 110KV Bracklone substation. The route follows local roads L-70481, L-71764, L-7050, L-7051, L-7176, and L-71761. It then joins regional roads R424 and the R420, before following the access road into the existing Bracklone 110 kV Substation.



The underground grid route connection works will involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables predominantly along the existing road network. These works will be progressive with short sections (up to several hundred metres in length) 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 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 the 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. The primary mitigation measure for this impact will be the installation of 2 no. wheel wash facilities (as shown in Figure 5-1) at both the northern and southern site entrances. Please refer to Drawing No. P22-145-0100-0001 and P22-145-0500-0010 for the location and details of the proposed wheel wash facilities.

In addition, a road sweeper will operate on the public road network at Derrynadarragh including the R419, R400, R402, L70481, L71764, L7050, L7051 and L7176 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:

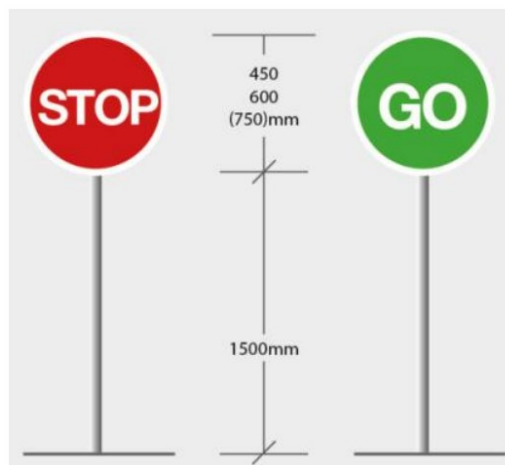
1. Site Entrance
2. Access roads, Cushina River bridge crossing, crane hardstands, and substation construction
3. Turbine base construction
4. Turbine erection
5. Grid connection

#### Site Entrance

The Proposed Wind Farm will include a new site entrance along the R419 to serve as construction and operation access to the Proposed Wind Farm and onsite 110kV substation, an additional access from L-70481 will be used for construction on the south of the river Cushina, prior to completion of the bridge crossing.

Following consultation with Offaly County Council, a temporary lay down area (40m x 45m) will be established. This area will be constructed during the initial site entrance mobilisation and enabling works, and the development of the first section of internal access track. The necessary clearance of trees, construction of the bell mouth, and creation of the gravelled lay down area would require a short-term lane closure on the R419 regional road. It is estimated that this lane closure would only last approximately 1-2 weeks. Importantly, access will be maintained at all times, minimising disruption to the wider road network.

Temporary signage and traffic management for works in rural single carriageway roads will be implemented in accordance with the Traffic Signs Manual 2021, similar to below:



**Figure 5-2: Acceptable Stop-Go Discs**

The new site access has been selected with consideration for safety of public road users, construction staff and to ensure that it can be constructed to comply with the requirements of Offaly County Council, Kildare County Council, and TII design requirements for direct accesses.

During the construction phase, standard HGVs shall use the existing southern access, located within Co. Kildare, if transporting materials prior to the on-site bridge being constructed. Otherwise, all construction traffic shall use the main northern access, located in Co. Offaly.

The onsite 110kV electrical substation will be accessed from the existing site entrance to the south.



### Access Roads, Cushina River bridge crossing, Crane Hardstands, and Substation Construction

As described in Chapter 14 of the EIAR, the Proposed Wind Farm will include a new main site entrance along the R419 Regional Road to serve as construction and operation access to the proposed wind farm and onsite 110kV substation. An additional southern access from L-70481 (the Derrylea entrance) will be used for construction on the south side of the river Cushina, prior to completion of the bridge crossing.

During the construction phase, HGVs shall access the site using the existing southern access to facilitate the construction of the proposed Cushina River bridge crossing. Construction access to the grid connection infrastructure will also be via the existing southern site access using the L70481, L71764, L7050, L7051 and L7176, L71761 local roads. Otherwise, all construction traffic will use the main northern access onto the R419 Regional Road.

In order to provide access to the bridge crossing location for HGVs, approximately 800 m of new wind farm access track will need to be constructed. A temporary compound will also be constructed upon mobilization which is located near the southern site access.

The construction activities associated with the works will include:

- Heavy Goods Vehicles (HGVs) transporting materials to and from the site, including road making materials, concrete, building materials, drainage/ducting materials and excavated material.
- HGVs transporting conventional earthworks machinery such as excavators, dumper trucks and rollers.
- Fuel trucks transporting fuel for plant to the southern site compound.
- Light Goods Vehicles (LGVs) such as cars, 4x4s and vans used by the workers and supervisory staff involved in the construction works.
- Crane mobilization for the lifting of prefabricated bridge components.

The methods of construction for the proposed bridge crossing and access track are detailed in the Construction and Environmental Management Plan (CEMP) contained in Appendix 2.1 of the EIAR.

The construction of the Cushina River bridge crossing is expected to take place over the first 3 months of the construction programme.

Construction vehicles shall make use of the proposed haul routes identified in Figure 14.2, Volume IV of this EIAR which use the main northern access onto the R419 Regional Road. However, during the construction of the proposed Cushina River bridge crossing, HGVs shall access the Site using the existing southern access via the existing roads designated as the L70481, L71764, L7050, L7051, L7176, L71761, R424 and the R420 to get within approximately 800m of the crossing location. Beyond this point new access track shall be constructed along the alignment of the proposed wind farm access track. This approach shall minimize the volume of materials required to construct the bridge crossing.

Based on traffic generation and trip distribution calculations, the construction of the bridge, access track and temporary compound is expected to generate approximately 1,100 HGV trips and take place over a 3-month period approximately. This shall result in approximately 14 HGV trips per day on average (or 2 per hour).



During the construction of the access roads, Cushina River bridge crossing, crane hardstands and substation buildings, a conservative scenario (assumes all construction aggregate and fill material is imported and no site won material is used) was estimated for the maximum number of loads to be delivered to the Proposed Site as outlined in 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 as the site is located within a flood plain and is therefore unsuitable for the development of a borrow pit.

As described in Section 5.1.1, 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 982m<sup>3</sup> during its construction. Assuming each truck has a capacity of 8m<sup>3</sup> of concrete, this volume of concrete will require approximately 123 loads of concrete in one day to complete. There will be 9 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.

## **5.2 Turbine Delivery Route - Traffic Management**

### 5.2.1 Turbine Component Delivery Mitigation

**Programme of Deliveries** – A programme of deliveries will be submitted to Offaly 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 accommodation works are suitable for the loaded convoy.

**Garda Escort** - Turbine deliveries will be escorted by An Garda Síochána. 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 roads along the TDR between the M6 and the proposed site entrance are capable of safely carrying the expected loads. As discussed with Offaly County Council, a program of structural surveys of roads along the TDR will be agreed with Offaly County Council prior to commencement of construction, particularly along the R400 regional road which is founded on peat. 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.

### 5.2.2 Accommodation Works to Facilitate Turbine Delivery and Construction Traffic

Accommodation works will be required at selected locations along the TDR to facilitate the delivery of large components to the site. This will include some temporary hardcore surfacing at roundabouts or areas of over sail, and overhead utilities and obstructions will need to be removed at several locations to provide adequate overhead clearance. The removal of overhead utilities will be by either temporary disconnections or permanent re-routing. Such works will be carried out by the utility providers in advance of turbine delivery to site. Most of the accommodation works associated with the TDR will be fully reinstated following the construction stage, except for the permanent Bridge Crossing at Philipstown Bridge (see Node 29/30 within Table 5-1).

Key elements of the accommodation works along the TDR for the delivery of turbines are summarised in Table 5-1. Works within private lands at TDR Nodes 19, 22, 29/30, 35/36, 38, 46/47, are included within the planning application red line boundary. All other works are within the public road corridor.

Key elements of all accommodation works for the delivery of turbines are summarised in Chapter 14. Their details are also contained in the Pell Frischmann Route Survey Review (RSR) in Appendix 2.3 and the Dara Energy Ltd. Amended Turbine Delivery Route Assessment Report in Appendix 2.4, EIAR Volume III.

**Table 5-1: Accommodation Works for Turbine Delivery Route**

TDR Node Reference	Location	Summary Description of Proposed Accommodation Works
13	M6 Slip Road / N52 Roundabout	Installation of Load Bearing Surface on southern verge of entry arm and the central reservation.
19	R420 / R402 Junction	Installation of Load Bearing Surface on the inside of the left turn.
22	R402 St Joseph's National School	Installation of Load Bearing Surface on the western footway/verge, the northern footway/verge and the traffic island.
25	Daingean Main Street / Edenderry Road	Installation of Load Bearing Surface in the northern footway.
29/30	R402 / R400 Junction & River Philipstown Bridge	Construction of new access bridge bypassing R402/R400 Junction.
31	R400 North of Drumcaw Or Mountlucas	Installation of Load Bearing Surface on the southern verge.
32	R400 East of Mountlucas	Installation of Load Bearing Surface on the western verge.
33	R400 South-east of Mountlucas	Installation of Load Bearing Surface on the eastern verges.



TDR Node Reference	Location	Summary Description of Proposed Accommodation Works
34	R400 Northeast of Brackagh	Trimming of vegetation and trees on both verges.
35/36	R400 South of Enaghan	Construction of new offline track to bypass bend on R400.
38	R400 East of Moanvane	Installation of Load Bearing Surface on the northeastern verge.
46/47	R400 / R419 Junction	Installation of Load Bearing Surface on the south-eastern verge.

### 5.2.3 Proposed Structures along the TDR

As part of the accommodation works at TDR Node 29/30, comprising 1 no. single span bridge crossing the Daingean River at Philipstown Bridge and a temporary access track, a one-way system is required along the proposed track between the entry point on the R402 and the exit on the R400. Directional and exclusionary signage will be required in accordance with the Traffic Signs Manual 2021 such as the RUS 050: No Entry Sign as shown below. For all traffic management measures to be implemented at this TDR Node, please refer to the Drawing No. P22-145-0300-0010.

### 5.2.4 Site Entrance

The site entrance to the Proposed Wind Farm on the R419 regional road will require widening and commercial forestry felling to allow the long turbine component loads turn east at this point and to avoid over sail of lands. 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.

The TDR will follow Motorway, National Secondary and Regional roads as described in Section 4.2. 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 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.

Key elements of the accommodation works for the delivery of turbines are summarised in Chapter 14. Their details are also contained in the Pell Frischmann Route Survey Review (RSR) in Appendix 2.3 and the Dara Energy Ltd. Amended Turbine Delivery Route Assessment Report in Appendix 2.4, EIAR Volume III.



## 5.3 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.

### 5.3.1 Temporary Road Works

It is proposed that cabling works within the public road will be completed by small crews of 2-3 staff and traffic management measures such as stop/go systems and road closures will be put in place where the grid connection corridor is within the public road.

The overall length of the grid connection between the on-site substation and the Bracklone Substation is 11.4km, which will run through 9.1km of existing public road.

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 the Traffic Signs Manual 2021 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.

Road closures will be applied for by the appointed contractor and will outline local diversions whilst always maintaining local access for residents, farms and businesses.

In general, two primary traffic management measures are anticipated to be required, based on an assessment of the existing road widths, locations and the type of works. These are a 1-way stop/go system and road closures, and these measures are outlined below:

- **1-Way Stop/Go System:** Where a road has provision for two traffic lanes with adequate width, a rolling Stop/Go traffic light system will be implemented in approximately 50m-100m works sections, allowing traffic to bypass the construction works. This measure would involve the road remaining open, but with reduced traffic flows due to the closure of one lane of traffic at the works area.
- **Road Closure:** Narrow single-lane local roads will be closed to allow construction of the grid route to proceed. Diversion routes will be indicated for all traffic. Local access for residents / businesses will be maintained and accommodated during the works. Where required, stoned passing bays will be prepared by the contractor in road verges to create space for local residents to bypass tracked machinery and other construction plant. Where open trenches obstruct residents' access, steel road plates may be installed over the trench temporarily to provide safe access.

It is expected for both options that approximately between 75-100m of trenching, ducting and backfilling (temporary surface) could be completed on average per day.

Please refer to Section 6 of Appendix 2.1B Grid Connection Construction Methodology for the anticipated traffic management measures associated with the grid connection works between the proposed 110kV substation on Site, and the existing 110kV Bracklone Substation.



Enforcement of traffic management procedures will include temporary traffic lights/flag men in place during proposed ducting 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. Road closures will be subject to the applicable statutory licensing processes as implemented by the roads authority. Road closures will be facilitated by the existing network of roads in the area.

- Prior to works commencing the area where excavations are planned will be surveyed and all existing services will be identified. All relevant bodies i.e. ESB Networks, EirGrid, Gas Networks Ireland, Eir, Offaly County Council, Laois County Council and Kildare County Council etc. will be contacted and drawings for all existing services sought. A road opening licence will be obtained where required from Offaly County Council, Laois County Council and Kildare 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 Offaly County Council, Laois County Council and Kildare County Council.

#### 5.3.2 Joint Bays

There are 15 no. joint bays along the grid connection route (refer to Planning Drawings P22-145-0103-001 to P22-145-0103-007 for joint bay locations). As discussed with Laois County Council, all efforts will be made to locate joint bays outside of public roads to avoid restricting the corridor for future services and utilities.

#### 5.3.3 Substation Entrance

Access to the substation will be from the main Site entrance on the R419 through internal wind farm site access tracks. A temporary lay down area (40m x 45m) will be constructed during the site entrance enabling / mobilisation and the construction of the first stretch of internal access track. The clearance of trees, construction of the bell mouth, including the gravelled lay down area would require a short-term lane closure on the R419 regional road. It estimated that the lane closure would only require approximately 1-2 weeks and will not create disruption to the wider road network as access can be maintained at all times.

Most 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 transformer component will be scheduled at off-peak times under escort to avoid local traffic disruption.

#### 5.3.4 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 to prevent traffic disruption to local residents and construction activities along the local road network.





#### 5.3.5 Public Notices

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

#### 5.3.6 Signage

The appointed contractor shall undertake consultation with Laois County Council, Offaly County Council and Kildare 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 the Traffic Signs Manual 2021 as shown in Appendix 1 of this TMP.

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.

#### 5.3.7 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.

#### 5.3.8 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.

#### 5.3.9 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.

The grid connection route is identified in Figure 2.3 EIAR Volume IV.



## 6. GENERAL TRAFFIC MANAGEMENT

### 6.1 Wind Farm General Mitigation Measures

General measures that shall be addressed in the TMP shall include:

- **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 final TMP will clearly identify roads that will be used to access the project site and roads that are not to be used. Turbine component and quarry material deliveries shall use the M6 motorway, the N52 national road, the R419, R400, R420, and R402 regional roads and the L-70481, L-71764, L-7050, L-7051, L-7176, and L-71761 local roads as the primary haul routes.
- **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 Proposed Development 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 Condition Survey** - A pre-condition survey will be carried out on all public roads that will be used in connection with the development to record the condition of the public roads in advance of construction commencing. 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 completed if the roads authority requests. Local sections of the TDR will be upgraded prior to construction starting.
- **Road Reinstatement** – All roads will be reinstated expeditiously on completion of the construction works. Roads will be reinstated to their pre-works condition or better and to the satisfaction of the roads authority.
- **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 at a minimum.
- **Orderly Traffic Management** - All necessary temporary traffic management will be planned and executed in accordance with best practice, including the Traffic Signs Manual published by the Department of Transport in 2021.
- **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.
- **Signage** - Clear signage relating to the development, both temporary and permanent, will be provided for accessing the site.
- **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 Sweeping** - Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. When, if necessary, a road sweeper will be used to maintain the public roads in a clean condition during the construction activities of the project.
- **Site Entrances** - The entrances to the site will be secured when the site is not in use. When necessary, a flagman will be used to assist traffic movements at the site entrance or in other areas as required. For example, during turbine blade and tower deliveries.
- **Temporary Road Crossing Point** - The proposed crossing point 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. 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. This road is a very quiet public road with extremely low traffic volumes.
- **Abnormal Load Deliveries** - Abnormal loads will require an abnormal load permit prior to delivery and will be delivered mostly at nighttime as agreed with local authority and An Garda Síochána.

## 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 Laois County Council and Kildare 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 road closures** – Reasonable access to local dwellings, farms and businesses will be maintained at all times during any road closures associated with the cable works. The details of this will be agreed with the roads authority in advance of the works in consultation with the local residents in so far as is practicable. The network of local roads in the area will be used for traffic diversions for local traffic to expedite the works and limit the duration of the impact owing to the cabling works. In the event of an emergency, steel plates (kept on site) can be placed over open trenches to temporarily restore traffic flow.
- **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** - As discussed with Laois County Council, trenches on public roads, once backfilled, will be temporarily reinstated without delay to the satisfaction of the roads authority. The design and reinstatement of trenching works will consider best current practice including recent department guidance to local authorities, and the Purple Book for trenching works in public roads.
- **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 Laois County Council and Kildare County Council prior to works commencing.



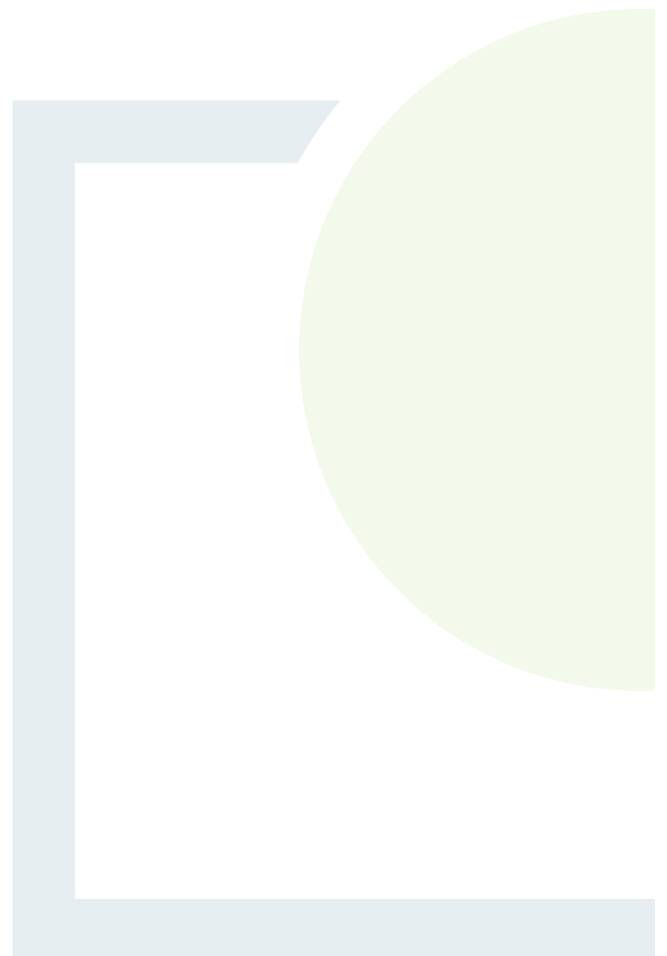
- During construction works, the trench will be excavated down through the existing stone in the road using an excavator. As stone fill is removed it is temporarily stockpiled adjacent to the trench for re-use in backfilling. In some instances, some soil or unsuitable material may be encountered in the 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 suitably 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 Laois County Council and Kildare 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.



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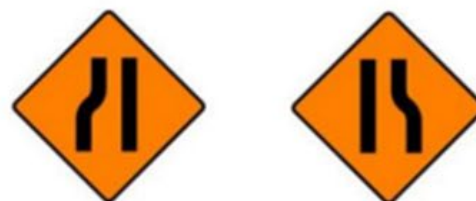
## APPENDIX 1

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



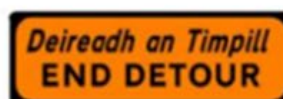
WK 061 - Flagman Ahead



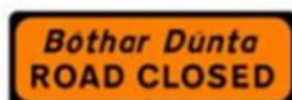
WK 060 - Temporary Traffic Signals



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



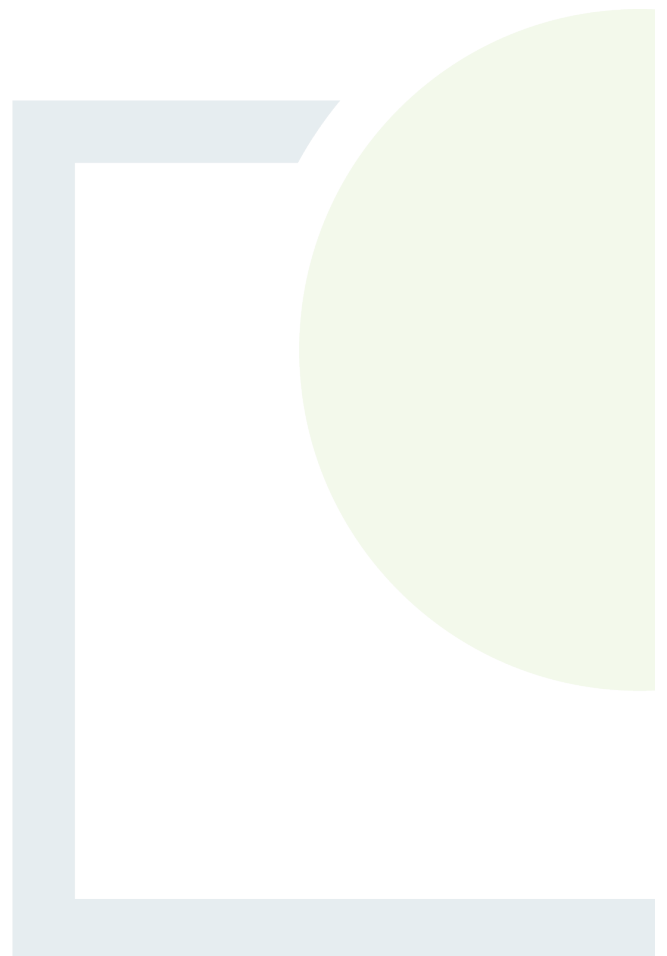
WK 052 - Site Access



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## APPENDIX 2

Example Schedule of Traffic  
Management Signage





## HEALTH, SAFETY AND RISK ASSESSMENT MASTER SHEET

**Works Name:**

TDRAM -

[illegible]

### Traffic Data

### Traffic Management Items

### Particular Risk Items

Brief Description of Works:		AADT		Accident History		Burial	<input type="checkbox"/>	Underground works	<input type="checkbox"/>
		% HCV		Pedestrians		Fall from height	<input type="checkbox"/>	Diving	<input type="checkbox"/>
		Speed Limit		Schools		Chemical/Biological	<input type="checkbox"/>	Compressed air	<input type="checkbox"/>
Road Classification		Operating Speed		Shops		Radiation	<input type="checkbox"/>	Explosives	<input type="checkbox"/>
Road ID (incl. Seg)				Cyclists		HV Power Lines	<input type="checkbox"/>	Heavy components	<input type="checkbox"/>
Road Width				Equestrian/Rail Crossing		Drowning	<input type="checkbox"/>	Other	<input type="checkbox"/>
Works Length				Vulnerable Road Users					

**Identified Items (For Map Reference see overleaf)**

[illegible]

Design Prepared By: \_\_\_\_\_

### TRAFFIC MANAGEMENT DESIGN CIVIL WORKS SHEET

SITE SPECIFIC SHEET OF

**Works Name:**

TDC .

[illegible]

Design Prepared By: \_\_\_\_\_

## TRAFFIC MANAGEMENT DESIGN DETOUR SHEET

TDD .

TDD .

Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.	Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.	Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.	Sign Ref	Sign	Quantity	Supplement/ Additional Info	No.
WK 001			km/h m		WK 091 KL	Diverted Traffic Keep Left				WK 081	Pedestrians Cross Right				W 603 R	Side Road Right		m	
RUS 014					WK 091 R	Diverted Traffic Right				W 647	Slippery Road	km/h m			W 652	Caution Children			
RUS 030-044			Specify Speed Both Sides		WK 091 KR	Diverted Traffic Keep Right				W 644	Hump or Ramp	m			PB	Pedestrian Barrier			
WK 090			 		WK 092	End of Detour				W 645	Hollow	m			PF	Hercule Style Fending			
WK 061			m		RUS 001	Keep Left				W 620 L	Dangerous Corner Left	km/h			WK 001 P010	Roadworks Ends			
WK 094					RUS 002	Keep Right				W 620 R	Dangerous Corner Right	km/h			RUS 014 P010	No Overtaking Ends			
MB					W 062L	Chevron Left				W 622	Series Dangerous Corners	km/h			C	Cone			
WK 001S					W 062 R	Chevron Right				W 626L	Road Narrows Left				LS	Steady State Lamp			
WK 091 L					W183 W184 W185	Barrier Board				W 626 B	Road Narrows Both				LF	Flashing Lamp			
					WK 080	Pedestrian Cross Left				W 603 L	Side Road Left	m							

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 INSPECTIONS				
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

Plan No.

PART 1

Job Details	Resources Required	Emergency Details
Employer Name: _____	Worker Skills: _____	Contact Names & Tel No.
Responsible Person/Supervisor: _____	_____	1. _____
Number of Workers: _____	_____	2. _____
Specific Location: _____	Plant/Equipment: _____	3. _____
Description of Works: _____	_____	First Aider: _____
_____	_____	Location of First Aid Box: _____
Start Date: _____	Hazardous Materials: _____	
NOTE: A new SSWP must be completed when the task or the environment changes.		<b>WORK PERMITS REQUIRED</b>
		Hot <input type="checkbox"/> Electricity <input type="checkbox"/> Excavation <input type="checkbox"/>
		Confined Space <input type="checkbox"/> Other <input type="checkbox"/>
		Method Statement Yes <input type="checkbox"/> No <input type="checkbox"/>

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

 Supervision <input type="checkbox"/>	 Safe Pass <input type="checkbox"/>	 Road Sign <input type="checkbox"/>	 CSCS <input type="checkbox"/>	 Communication/Induction <input type="checkbox"/>	 WC & Washing <input type="checkbox"/>	 Canteen <input type="checkbox"/>	 Drying/Changing <input type="checkbox"/>	 Drinking Water <input type="checkbox"/>	 First Aid <input type="checkbox"/>	 PPE <input type="checkbox"/>
--	--	--	---	--	---	--	---	---	--	--

**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

 Live Traffic <input type="checkbox"/>	 Urban/General <input type="checkbox"/>	 Obstruction <input type="checkbox"/>	 Road Signage <input type="checkbox"/>	 Flagman/Stop-Go Man <input type="checkbox"/>	 Traffic Management Plan <input type="checkbox"/>	 Traffic Speed Control <input type="checkbox"/>	 Vehicle Crash Barriers <input type="checkbox"/>	 Crash Cordon/Lorry <input type="checkbox"/>	 Motor Vehicle Parking <input type="checkbox"/>	 Excluding Traffic Control Signs <input type="checkbox"/>
 Working Close to the Public <input type="checkbox"/>	 Urban <input type="checkbox"/>	 Fencing/Hoarding <input type="checkbox"/>	 Barriers <input type="checkbox"/>	 Pedestrian Route <input type="checkbox"/>	 Security <input type="checkbox"/>	 Traffic Control <input type="checkbox"/>	 Flagman/Stop-Go Man <input type="checkbox"/>	 Vehicle Plant Controller <input type="checkbox"/>	 Surveying <input type="checkbox"/>	 Examination & Inspection <input type="checkbox"/>
 Lifting Operations <input type="checkbox"/>	 Selection's Safety <input type="checkbox"/>	 Plan Lift/SMR <input type="checkbox"/>	 Lorry Crane/Service/Guards <input type="checkbox"/>	 Signal/Signaller <input type="checkbox"/>	 Check Lifting Gear <input type="checkbox"/>	 Exclusion Zone <input type="checkbox"/>	 Examination & Inspection <input type="checkbox"/>	 Lighting <input type="checkbox"/>	 Overhead/Overhead Removal <input type="checkbox"/>	 Pedestrian Controller <input type="checkbox"/>
 Plant and Equipment <input type="checkbox"/>	 Selection's Safety <input type="checkbox"/>	 Vibration Control/Service/Duration <input type="checkbox"/>	 Reverse Warning Devices <input type="checkbox"/>	 Locking Attachments <input type="checkbox"/>	 Roll Over Protection/No Pedestrians <input type="checkbox"/>	 Seat Belts <input type="checkbox"/>	 PTO Guards & Access Steps <input type="checkbox"/>	 Hedge Cutting/Guarding/Storage <input type="checkbox"/>	 Safe Parking <input type="checkbox"/>	 Traffic Speed Control <input type="checkbox"/>
	 Pedestrian Route <input type="checkbox"/>	 Road Plant/Plant Full Controls <input type="checkbox"/>	 Working/Working Full Controls <input type="checkbox"/>	 Overhead/Overhead Full Controls <input type="checkbox"/>	 Rock Protection/Cab Protection <input type="checkbox"/>	 100 Excavation/Check Values <input type="checkbox"/>	 100 Excavation/Visual Aids Set Up <input type="checkbox"/>	 Vehicle Recovery <input type="checkbox"/>	 Proximity to Public <input type="checkbox"/>	 ATV/Training: PPE <input type="checkbox"/>
	 Exclusion Zone <input type="checkbox"/>	 No Tipping - OM Lines <input type="checkbox"/>	 Striking <input type="checkbox"/>	 Subsidence/Training Services <input type="checkbox"/>	 Hot Compressed Air/Lance <input type="checkbox"/>	 Signal/Signaller <input type="checkbox"/>	 Safe Driving <input type="checkbox"/>	 Compartment Plant Security <input type="checkbox"/>	 Rucker Digging/Soil Supervision Training <input type="checkbox"/>	 Examination & Inspection <input type="checkbox"/>
 Hand Tools <input type="checkbox"/>	 Selection's Safety <input type="checkbox"/>	 Voltage <input type="checkbox"/>	 Cable Chock Protection <input type="checkbox"/>	 Guards <input type="checkbox"/>	 Generators Outside <input type="checkbox"/>	 Compressed & Utility Checks <input type="checkbox"/>	 Jack Hammer/Warning Cones <input type="checkbox"/>	 Dust Suppression <input type="checkbox"/>	 Chain Saw/Training PPE <input type="checkbox"/>	 Can Saw/Approved Wheels <input type="checkbox"/>



# PART 2

HAZARD OR ACTIVITY	CONTROL									
	Tick the <input checked="" type="checkbox"/> box to identify controls required; Tick the <input checked="" type="checkbox"/> circle when control is in place.									
 Excavation										
										
 Falls and Falling Objects										
 Sewers/Culverts/Manholes/Services										
 Working Close to Water										
 Substances										
 Asbestos/Cement Water Pipes										
 Other Items										
 Health										
 PPE										

# 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	<input type="checkbox"/> tick	<input type="checkbox"/> tick	<input type="checkbox"/> tick	<input type="checkbox"/> tick	<input type="checkbox"/> tick	<input type="checkbox"/> tick
≥ 50m	≥ 60m						
≥ 90m	≥ 120m						
	≥ 160m						

**Width** value (m)  **Speed** value (km/h)

**Urban** ☐ **Rural** ☐ **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** ☐ **Semi-Static** ☐ **2-way** ☐ **All Stop** ☐ **Stop-Go** ☐ **Traffic Signal** ☐

**Marshall** ☐ **Priority** ☐ **Give & Take** ☐ **Convoy** ☐

If using standard plan, ID reference

## Step 4: Record Traffic Management Devices Implemented

Warn → Inform → Direct → End

Warn		Inform		Direct		End	
no.	tick	no.	tick	no.	tick	no.	tick
A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>
B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>
C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>
D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>
A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>
B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>
C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>
D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>
A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>
B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>
C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>
D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>
A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>	A <input type="checkbox"/>	<input type="checkbox"/>
B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>	B <input type="checkbox"/>	<input type="checkbox"/>
C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>	C <input type="checkbox"/>	<input type="checkbox"/>
D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>	D <input type="checkbox"/>	<input type="checkbox"/>

Are all required cones (lamps & beacons) in place (& operating)

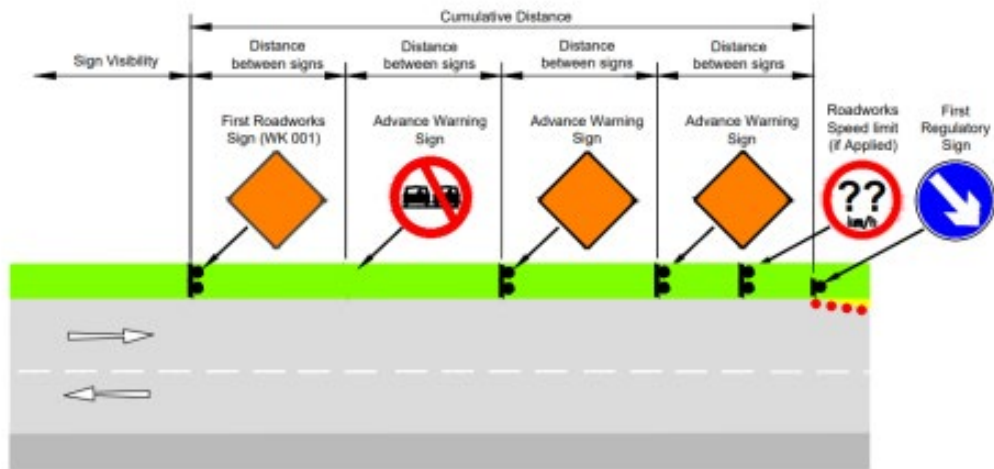


Yes  
No

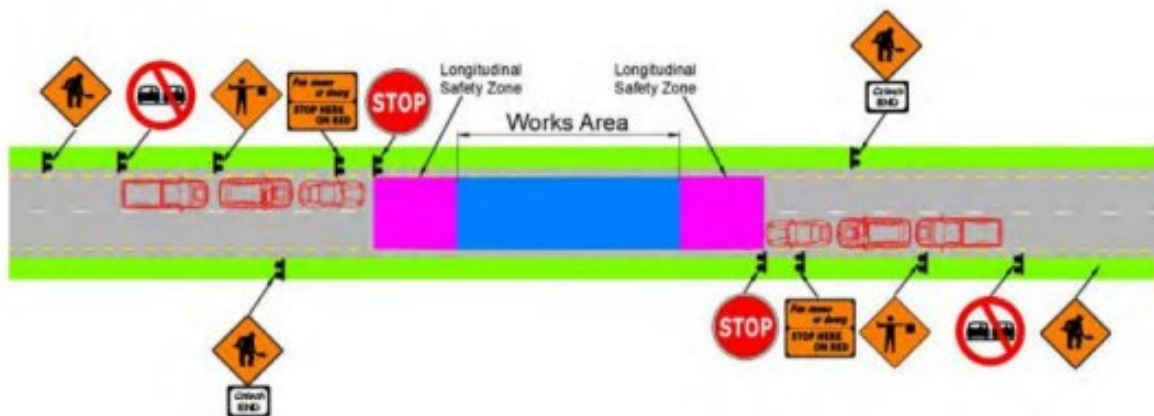
If using traffic signals/Stop-Go have Gardai been notified



Yes  
No

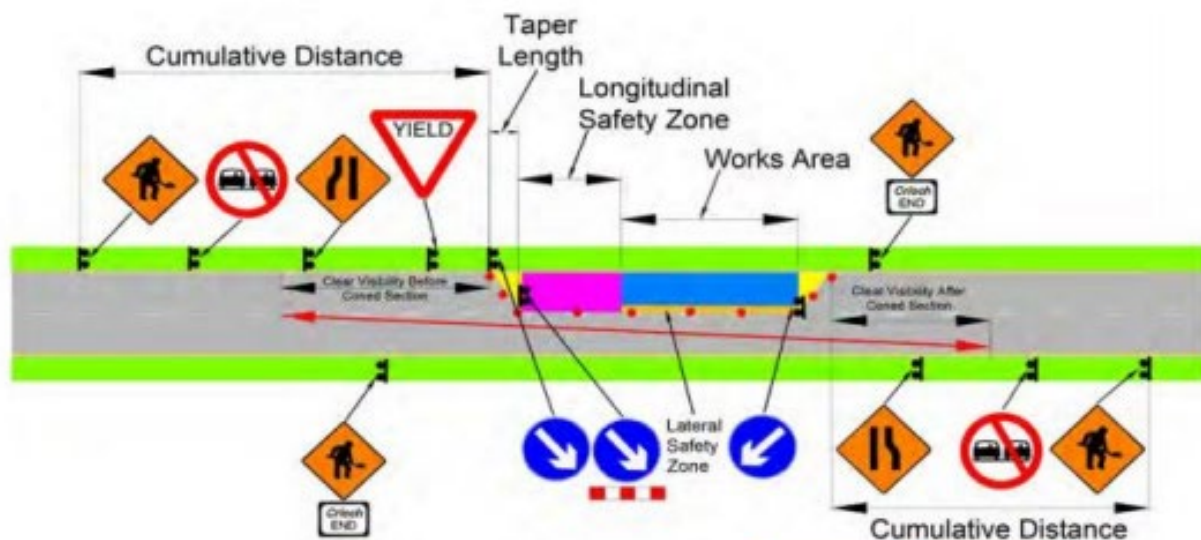


### Required Locations for Advance Warning Signs to Roadworks



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

### Example Layout of an "All Stop" Traffic Operation



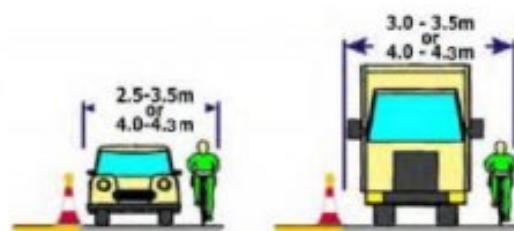
Roadworks Type	Speed (km/h)	No. Adv. Warning Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24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

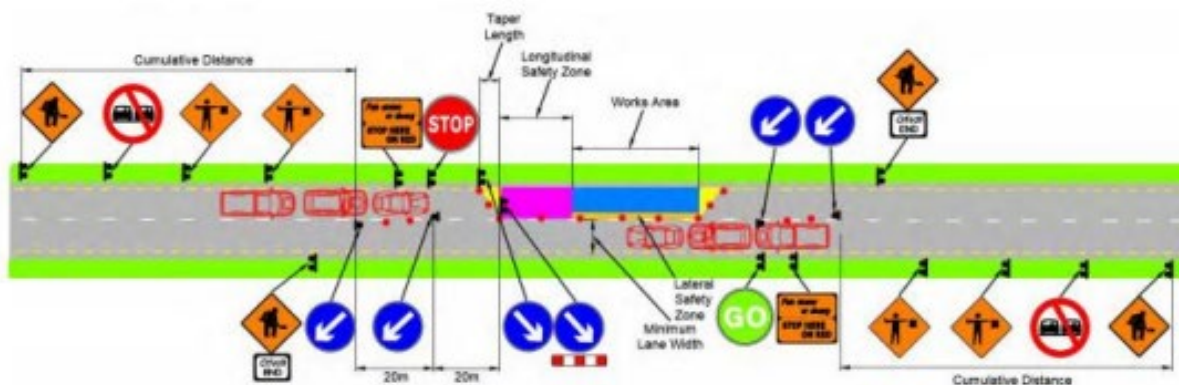
### Lane Widths

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





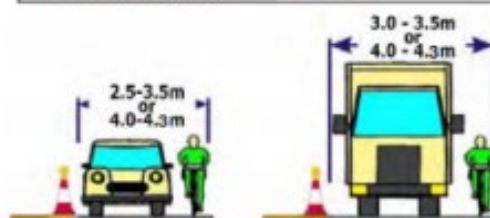
Roadworks Type	Speed (km/h)	No. Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24
Level 2 (ii)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

## Summary Criteria

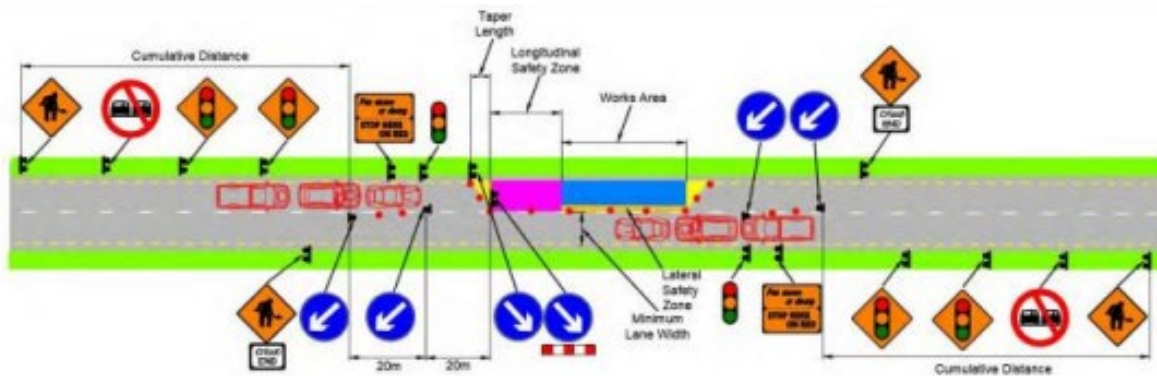
Shuttle Length	Maximum Traffic / 3 mins	Notes
500m	45	Shall be 2 operators, 2 discs when $\geq 200m$
400m	50	
300m	55	
200m	60	May be 1 operator with remote discs. Operator must be $\leq 100m$ from each disc and have clear view of each
100m	70	
20m	25	May be 1 operator, 1 disc

## Lane Widths

Cars only	$\geq 2.5m$
HGVs present	$\geq 3.0m$
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 Sequence

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

### Signal Heights

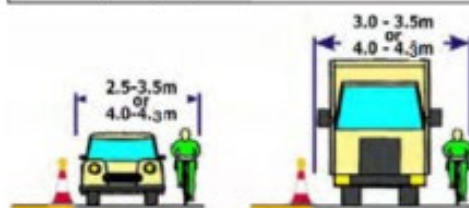


### Summary Criteria

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

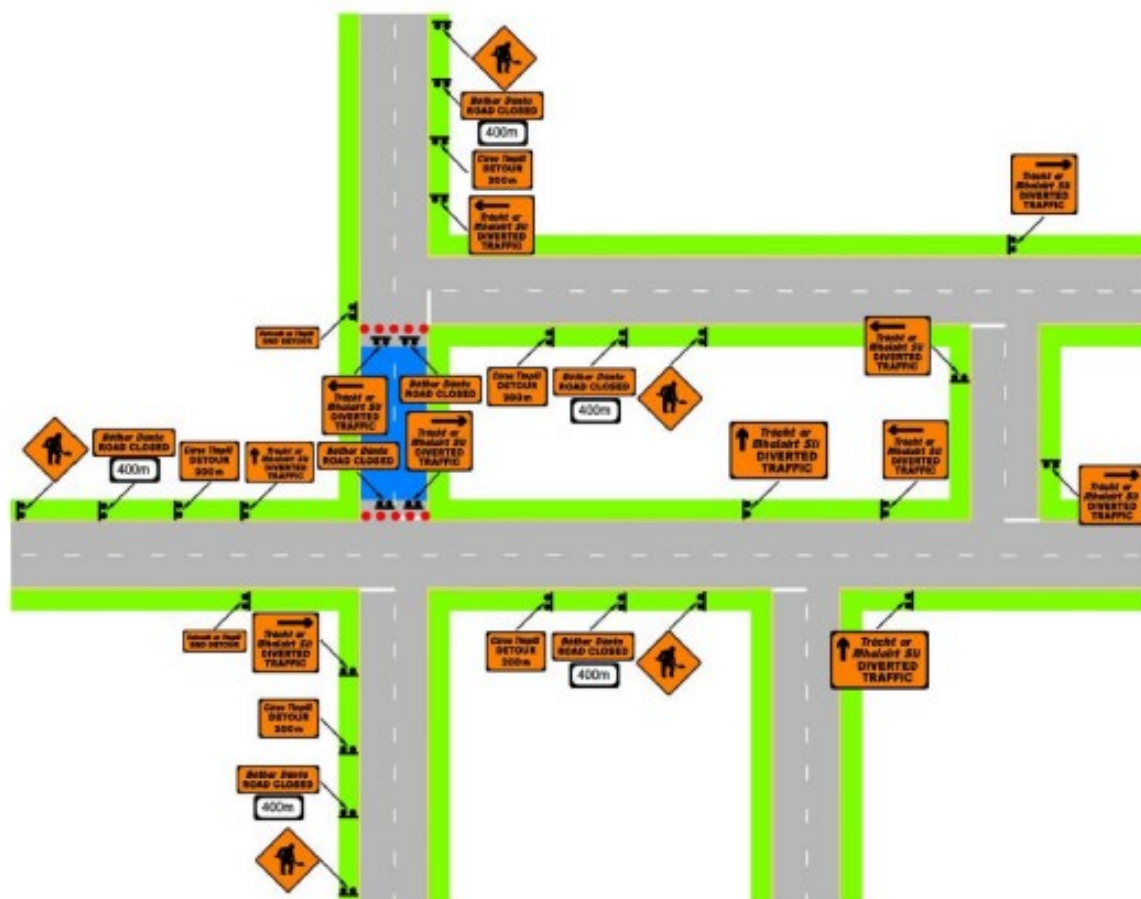
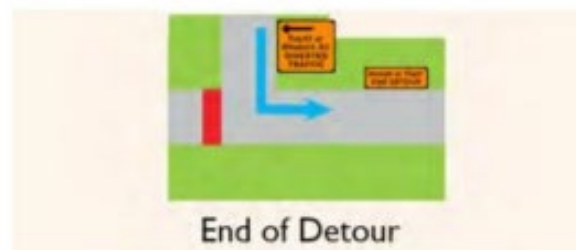
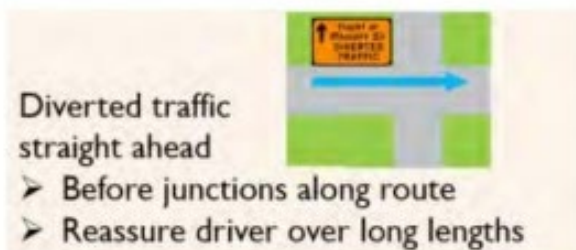
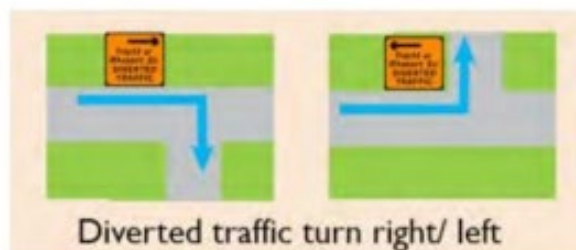
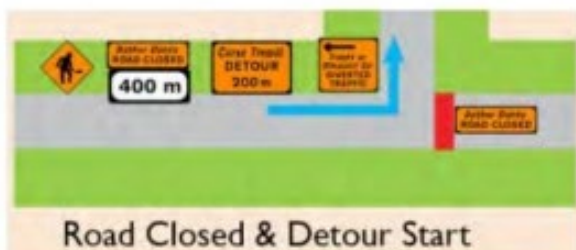
### Lane Widths

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 Detour and Signage Operation





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