Appendix 16A

TRAFFIC MANAGEMENT PLAN

MWP

Traffic Management Plan (TMP)

Brittas Wind Farm,

Thurles, Co. Tipperary

Nov 2024

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
23318	6001	A	07/08/24	IA/MT	OH/EH	MT	DRAFT
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1. Introduction

The Traffic Management Plan (TMP) outlines the procedures to be implemented during the construction of the Brittas Wind Farm and the underground grid connection route, and the turbine delivery route (TDR). The project is currently at planning stage. This document will facilitate the process of optimising the project traffic management and help ensure minimal disruption during the construction phase.

Brittas Wind Farm Ltd. (the Applicant) propose to develop a wind farm (named Brittas Wind Farm) comprising ten (10) No. wind turbines approximately 3km to the north of Thurles, Co. Tipperary in the townlands of Brittas, Rossestown, Clobanna, Killeenleigh, Brownstown, and Kilkillahara. The wind farm location is shown in Figure 1-1 below. The proposed 7km grid connection route from the wind farm to the existing Thurles substation is mapped in Figure 1-2.

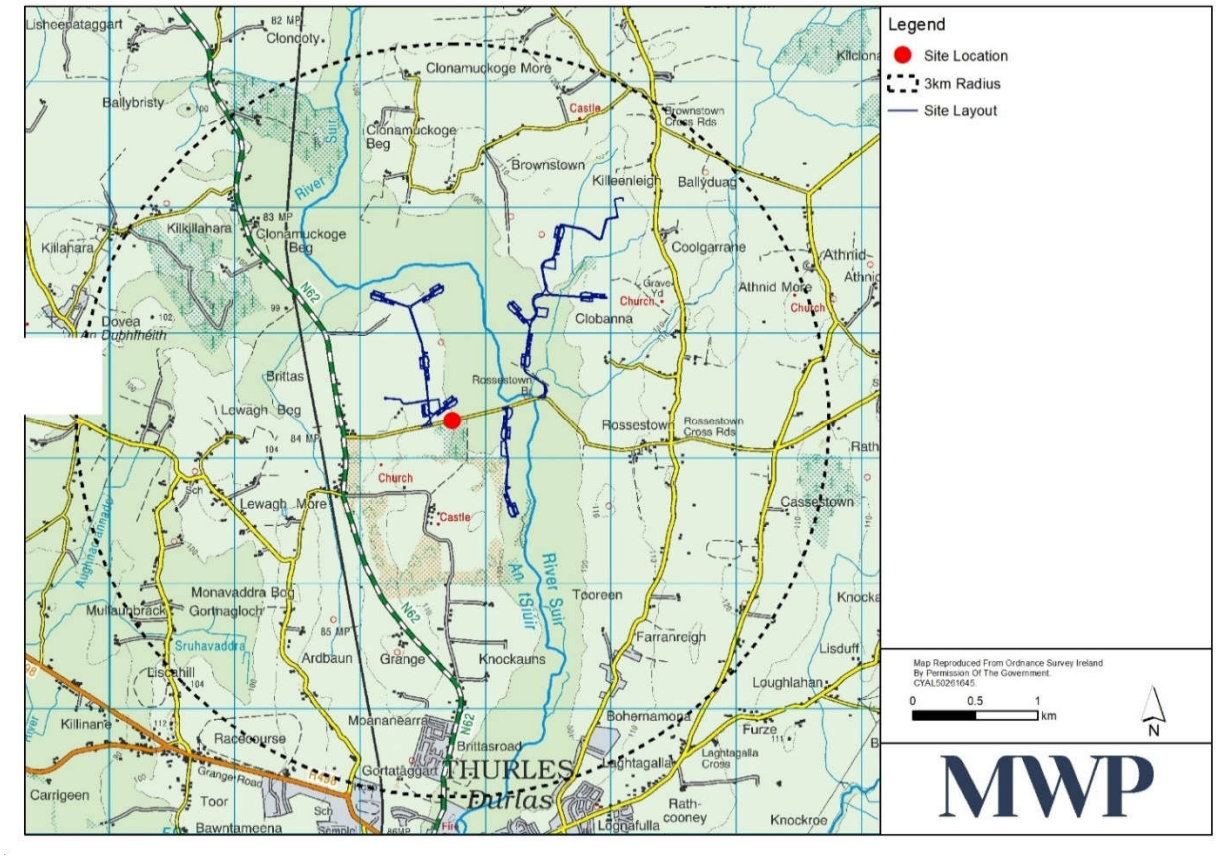


Figure 1-1 Wind farm Site Location

Figure 1-2: Grid Connection Route

Proposed turbine delivery route is described in section 3.3 below. The components are expected to be delivered by sea to the Port of Foynes in County Limerick and transported to site along the national, regional and local road network. A full description of the proposed development, development lands and all associated project elements is provided in Chapter 2 of the EIAR for the proposed development.

The goal of the TMP is to provide a safe working environment for construction workers and efficient passage of traffic and other road users through the proposed development site. The procedures to be implemented by the 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 contractor will ensure traffic management controls are in accordance with Chapter 8 of the *Traffic Signs Manual 2019* and the *Guidance for the Control and Management of Traffic at Road Works, Second Edition 2010.*

This TMP is for planning purposes only and is a 'live document' that will be updated at construction stage by the appointed contractor. In addition, the appointed contractor will further discuss, adapt, and improve the project traffic management regime in consultation with the County Council roads department through the road opening & road closure licence processes if required.

In the event An Bord Pleanála (ABP) decides to grant permission for the proposed development, the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by the planning authority. Prior to works commencing, the final traffic management plan for construction traffic using the public road will be produced by the appointed contractor and agreed with Tipperary County Council. Key to the implementation of the final TMP is the dedication of an on-site construction manager nominated by the contractor. All site personnel are required to ensure compliance with the requirements of the site's TMP.

2. Transport Management Principles

The two core principles for planning, developing and implementing transport management proposals are:

- To maximise the safety of the workforce and the travelling public; and
- To keep traffic flowing as freely as possible and reduce the impact of the construction traffic and road works to a minimum.

For the purposes of the works to be carried out to ensure that there is minimal effect on the commercial and socio-economic life of the surrounding areas, the appointed contractor will have regard to the above principles. The appointed contractor shall endeavour to meet these objectives by proper planning of the project and as reasonably practical that:

- Works within the road network do not cause safety issues or hazards to road users or the workforce involved in the project; and
- Any resulting increase in traffic delays and congestion are minimised.

The appointed contractor will liaise with An Garda Síochána and Tipperary County Council in the event of other planned 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 project and will endeavour to minimise the effect of the works on traffic in the planning and programming of the works at construction stage.

3. Construction Works

A summary of works for the wind farm, TDR and grid connection route on the public road for each type of road networks is described below.

3.1 Wind Farm

The proposed wind farm and associated infrastructure area is located 3km north of Thurles town in County Tipperary. The main components of the wind farm are ten (10) wind turbines with a height of 180m, an on-site 110kV electrical substation, a Battery Energy Storage System (BESS), a meteorological lidar, the four site entrances, the access tracks and associated underground electrical cables, the two construction compounds, borrow pit, various spoil stockpiles, and the re-routing of a permitted overhead power line that crosses through the site.

Construction of the wind turbines and all associated facilities on the wind farm site will result in a short-term (18 month) increase in traffic on the Local Rossestown Road (L-8017) and the N62 National Road. The wind farm site is located within a flat, rural landscape dominated by agricultural land. Settlement consists of one-off housing and farmsteads.

Primary access to the proposed wind farm site will be provided from the local public Rossestown road (L-8017). There will be four site entrances. Three of these are located along the local Rossestown road and will provide access to turbines 1, 2, 6 and 8, as well as the Lidar and the main construction site compound to the north of the public road. The middle entrance provides access to turbines 9 and 10 and the borrow pit, to the south of the public road. The third eastern entrance provides access to turbines 3, 4, 5 and 7 as well as another construction compound and the substation. The fourth entrance is to the substation only and will only be used for maintenance access during the operational phase. This entrance is located along the section of the Rossestown road that goes northward on the eastern side of the River Suir.

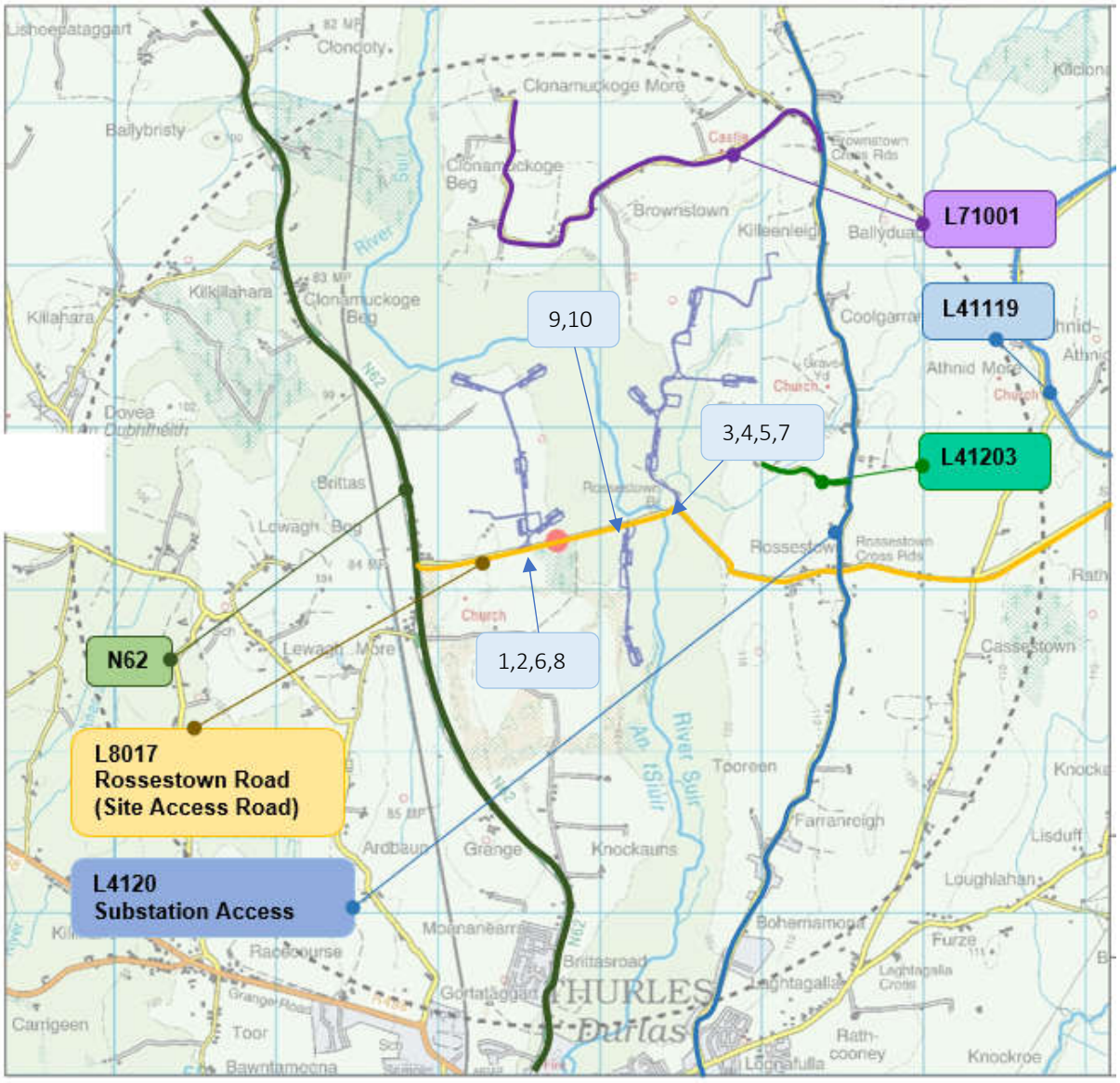


Figure 3-1: Indicative Site Location and three construction site entrances for construction traffic

Subject to planning permission, the construction phase is expected to last c. 18 months and will commence in Q4 of 2028.

As per Chapter 16 of the EIAR (Traffic and Transportation Chapter) it is envisaged that the construction traffic will have slight to moderate impact on the surrounding transport network. The nature of the surrounding road network being lightly trafficked, with no active travel infrastructure (designated pedestrian routes, bicycle tracks or leisure routes) partnered with narrow carriageway widths, indicates that utilising the surrounding routes will not raise major safety concerns or cause disruption to the surrounding networks mobility. The routing and delivery of the turbine components is further detailed in section 3.3 below.

3.1.1 Construction Process for Turbines

The phases of the construction of the wind turbines can be broadly summarised in terms of traffic management in 3 steps:

1. Access road/crane hardstand/substation construction
2. Turbine base construction
3. Turbine erection

3.1.1.1 Access Road/Crane Hardstand/Substation Construction

All construction transport including deliveries of quarry and building materials, will use the N62 and L8017, as the designated delivery road for the wind farm. During the construction of the access roads, crane hardstands and substation buildings, a worst case scenario estimates that the maximum number of loads to be delivered to the wind farm work area would be approximately 10,576 (total for Civil & Electrical Works) as specified in the detailed Chapter 16 of the EIAR. This includes loads of aggregate capping material, concrete, reinforcing steel, geo-textiles, electrical cabling, switchgear and general building materials. Much of the stone for the access road construction within the wind farm will be sourced from the borrow pit which will reduce the number of haulage deliveries required. It is proposed to source any imported capping aggregate from local quarries in the area.

A traffic coordinator will be employed full time during this construction period to implement speed limitations and construction traffic safety and courtesy protocol.

Two (2) No. temporary construction compounds will be set up upon commencement of the construction phase. The location of these temporary compounds is shown in Figure 3-2 below.

Main Construction Compound

Supplement Construction Compound

Figure 3-2: Location of Temporary Construction Compound

The main construction compound (located just inside the western site entrance of the wind farm site near T8) will have a footprint of approximately 4,750 sqm (0.5 ha).

The supplementary construction compound will be located just north of T7 and will be 1,375 sqm (0.13ha) in size.

The compounds will be used as secure storage areas for construction materials and will also contain temporary site cabins to provide welfare facilities for site personnel. Facilities will include office space, meeting rooms, canteen area and mobile sanitary facilities. The proposed development will include an enclosed wastewater management system at the temporary compounds capable of handling the demand during the construction phase. Two holding tanks are proposed at each compound for wastewater management. The holding tanks will

be emptied by a licensed permitted contractor only. Upon completion of the project the compound will be decommissioned by backfilling the area with the material arising during excavation and landscaping with topsoil.

3.1.1.2 Turbine Base Construction

A wind turbine with a ground bearing concrete foundation will require a concrete pour during its construction. The pours will generally start early in the morning and be complete in early afternoon. Normal deliveries will be curtailed during concrete pours until the pour is completed. Concrete pours are weather dependant but are normally planned and scheduled in advance. Written notice of each base pour will 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.

3.1.2 Schedule of Wind Farm Construction Works/Construction Schedule

The proposed duration of the wind farm works will be of the order of 18 months. The construction work will be phased as outlined in Table 3-1. A number of these phases will however run concurrently as follows:

- As the internal site access roads are constructed up to each turbine, hardstand areas for the crane and turbine foundations will be prepared;
- Once the roads are completed, the trenching and laying of underground cables adjacent to the roads will begin; and
- Construction of the site substation compound and substation buildings will commence so that they will be ready to export power as turbines are commissioned.

Table 3-1: Construction Programme

Phase	Activity	Duration
Phase 1	Clear-felling (to be complete ahead of construction site mobilisation)	2 months (prior to construction)
Phase 2	Prepare site, pre-construction activities, site entrance, temporary compound	1 month
Phase 3	Access road construction + Drainage plan implementation	3 months
Phase 4	Hard standing construction for turbines	2 months
Phase 5	Turbine Foundation construction	4 months
Phase 6	On site trenching and ducting (underground electrical collection system)	2 months
Phase 7	Substation and BESS construction	4 months
Phase 8	Permanent meteorological lidar compound preparation and unit installation	1 month
Phase 9	Underground grid connection route within the public road	5 months
Phase 10	Turbine delivery	3 months
Phase 11	Turbine erection	4 months
Phase 12	Wind Farm Commissioning	4 months (approx.)

3.2 Grid Connection Route

A 7km grid connection route and associated connection point for connecting the proposed Brittas Wind Farm to the National Grid has also been assessed in the EIAR and is shown in **Figure 1-2** and described below. This will connect to the nearby Thurles 110kV substation located approximately 6.1km south-east of the proposed wind farm site.

Almost 3km of these local roads from Brittas Substation are narrow roads. Starting from the onsite substation entrance the proposed grid route will follow the L-4120 road south to the Rossestown road (L-8017) and turn east. At the next junction it will turn south along the L-4119 road to Thurles town. At the T-junction with the L-8015 road the route will turn east along the L-4009 and L-4119 road sections until the fork in the road and will then follow the L-8015 to Thurles substation.

The Thurles grid connection route begins at the Brittas WF boundary and heads southeast towards its destination at Thurles 110kv substation. It is roughly 7km in length. There are two water crossings. One is in close proximity to Thurles 110kv substation and another over the Rossestown stream on the L-4120 road close to the proposed wind farm substation. A site of archaeological heritage significance, a ringfort, is located halfway along this route. Potential effects on this archaeological site is assessed in EIAR Chapter 11 Cultural Heritage

Laying of underground cabling will require trenching in accordance with standard ESB Networks requirements, to a typical depth of ca. 1.2m and a width of 0.60m, insertion of ducting, backfilling of trenches and subsequent pulling of cable (typically 400mm^2 XLPE insulated cable). Trenching and surface finishing will be completed in accordance with the Guidelines for Managing Openings in Public Roads as discussed with the Local Authority.

Cable trenching in the public road will be carried out in the road edge or in the grass verge where it exists. This will be done under the terms of road opening licences from the Local Authority. Road closure applications may also be required. All works will be planned and undertaken in full consultation with Tipperary County Council, in particular the Roads Department and the Roads Engineer for the area.

The goal of a traffic management plan is to provide a safe working environment for workers and efficient passage of traffic and other road users through the cable works site. 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.

3.2.1 Grid Connection Construction Programme

The proposed grid connection from the proposed on-site substation to the existing Thurles 110kV substation will be constructed adjacent on-site tracks and within the public road over a period of 4-5 months. It is expected that 100m of active construction works will be completed each day over a period of approximately 2 months. Thereafter, the second 2-3 months of construction will involve sequentially opening up all joint bays (these are pre-cast concrete chambers that will be required along the grid connection route over its entire length) and pulling electrical cables through ducts and then joining each cable together. There is anticipated to be 12 joint bays with 2-3 days' work involved at each. Construction activities along the proposed grid connection route will operate between the hours 7:00 a.m. and 7:00 p.m., Monday to Saturday (if required).

It is expected that the civil works for the grid connection route will require at least 10 personnel to complete the works. The electrical works will require less heavy machinery but more labour personnel, with typically 25 personnel to complete the works. The expected peak staff would generate approximately 48 car and van trips on the basis of an average vehicle occupancy rate of 1.25 personnel per vehicle. The staff requirements will further be managed by the contractor on site with the construction staff utilising the main site (windfarm parking compound)to park their vehicles and travel together for the construction of the grid route.

3.2.2 Grid Connection Cable Route Construction Works

The installation of the grid connection along the public roads will involve the following process:

- 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, Tipperary County Council etc. will be contacted and drawings for all existing services sought. A road opening licence will be obtained where required from the 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 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 the council prior to works commencing;
- 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 barriers, etc;
- Prior to works commencing a detailed traffic management layout will be prepared by the appointed contractor and agreed with the council;
- 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 grid connection route and associated road areas will receive a new permanent macadam finish as agreed with the 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; and
- A condition survey will be carried out on the roads impacted by the 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.

3.3 Turbine Delivery Route (TDR)

The components for each turbine are expected to be delivered in approximately 100 No. deliveries. Due to their abnormal size, blades and towers will be delivered at night to avoid disruption to peak daytime traffic. The turbine blades will be the longest components to be transported from port to site. The turbine blades will range from 73m to 76m in length. The components are expected to be delivered by sea to the Port of Foynes in County Limerick and transported to site along the national, regional and local road network. The first section of the TDR will be along the N69 and M7 from the Port to Junction 25 (Nenagh Centre) on the M7 highway. A description of

the rest of the turbine delivery route is provided below, and an overview of the proposed section is shown in Figure 3-3.

- Exit M7 at Junction 25
- M7/R498/ Roundabout, Exit travelling southeast
- Travelling southeast along R498 to Borrisoleigh
- Travelling southeast along R498 to Thurles
- R498/Jimmy Doyle Rd Roundabout, 1st Exit travelling northeast
- Turn left at Jimmy Doyle Rd/N62 (Brittas Rd) junction
- Travelling north along N62 (Brittas Rd) to Brittas
- Turn right at N62 (Brittas Rd)/L-8017 Rossestown Rd junction
- Travelling east along L-8017 Rossestown Rd
- Turn left at site entrance for wind turbines 1 - 8
- Turn right at site entrance for wind turbines 9 – 10

The full details of the Turbine Delivery Route as well as works proposed along the route to address the pinch points along the route are further elaborated on in the Turbine Delivery Assessment Report (Appendix 2A).

Twenty-two pinch points have been identified along the route where various temporary accommodation works will be required. These include the following:

- The temporary removal of traffic signs and lights
- The temporary removal of electricity poles, bollards and lamp posts
- Hedges and tree removal or trimming
- Temporary land take
- Lowering of some roadside banks
- Temporary Fence removal
- Road widening

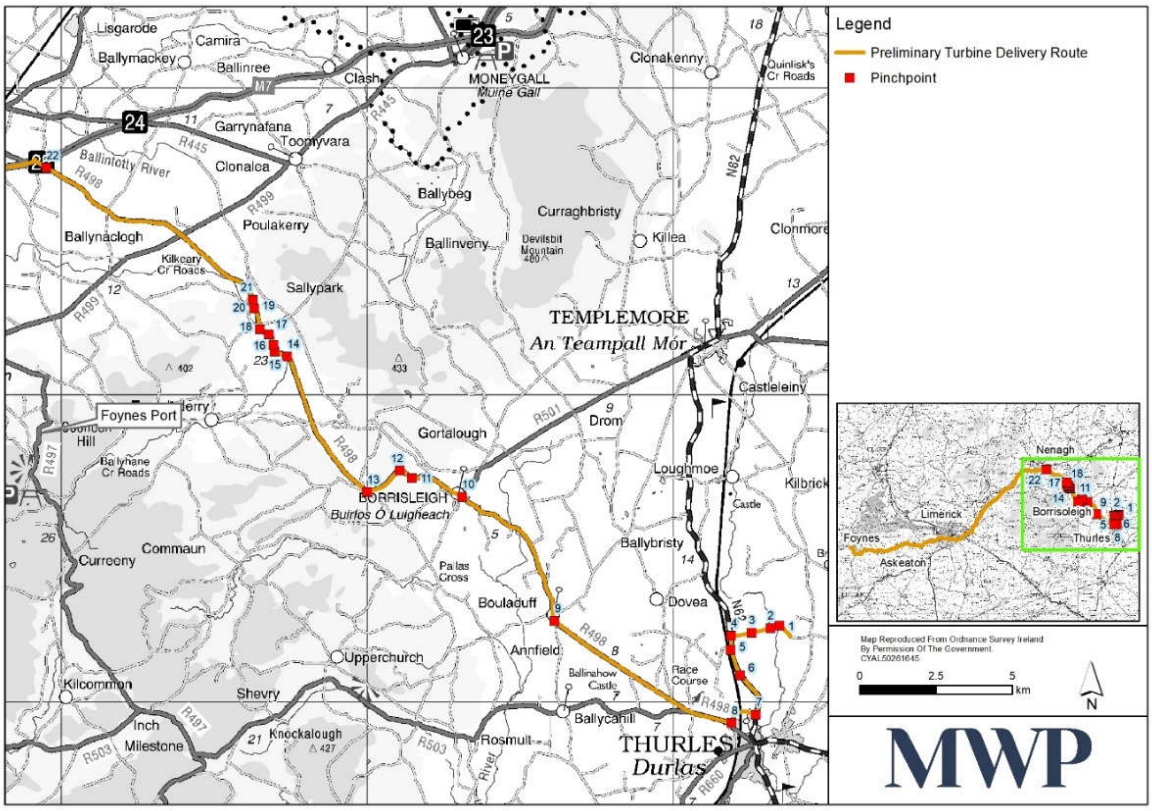


Figure 3-3: Turbine Delivery Route

Two points have been identified where hardstanding areas are required and these are included in the redline planning boundary for this planning application.

The majority of the temporary works mentioned above can be accommodated through road opening licence. A permit for moving abnormal loads to the wind farm site along the proposed TDR will be sought from An Garda Síochána, Tipperary County Council and Limerick City & County Council. A detailed transportation plan with a breakdown of the timing of deliveries will be established at construction stage.

The temporary accommodation works will be completed one month prior to initiation of the delivery of turbine components in agreement with the Local Authority.

Apart from the two pinch points identified where road widening will be required, all other turbine component movements can be accommodated within existing road alignments. 100 abnormal size heavy vehicles will be used to deliver the turbine components over a period of 3 months in the 10th phase of construction. These deliveries will be made at night to reduce disruptions to day-time road users. The vehicles will be slow moving and will require a garda escort. In advance of these deliveries some temporary accommodation works will be needed to trim or remove trees, remove road signs, street light poles, electrical poles, fences and road widening at the 22 pinch points along the delivery route. This will result in some temporary inconvenience for existing road users and some potential traffic safety risks at these pinch points as well as some temporary alterations to public road infrastructure.

Pre and post-construction surveys will be carried out to ensure the structural integrity of the selected haulage route. Repairs will be carried out on the public road network, as necessary, during the construction phase, to ensure that the condition does not deteriorate below a standard that could affect the use of the site, as required.

Following completion of construction, the condition of the public road network will be of at least the same standard as it was prior to commencement of construction.

A permit for moving abnormal loads to the wind farm site will be sought from An Garda Síochána and the applicable local authorities on the selected haulage route with a transportation plan for the time of deliveries established at construction stage.

The delivery of turbine components normally takes place overnight due to the oversize nature of some of the components such as tower sections and blades. Some 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.

Turbine erection is entirely weather dependent 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.

4. Existing Road Network

4.1 Road Network

The first section of the TDR will be along the N69 and the M7 motorway from the Port to Junction 25 (Nenagh Centre) on the M7 highway. Thereafter the TDR and delivery routes will make use of regional, national and local roads. From the M7 junction 25, the TDR will make use of the R498 down to Thurles. At the Jimmy Doyle Rd Roundabout on the R498, the TDR takes the 1st exit onto the Jimmy Doyle road traveling 1km north eastwards to the junction with the N62. The TDR then follows the N62 northwards for 3km to the Britas site where it then turns east onto the local L8017 (Rossestown) road where 3 of the site entrances are located within the first 1.6 kilometres of the road.

All deliveries to the site will be made from the west via the N62 and L-8017 roads.

The seven kilometre grid connection route will only affect local roads, these being the L-4120, L-8017, L-4119, L-8015, L-4009, L-4119 and L-8015.

A road safety and courtesy protocol will be in place for all road users for the duration of construction. All companies delivering to site will have to sign up to this protocol as part of their supply contract. Courtesy for other road users is fundamental to the protocol. HGV traffic will give way to oncoming local traffic where possible. Vehicles will always slow down or stop, as appropriate, for pedestrians and cyclists along the proposed haulage routes. Passing bays will be provided to ensure intervisibility between traffic coming from opposing directions.

4.2 Maintenance of Road Network

The road condition will be inspected daily by site management to ensure that the access route roads (L-8017 and relevant sections of the N62) are maintained in a safe and passable condition. Where necessary, potholes and ruts will be filled in and the road cleaned of any mud and rubble. Following completion of construction, the condition of the public access route road will be of at least the same standard as it was prior to commencement of construction.

4.3 Signage

Signage will be manufactured using retro-reflective material to Class Ref 2 of EN 12899. The colours, chromaticity and luminance factors will be as specified in Specification TS4 published by the Department of the Environment, Heritage and Local Government. Specification TS4 consists of guidelines produced by the DoEHLG, Dublin

Signage will be inspected at regular intervals by the contractor to check that it is in place, secure, unobstructed (by vegetation etc.) and cleaned when required. Warning lights will be appropriately fitted as required. Where signs could be obscured by bends, hills or dips in the road, additional warning signs will be put in place. If traffic management controls involving traffic lights are being implemented, a contact person will be available in the event of traffic light failure outside of normal working hours.

4.4 Staff Training

The contractor will provide training to operatives in the traffic control systems being used on site. The works will be designed and maintained by a trained operative holding a current Signing Lighting and Guarding CSCS card. The importance of traffic management, the safety of motorists, pedestrians and site staff will be emphasised to all construction staff. All personnel will be informed of the Traffic Management Plan during their induction when they first arrive on site. Toolbox talks will also be given so that all personnel are aware of traffic management controls being implemented as the work progresses. Onsite turning bays, speed limit signage, directional signage to each turbine location, sub-station, site compound, delivery routes, exit routes, stores, offices, canteen, and the requirement for reverse parking, will be erected as required.

4.5 Duties and Responsibilities

The following parties will have an input into traffic management and will be kept informed by the appointed contractor of developments in relation to traffic management.

- Appointed Contractor;
- Project Supervisor Construction Stage (PSCS);
- Project Supervisor Design Process (PSDP);
- An Garda Síochána;
- Road Engineers for Local Authority (Tipperary County Council); and
- Emergency Services.

4.5.1 Appointed Contractor

The appointed contractor shall consult with An Garda Síochána, the emergency services and all other relevant parties listed above during the preparation of any traffic management proposals. The appointed contractor will co-ordinate the implementation of the developed traffic management. Where any issues arise with the traffic management plan, they shall consult with the relevant parties to revise or modify the traffic management plan to each parties satisfaction.

4.5.2 An Garda Síochána

An Garda Síochána shall have final authority with regard to day-to-day traffic control. The appointed contractor will comply with all directions, instructions and requirements of An Garda Síochána.

4.5.3 Road Engineers for Local Authority

Road Engineers from the Local Authority are primarily engaged in the maintenance and management of the road network and its services in the area of the wind farm, grid connection cable route and along the turbine delivery route. In respect of all works on, under, and above the road network, they are empowered as officers of the Road Authority to issue directions to undertakers of all works in relation to timing, the manner in which works are carried out, reinstatement and satisfactory completion. The appointed contractor will ensure to work with the Roads Department of Tipperary County Council throughout the proposed works.

4.5.4 Emergency Services

In relation to accidents occurring on or caused by the works, the appointed contractor will provide all necessary assistance to deal with any emergency to An Garda Síochána, Ambulance and Fire Brigade services. The appointed contractor will consult with the emergency services providers regarding the traffic proposals for work in public areas/on public roads.

In the event that emergency services need to travel past the works area where a road closure is not active, the existing traffic management system, be it stop/go or traffic lights, may need to be cancelled and priority given to the emergency vehicle.

Where a road closure is active, the emergency services will be notified of suitable diversions. If the emergency is located along the works area, the appointed contractor will allow the emergency services to pass the works area by removing machinery from the road in an orderly fashion and allowing the emergency services pass under the supervision of the team leader. In the event of a road crossing, steel road plates will be available at the works area to span the trench in the event of an emergency.

4.6 Procedures

4.6.1 Traffic Control Tools

The appointed contractor will use a range of traffic control tools, including temporary road closures, temporary traffic lights, stop/go boards, two-way radios, safety barriers, cones, signage etc. Each crew on site will have personnel on site trained in Signing Lighting and Guarding/Health and Safety at Road Works. Communication/Instruction of the Traffic Management Plan will come from the Project Manager and communicated to site personnel with the relevant training.

A traffic coordinator will be employed full time during the construction period to implement speed limitations and construction traffic safety and courtesy protocols.

4.6.2 Traffic Diversions

Where traffic diversions are necessary due to temporary road closures associated with the wind farm and grid connection works, the appointed contractor will advise Tipperary 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; and
- Details of proposed system of public communications and public liaison.

Alternative routes where traffic is to be diverted on will require an inspection prior to diverting traffic. These will need to be inspected again closer to the time of the works to ensure no hazards have occurred since the traffic management plan was developed.

4.6.3 Lane Width Restrictions

Where lane width restrictions are necessary due to the construction of the grid connection cable route, the appointed contractor will advise Tipperary County Council of the following details:

- Reasons for lane width restrictions;
- Details of restricted width of traffic lane;
- Details of associated signage and warnings to motorists and pedestrians, including road markings;
- Details of proposed system of public communications and public liaison; and
- Temporary footpaths.

4.6.4 Public Notices

Public notices in respect of road closures or other traffic management tools are the responsibility of the Roads Authority who will undertake to publish such notices.

4.6.5 Communications

The developer is committed to providing a high level of communication to the general public and business community regarding the extent and duration of the proposed works. The appointed contractor will co-operate with the employer in this regard.

The employer / appointed contractor will advise to the public:

- Commencement and duration periods for the works;
- Current and proposed road closures or other traffic management tools;
- Alternative routes; and
- Provision for access / egress.

In the event of potential conflicts arising from construction activities, such conflicts shall be resolved, if possible, in consultation with Tipperary County Council, the appointed contractor and where necessary An Garda Síochána.

4.7 Traffic Management and Control Procedures

4.7.1 General

- Excavation, backfilling and reinstatement of trenches in roads will be completed within the shortest possible time frame.
- The planning of road closures and traffic diversions will ensure that reinstatement of the trenches, joint bays, launch and reception pits are completed and all temporary traffic measures (lane and road closures/diversions) are removed in progressive stages.

4.7.2 Access for Residents

- The appointed contractor shall make provision for safe access at all times to private residences in proximity to the construction works.
- Steel plates or stone will be put in place to allow access to residential properties. This will be done in co-operation / communication with local residents in the area.
- The appointed contractor will inform local residents of the programme of works in their area and local access will be catered for where possible.

4.7.3 Access to Commercial/Business Properties

- The appointed contractor shall make provision for safe access to commercial and business premises for employees, customers, the general public and for deliveries.

4.7.4 Pedestrian Safety

- The appointed contractor shall ensure that throughout the course of the works its operations do not put pedestrians at any risk.
- Where the construction work necessitates the restriction or partial closure of a pedestrian walkway where they may exist, the appointed contractor shall provide adequate safety barriers, signposts, lighting and temporary surfacing (if applicable) to ensure safe passage for pedestrians.
- Where the construction work necessitates the closure of a pedestrian walkway, the appointed contractor shall provide a safe and reasonable alternative. The appointed contractor shall provide adequate safety barriers, signposts, and lighting (if applicable) to direct pedestrians and ensure their safe passage.
- With respect to pedestrians, the appointed contractor shall refer to and observe the requirements of the updated version of the Traffic Signs Manual 2019 titled Temporary Traffic Measures and Signs for Roadworks.

4.7.5 Signage

- 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. Examples required road signage are provided in Appendices 1-2 and 3.

- Signage shall be inspected at least twice daily by the contractor so as to ensure that it is in place, secure and appropriately fitted with warning lights as required.

4.7.6 Cleanliness of Roads

- The contractor will provide sufficient resources on site, including road sweeping equipment, to ensure the cleanliness of the adjacent road network.

4.7.7 Operator Training

- The 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 shall be emphasised to all construction staff.
- There must be at least one competent person with the valid and relevant Construction Skills Registration (CSR) or Construction Skills Certification Scheme (CSCS) Card on site at all times when work is being carried out on roads.

4.7.8 Emergency Crew

- The appointed contractor's emergency contact telephone number shall be displayed at the appointed contractor's site office and shall 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 situation.
- The appointed contractor shall set up an emergency crew, led by an experienced foreman or an engineer, for dealing with emergencies arising as a result of the works on roads outside of normal working hours. The emergency crew shall 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, in the event that they are required.

4.8 Traffic Management Plan

4.8.1 Wind Farm Site Construction Traffic

The main construction works associated with the wind farm site that may affect traffic using public roads will be the construction of the three no. site entrance along L-8017 Rossestown road and the entrance to the substation on the L-4120 road. The construction of these elements of the project are not expected to result in any road closures.

However, the delivery of concrete, fill and excavation materials, another facilities will increase the number of heavy goods vehicles along the N62 and 1.6km of the western end of the L-8017 Rossestown road. Traffic on these roads will also increase due to construction staff and visitor traffic to and from the wind farm site.

The construction phase of the wind farm will require the delivery of turbine components, concrete, steel and aggregate to the site via the public road network. The key timing periods when use of the public road network will be at its peak for residents is between 08.15 and 09:15. It is proposed to allow routine deliveries such as

aggregate into the site outside of peak hours to minimise any impact on surrounding network peak traffic. The initial early morning delivery trucks will exit the wind farm site empty with the run of traffic, but they will be delayed from delivering again until the peak hour has fully subsided as instructed and coordinated by the contractor once appointed

4.8.1.1 Working Hours

Works along public roads will be carried out from 07.00am – 7.00pm, Monday to Saturday. No work will take place on Sundays or bank holidays unless preapproved by the Local Authority. During summer periods the working day may extend at times when critical elements of work need to be advanced. Longer working days can also occur when there is a phased construction programme with some elements such as commissioning overlapping with final site construction activity. Working hours will be confirmed at the outset of the project and any changes in hours will be agreed with the Local Authority.

4.8.1.2 Personnel Traffic

All traffic arising from personnel (appointed contractors, sub-appointed contractors, site operatives etc.) will park their vehicles at the appointed contractors main site compound within the wind farm site. This will be done so as to prevent traffic disruption to construction and to local residents by prohibiting personal vehicles being parked along the local road network. The expected peak staff for construction of the wind farm would be up to 40 personnel, which would generate approximately 30 car and van trips, both to and from the site each working day, on the basis of an average vehicle occupancy rate of 1.33 personnel per vehicle. Canteen facilities for personnel will be provided on-site.

4.8.1.3 Schedule of Control Measures for Heavy Goods Vehicles

The mitigation measures outlined below will be implemented so as to minimise the impacts of construction phase traffic associated with the project.

- Ensure a strict protocol for Heavy Goods Vehicle (HGV) drivers to follow the designated haulage route.
- Advance warning should be given to the local residents and road users for specific times when large volumes of HGV traffic may occur
- A maximum speed limit would be imposed for HGVs on the local road network during the construction phase
- A well planned and executed delivery programme avoiding peak traffic on typical days will be ensured (i.e. local school start and finish times)
- A road sweeping vehicle will be provided as required to remove any mud that is deposited on the road network on the approach to the site
- Enforcement of existing regulatory markings and signage will be ensured

4.8.1.4 Supply Route to Site

The delivery of construction materials to the site will be via the N62 road and approach the site via the L8017 Rossestown Road. The number of construction vehicles that will be generated during the construction phase of

the proposed development is described as part of the Traffic and Transportation Assessment in Chapter 16 of this EIAR and shown in Table 4-1 below.

The construction material, is primarily aggregate and cement for the construction of the turbine foundations and hardstands, internal access tracks and substation and BESS substation foundations. The supply of concrete and other ancillary journeys, result in a small increase in the anticipated traffic movement.

The 18-months construction will require the importation of a total of up to 8,846 loads of construction materials plus the removal of 60 loads. This includes the delivery vehicles for the 10 wind turbines, their steel towers, turbine blades, nacelle, rotor hub etc. from the proposed port of entry (Foynes, County Limerick) to the site. All construction materials would be transported using standard heavy vehicle delivery trucks with capacities of 10 m^3 and 20 tonnes.

Table 4-1: Proposed Construction Works Delivery Volumes - Peak Hour

Works	Total Number of Heavy Vehicles		
	Total Construction Programme	Peak Daily	Highest Peak Hour
Concrete	**2,506**	**40**	**4**
Reinforced Steel	**138**	**10**	**4**
Wind Turbine	**100**	**10**	**3**
Crane	**20**	**10**	**4**
Imported Stone	**6,081**	**40**	**4**
Substation Transformer	**1**	**1**	**1**
TOTAL	**8,846**	**40**	**4**

Note (1) : During base concrete pours. Other deliveries to site will be curtailed or stopped during concrete pours.

Note (2) : For the purpose of the analysis, truck movements are conservatively assumed to occur within a 18-month period, during which more onerous construction elements are taking place.

Any excavated material that cannot be stored on site will be classified and removed by an authorised waste disposal service provider in accordance with best practice.

Most of the material delivered to site will consist of aggregate for the construction of the internal access roads and foundations. Table 3-3 below identifiers the quarries in proximity to the proposed site and could supply these construction materials. The use of local quarries, where possible, will also reduce any impact on traffic and the environment. The local authority will be notified of the selected quarry and the final haul route, and will be agreed prior to commencement of development.

Table 4-2: Quarries within 20km of the site

Quarry Name	Address	Rock or Deposit Type	Product Type	Distance from site (km)	Co-ordinates (Lat/Long)
Castletown Quarry, Maher Quarries Ltd.	Castletown, Moyne, Thurles, Co. Tipperary	Blue Limestone	Aggregates for concrete, hardcore, farm drainage, earthworks/fill	8.88km east	52.71858, -7.68274
Lisduff Quarry, Dowling Quarry Ltd.	Lisduff, Erril, Co. Laois	Limestone	Aggregates for concrete, hardcore, farm drainage, earthworks/fill	16.75km northeast	52.84969, -7.71326
Killough Quarry, Roadstone Ltd.	Aughnagomaun, Thurles, Co. Tipperary	Limestone	Aggregate for concrete, hardcore, farm drainage, earthworks/fill	12.15km southwest	52.60389, -7.84411
Gleeson Quarries, Laffansbridge Quarry	Laffansbridge, Thurles, Co. Tipperary	Limestone	Aggregate for concrete, hardcore, farm drainage, earthworks/fill	17km southeast	52.58538, -7.73162
Ballybeg Pit, Seamus Ryan Sand and Gravel	Ballybeg, Toomevara, Nenagh, Co. Tipperary	Unsorted	Fine/coarse sand, pebble, natural gravel, crushed gravel, graded aggregate	17.25km northwest	52.83642, -7.96667
Cloncannon Pit, Harney Masonry Ltd.	Cloncannon, Moneygall, Roscrea, Co. Tipperary	Unknown	Coarse sand, natural gravel, crushed gravel,5mm chip, 10mm chip	18.40km northwest	52.85958, -7.94888

4.8.1.5 Management of construction dirt on roads

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 proprietary construction vehicle wheel wash facility to be installed at the exits of the wind farm site as illustrated below in Figure 4-1. In addition to this, a road sweeper will operate on the surrounding local roads during the construction phase.

Figure 4-1: Typical wheel wash using the dry ramp system

4.8.1.6 Road Safety and Courtesy Protocol

A road safety and courtesy protocol will be implemented for the duration of the wind farm construction. 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 and speed limits along public roads and within the wind farm site. Fundamental to the protocol is courtesy for other road users. The protocol will provide for vehicles to give way to oncoming residential traffic and slow down or stop as appropriate for pedestrians and cyclists.

Appropriate signage will be maintained for the duration of the project with clear signage at all junctions and distances to passing areas clearly indicated along the approaches to the site. The mitigation measures can be summarised as below:

- Ensure a strict protocol for Heavy Goods Vehicle (HGV) drivers to follow the designated haulage route, and timing restrictions as detailed;
- Advance warning will be given to the local residents and road users for specific times when large volumes of HGV traffic may occur;
- Signage relating to the proposed construction traffic will be installed at the entrances to the wind farm;
- Signage relating to the proposed construction traffic route and directions to the wind farm will be installed along the main access route to the wind farm;
- A maximum speed limit will be imposed for HGVs on the local road network during the construction phase;
- A well planned and executed delivery programme avoiding peak traffic on typical days will be ensured (i.e., local school start and finish times);
- A road sweeping vehicle will be provided as required to remove any mud that is deposited on the road network on the approach to the site; and
- Enforcement of existing regulatory markings and signage will be ensured.

4.8.2 TDR Traffic Management

In advance of the turbine component deliveries some temporary accommodation works will be needed to trim or remove vegetation, remove road signs, street light poles, electrical poles and fences at the 22 pinch points along the delivery route. This will result in some temporary inconvenience for existing road users and some potential traffic safety risks at these pinch points as well as some temporary alterations to public road infrastructure. Apart from the two pinch points identified where road widening will be required, all other turbine component movements can be accommodated within existing road alignments. No road closures are expected to be required as part of the temporary accommodation construction works.

Accommodation works at the 22 pinch points along the TDR roads will be carried out one month prior to the delivery of the turbine components. The turbine components will be delivered over a period of three months in phase ten of the construction works (see Table 2-5 in EIAR chapter 2). The turbine components are expected to be delivered in approximately 100 No. deliveries. Due to their abnormal size, blades and towers will be delivered at night to avoid disruption to peak daytime traffic. The vehicles will be slow moving and will require a garda escort. A permit for moving abnormal loads to the wind farm site along the proposed TDR will be sought from An Garda Síochána, Tipperary County Council and Limerick City & County Council. A detailed transportation plan with a breakdown of the timing of deliveries will be established at construction stage.

The working hours for the accommodation works will be from from 07.00am – 7.00pm, Monday to Saturday. No work will take place on Sundays or bank holidays unless preapproved by the Local Authority. The working day may extend occasionally at times when critical elements of work need to be advanced.

4.8.3 Grid Connection Route Traffic Management

It is envisaged that a system of single lane and road closures will be implemented along the underground grid connection route in the public roadway. This is to ensure the cable route can be constructed safely to protect construction workers and members of the public.

The appointed contractor will apply to Tipperary County Council for a Road Opening Licence prior to works commencing and follow the relevant procedures as outlined.

4.8.3.1 Single Lane Closures

Single lane closures will be implemented as the construction of the cable trench progresses along the cable route. It is envisaged that approx. 100m of the cable route will be constructed each day and therefore single lane closures will move with the works. The single lane closure will be controlled by way of either a stop-go system, a priority yield system or by temporary traffic lights. Single lane will be planned on a rolling basis so when works on a section of the grid connection cable route are complete then roads will re-open. The appointed contractor will ensure that procedures and works for single lane closures are in accordance with the *Temporary Traffic Management Design Guidance, Third Edition 2019.* Temporary traffic management and roadwork signs will be to Chapter 8 of the *Traffic Signs Manual 2019.*

The overall length of the cable route is 7km along the public roads. Access to residential and agricultural properties along the route will be maintained throughout the construction process. Affected residents, local road users and the planning authority will also be kept informed of the progress of the construction activities and will be consulted. Plans for the single lane closures and road closures will be agreed with the planning authorities prior to initiation of construction works.

4.8.3.2 Road Closures

Roads closures will be avoided where possible and will only implemented where there is insufficient space on the existing public roadway to implement a single lane closure. A road closure will be controlled by way of diversions but local access will be accommodated on the route where possible with all residents on the route informed of the programme for a road closure. Road closures are to be planned on a rolling basis so when works on a section of the grid connection cable route are complete then roads will re-open. This will ensure roads are not closed for longer than necessary. The appointed contractor will ensure that procedures and works for closures are in accordance with the *Temporary Traffic Management Design Guidance, Third Edition 2019.* Temporary traffic management and roadwork signs will be to Chapter 8 of the *Traffic Signs Manual 2019.*

4.8.3.3 Diversions

Diversions will be avoided where possible and will only be implemented to provide an alternative route for road closures during construction where required. Road closures will be sequenced in order to prevent unnecessary delays to the public and allow the appointed contractor to achieve their construction timeline. Information and directional signage will be provided to inform the public of road closures and direct them along diversion routes. Local access will be maintained for residents where possible. The appointed contractor will ensure that procedures and works for diversions are in accordance with *Temporary Traffic Management Design Guidance, Third Edition 2019.* Temporary traffic management and roadwork signs will be to Chapter 8 of the *Traffic Signs Manual 2019.*

4.8.3.4 Road Crossings

The grid connection cable route may need to cross public roads at intersections or where existing underground services beneath the road need to be avoided. In such instances the appointed contractor will decide on the best method for controlling traffic. A single lane closure may be utilised, in accordance with the *Temporary Traffic Management Design Guidance, Third Edition 2019* where works are carried out and controlled by a stop-go system. The ducting shall cross the road in two phases. Phase one will construct the trench as far as the centre line of the carriageway and then have the road and trench temporarily reinstated.

Once the work has been completed on the closed lane, the area is inspected and traffic management procedures will switch to the opposite lane for phase two. An "All Stop" system, in accordance with the *Temporary Traffic Management Design Guidance, Third Edition 2019* may be used to control traffic and to allow the works commence on the other lane. Once the work has been fully complete, the trench and road can be temporally reinstated.

Where the cable route is planned to cross the local public or private roads, the contractor will decide on the best method for controlling traffic.

Steel plates or stone will be made available to allow access to residential properties. This will be done in co-operation / communication with local residents in the area.

4.8.3.5 Joint Bays (Grid Route)

Eleven joint bays will need to be constructed within the public road along the grid connection cable route (see Figure 16.9 in chapter 16). While under construction temporary covers will be placed over the joint bays overnight and fenced with appropriate signage and stop go/traffic light system in place to facilitate traffic.

Management of the construction of each joint bay will be individually assessed to determine what type of traffic management system will be required at each location. Safety barriers or fencing will be erected around each open joint bay with either a priority yield or temporary traffic light system utilised to safely navigate vehicles around.

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.*

4.8.3.6 Working Hours

Works along public roads will be carried out from 07.00am – 7.00pm, Monday to Saturday. No work will take place on Sundays or bank holidays unless preapproved by the Local Authority.

The working day may extend occasionally at times when critical elements of work need to be advanced for the grid connection. Working hours will be confirmed at the outset of the project and any changes in hours will be agreed with the Local Authority.

4.8.3.7 Personnel Traffic

For the grid route, site operatives who's vehicles are not required for the construction works will park their vehicles at the contractor's main site compound which will be located within the wind farm site. This is to prevent traffic disruption to construction and to local residents by prohibiting personal vehicles being parked along the local road network.

4.9 Operational Stage

There will be no significant operational stage traffic impacts associated with the proposed development. The only likely potential traffic issues that may arise during the operational phase are related to the need to replace Turbine components such as a blade. In such an event, the traffic management measures proposed in this document related to the turbine delivery route would apply, subject to agreement with the local authority.

4.10 Decommissioning Phase

At the end of the 35-year lifespan of the proposed project, the Developer will make the decision whether to repower or decommission the turbines. Any further proposals for development at the site during or after this time will be subject to a new planning permission application. If planning permission is not sought after the end of life of the turbines, the site will be decommissioned and reinstated with all 10 No. wind turbines and towers removed. Removal of infrastructure will be undertaken in line with landowner and regulatory requirements and best practice applicable at the time. The information below outlines the proposed decommissioning tasks based on current requirements and best practice.

Prior to the decommissioning work, the following will be provided to Tipperary County Council for approval:

- A plan outlining measures to ensure the safety of the public and workforce and the use of best available decommissioning techniques at the time.
- A comprehensive reinstatement proposal, including the implementation of a programme that details the removal of all structures and landscaping.

Cranes of similar size to those used for construction will disassemble each turbine. The towers, blades and all components will then be removed.

Wastes generated during the decommissioning phase will be taken off site and disposed of at an authorised waste facility. Any materials suitable for recycling will be disposed of in an appropriate manner.

At present it is anticipated that internal underground cables connecting the proposed turbines to the proposed on-site substation will be cut back and left underground. The cables will not be removed if an environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them *in situ*. The assessment will be carried out closer to the time to take into account environmental changes over the project life.

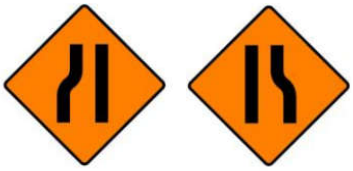
Hardstand and turbine foundation areas will be left in situ and covered with soil to match the existing landscape. Access roads will be left in situ for agricultural use.

During this decommissioning phase similar traffic management measures proposed for the construction phase will apply. However, a new traffic management plan will be developed in consultation with the planning authorities at that time taking into consideration the legal requirements at that time.

Appendix 1

Sample Schedule of Signs

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

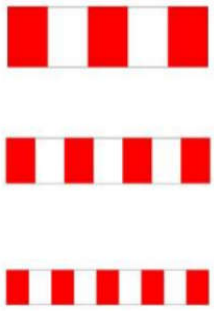
WK 060 - Temporary Traffic Signals

WK 090 - Detour

WK 092 - End of Detour

WK 094 - Road Closed

WK 095 - Stop Here on Red

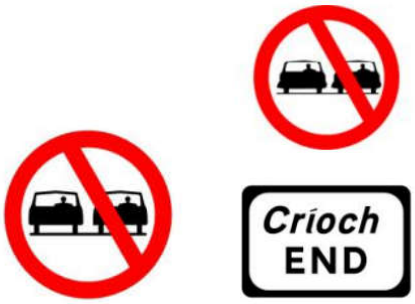


W 183 / 184 / 185 - Barrier Boards

RUS 060 / 061- Stop and Go

RUS 001 - Keep Left

RUS 002 - Keep Right



RUS 014 - No Overtaking / End

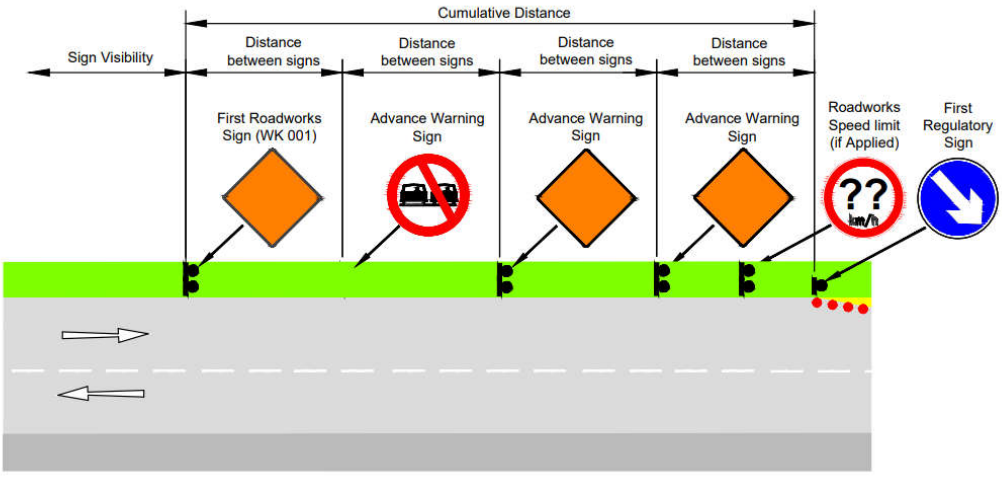
WK 071 - Uneven Surface

WK 073 - Loose Chippings

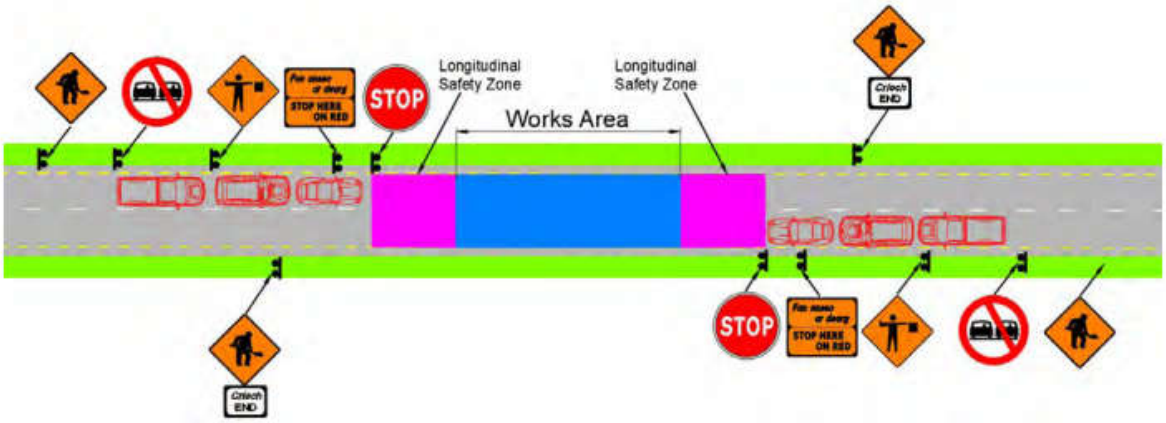
WK 052 - Site Access

Appendix 2

Sample Traffic Management Drawings and Check Sheets

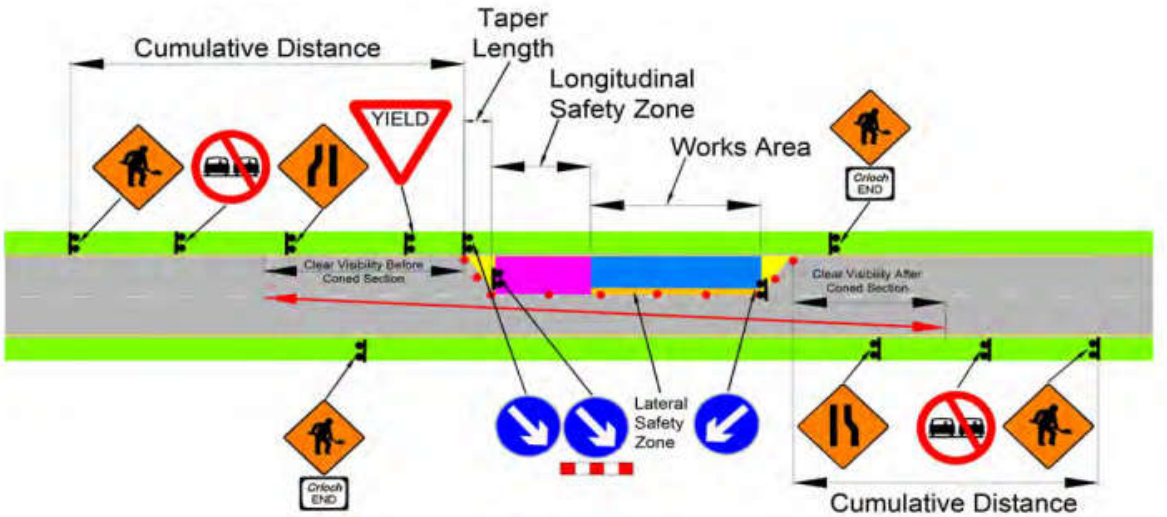


Required Locations for Advance Warning Signs to Roadworks



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

Example Layout of an "All Stop" Traffic Operation



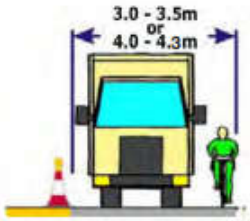
Roadworks Type	Speed (km/h)	No. Adv. Warning Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24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

Summary Criteria

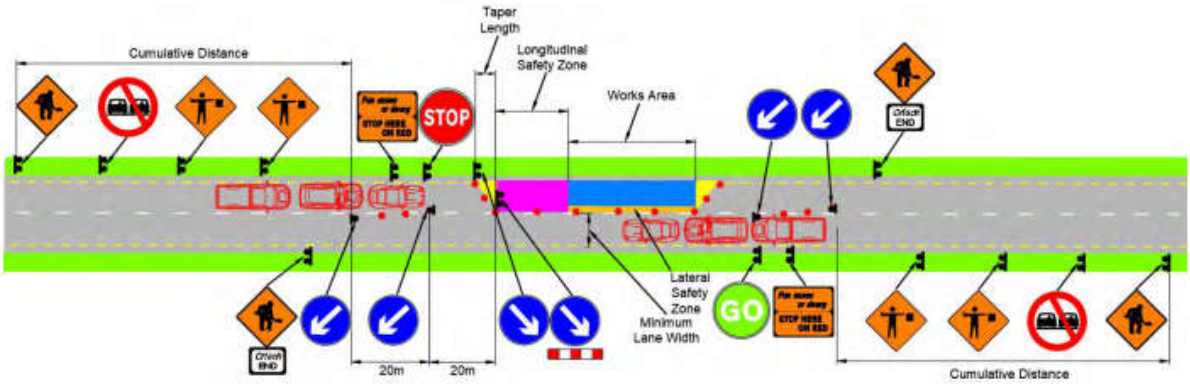
Speed (km/h)	Coned Area Length	Max Traffic Flow (3 min count)	Clear Visibility Before and After Coned Area (m)
80	80m maximum	40 vehicles	80
100			100

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



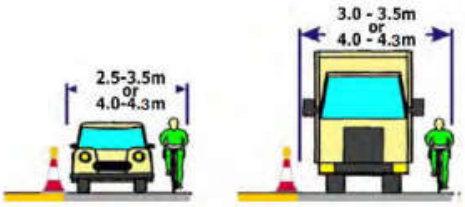
Roadworks Type	Speed (km/h)	No. Signs	Cumulative Distance (m)	Sign Visibility (m)	Longitudinal Safety Zone (m)	Lateral Safety Zone (m)	Max Cone / Lamp Spacing (m)
Level 2 (i) A	80	4	480	90	45	1.2	12 / 24
Level 2 (i) B	80	3	360	90	45	1.2	12 / 24
Level 2 (ii) A	100	4	800	120	60	1.2	12 / 24
Level 2 (ii)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

Summary Criteria

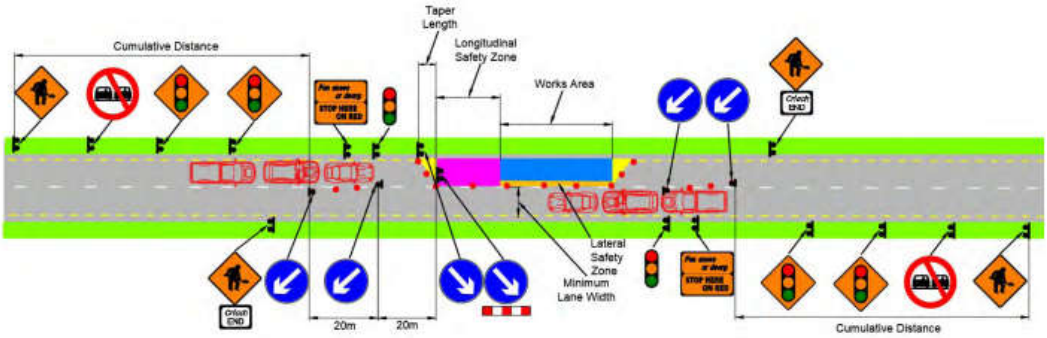
Shuttle Length	Maximum Traffic / 3 mins	Notes
500m	45	Shall be 2 operators, 2 discs when ≥ 200m
400m	50	
300m	55	
200m	60	May be 1 operator with remote discs. Operator must be ≤ 100m from each disc and have clear view of each
100m	70	
20m	25	May be 1 operator, 1 disc

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

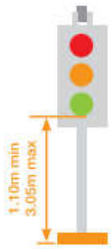
Signal Checks

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

Signal Sequence

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

Signal Heights

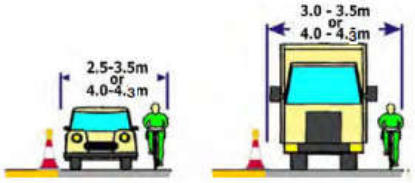


Summary Criteria

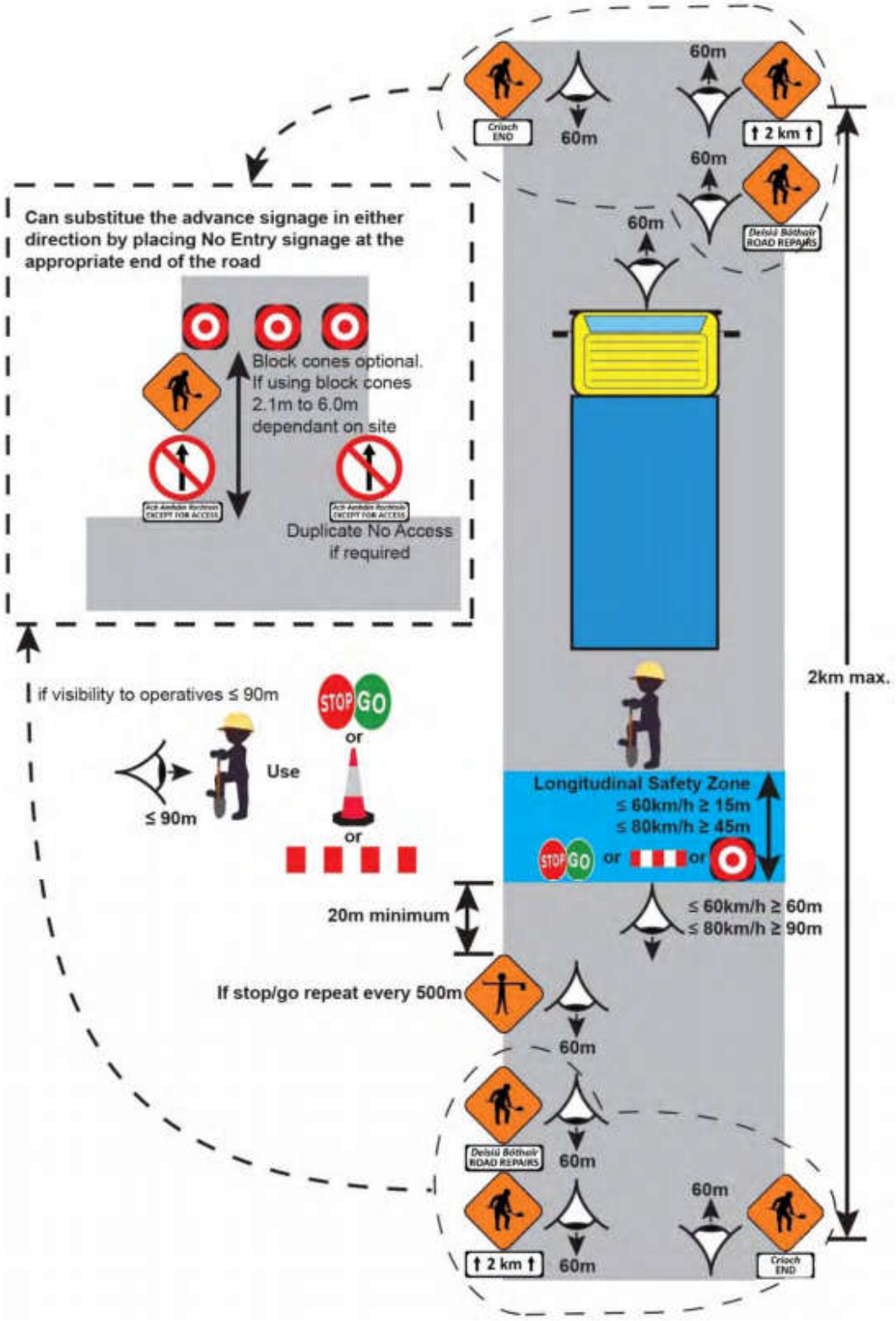
Max Speed Limit (km/h)	Max Coned Area Length (m)	Max Traffic Flow
60	500	No Restrictions

Lane Widths

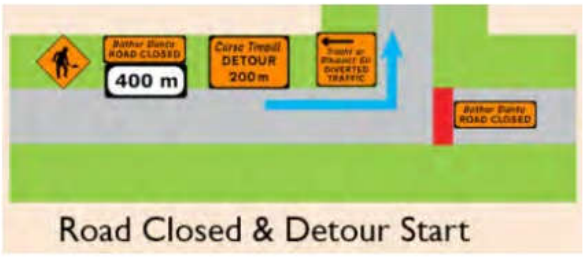
Cars only	≥ 2.5m
HGVs present	≥ 3.0m
Preferred width	3.3m
Preferred (with cyclists)	4.0 - 4.3m



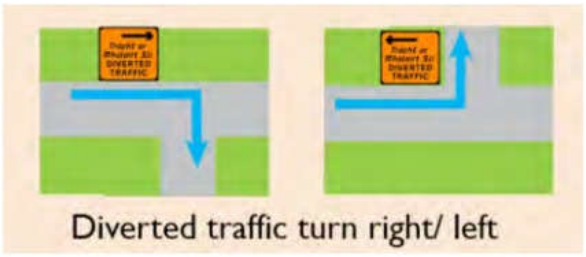
Example Layout for a Temporary Traffic Signals Operation



Example of a Road Opening Works Operation



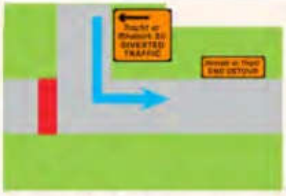
Road Closed & Detour Start



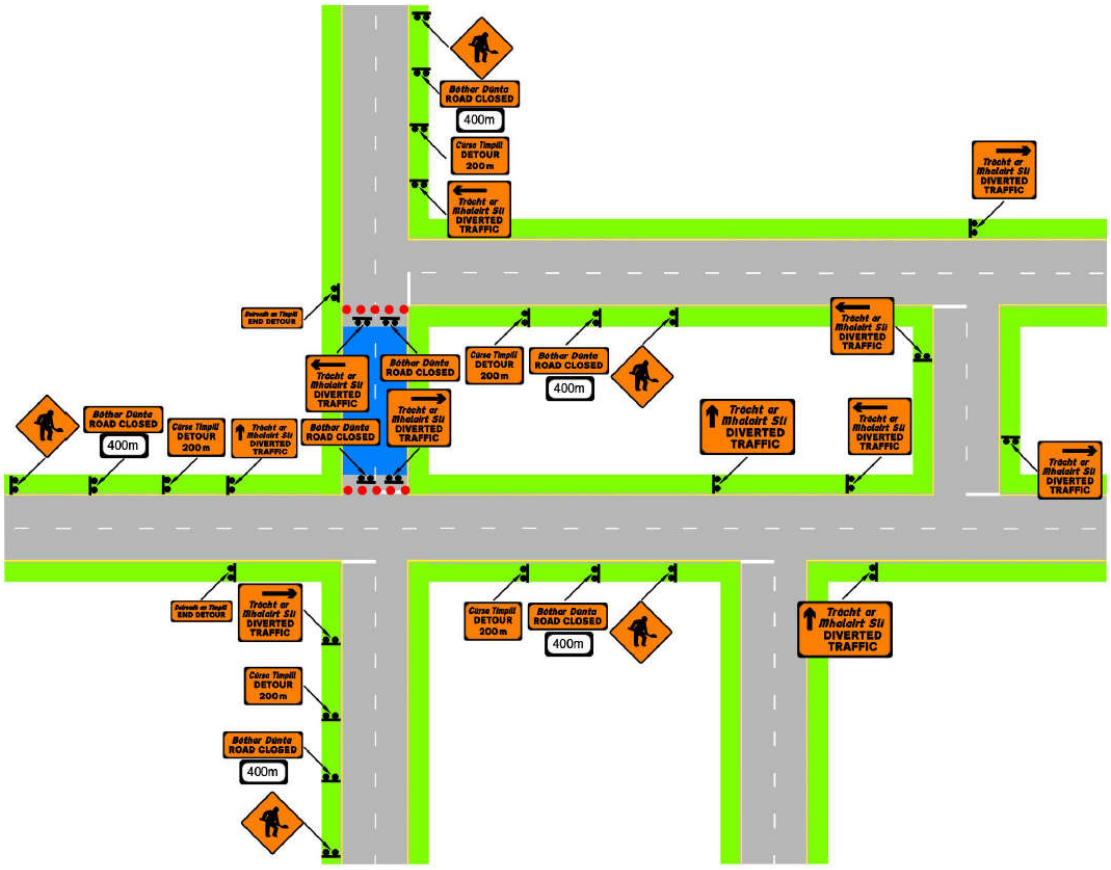
Diverted traffic turn right/ left

Diverted traffic straight ahead

- Before junctions along route
- Reassure driver over long lengths



End of Detour



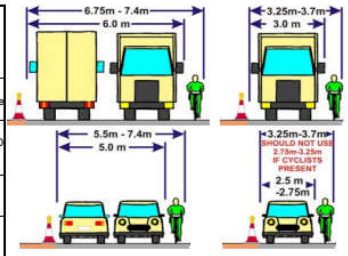
Example of a Road Detour and Signage Operation

PLANNED WORKS TRAFFIC MANAGEMENT DESIGN SHEETS

TRAFFIC MANAGEMENT LAYOUT PARAMETER DESIGN SHEET

STEP 1: SELECT TRAFFIC MANAGEMENT TYPE

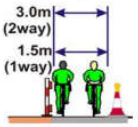
Road Closure	When: 1) Adequate Safety Zone + Lane Width cannot be achieved, or 2) Alternative Safe Method of Work cannot be implemented, or 3) Semi Static Operation for Minor Roads not applicable, or 4) Convoy Working cannot be implemented	
	24/7 detour	Where RESIDUAL risks on Road Works Section are greater than on the Detour even when active works are not taking place
	Working hours detour	Where RESIDUAL risks on Road Works Section are greater than on the Detour when works are active AND where the RESIDUAL risks on Road Works Section are less than on the Detour when works are not active
Two-Way	Abs Min.	5.0m (Cars and light vehicles only)
	Minimum	6.0m
	Maximum	Combined lane width should not exceed 7.4m
Lane/ Shuttle	Abs Min.	2.5m
	Minimum	3.0m
	Maximum	3.7m
	Cyclists	DO NOT USE lane width between 2.75m and 3.25m
Marshall	Shuttle with mainly light vehicles and alternatives not suitable	
Convoy	Select Where: 1) Adequate Safety Zone +Lane Width cannot be achieved 2) Alternative Safe Method of Work cannot be implemented 3) Semi Static Operations for Minor Roads not applicable	
Semi-Static Management	> On Minor Roads use for Surface Dressing > For moving single vehicle operations	
Roadworks Speedlimit	Refer to Section 4.3	
Cautionary Speed Plate	See Section 4.3	
All Stop	short duration (<10 min typically) and 300 veh/hr or less	



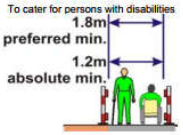
STEP 2: SHUTTLE OPTION

Method	Max Speed Limit (km/h)	Length of Works (m)	Traffic Flow (veh/hr)	Notes	
Give and Take See 4.5.1	50	50	400	Visibility	
Priority	100	80	850	Speed	Distance
				50 km/h	60m
				60 km/h	70m
				80 km/h	80m
				100 km/h	100m
	If used at night, will require flashing lamps				
Stop/Go					
1 Sign	100	20	500	1 Person/ 1 Sign	
1 Person	100	100	1400	1 Person/ Auto Signs	
1 Person	100	200	1250	1 Person/ Auto Signs	
2 Person	100	300	1050	2 Person/ 2 Signs	
2 Person	100	400	950	2 Person/ 2 Signs	
2 Person	100	500	850	2 Person/ 2 Signs	
Traffic Lights	100	500	n/a	Vehicle Actuated	

> Limit Shuttle lengths to 500m generally (+/- at junctions/ specific reasons)
> Use Vehicle Actuated Traffic Lights
> Notify Gardaí if using Traffic Lights/ Stop-Go boards



To cater for persons with disabilities



VULNERABLE ROAD USERS

Footway Desirable minimum width	1.8m
Vulnerable users' minimum width	1.2m
Minimum width at obstacle	1.0m
Minimum width at bus stop	3.0m
Minimum width at shop front	3.5m
Cycle track desirable minimum width	1.5m
Cycle track absolute minimum width	1.3m
Combined minimum width	3.0m
Desirable minimum clearance height	2.5m
Absolute minimum clearance height	2.3m

STEP 3: SELECT PARAMETERS

Type of Road	Type of Works	Advance Sign Distance (D) (m)	Min. Number Of Advance Signs	Min. clear visibility of Signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. Safety Zone (L) (m)	Side. Safety Zone (S) (m)	Long. Cone Space	Long. Lamp Space	Hard Shoulder Taper Multiply Factor	2 WAY Lane Taper Multiply Factor	2 WAY Lane Taper Cone Spacing	Lane Taper Lamp Spacing	Lane Lead-in cone tapers Recommended lengths	Width of hazard (including safety zone) NOTE: WHERE TWO TRAFFIC MAINTAINED 1m	2m	3m	4m
Single carriageway road, 30km/h	All works	50	1 (rwa) 1 (tm)	50	600	750	5	0.5	6	12	5	10	3	6	Length of taper (T) in (m)	10	20	30	40
															Minimum no. of Cones	5	8	12	15
															Minimum no. of Lamps	3	5	7	8
	Single Vehicle	25	1 (rwa)	50	600	750	5	0.5	6	12	5	5	3	6	Length of taper (T) in (m)	5	10	15	20
															Minimum no. of Cones	3	5	7	8
															Minimum no. of Lamps	2	3	4	5
Single carriageway, 31km/h to 60km/h	All Works	75	1 (rwa) 2 (tm)	50	600	750	25	0.5	6	12	10	15	3	6	Length of taper (T) in (m)	15	30	45	60
															Minimum no. of Cones	7	12	17	22
															Minimum no. of Lamps	4	7	9	12
	Single Vehicle	50	1 (rwa) 1 (tm)	50	600	750	5	0.5	6	12	5	5	3	6	Length of taper (T) in (m)	5	10	15	20
															Minimum no. of Cones	3	5	7	8
															Minimum no. of Lamps	2	3	4	5
Single Carriageway 61 to 100 km/h	All Works	800	1 (rwa) 1 (no) 2 (tm)	120	600* 750*	750	60	1.2	12	12	30	55	3	6	Length of taper (T) in (m)	55	110	165	220
															Minimum no. of Cones	20	38	57	75
															Minimum no. of Lamps	11	20	29	38
	Single Vehicle	600	1 (rwa) 1 (no) 1 (tm)	120	600* 750*	750	45	1.2	12	12	20	40	3	6	Length of taper (T) in (m)	40	80	120	160
															Minimum no. of Cones	15	28	42	55
															Minimum no. of Lamps	8	15	22	28

* Use 600mm signs where Vehicles Per Day < 5,000. Use 750mm signs where Vehicles Per Day > 5,000

Tapers at Shuttles to be at 45 degrees with 1m cone spacings.

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 Rid 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		Oscail Cheile CONCEALED ENTRANCE	
WK 051	Side Road Right		Oscail Cheile CONCEALED ENTRANCE	
WK 052	Site Access Left		Oscail Cheile CONCEALED ENTRANCE	
WK 053	Site Access Right		Oscail 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 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)

HEALTH AND SAFETY AUTHORITY

WORKING ON ROADS

Plan No. ☐

PART 1

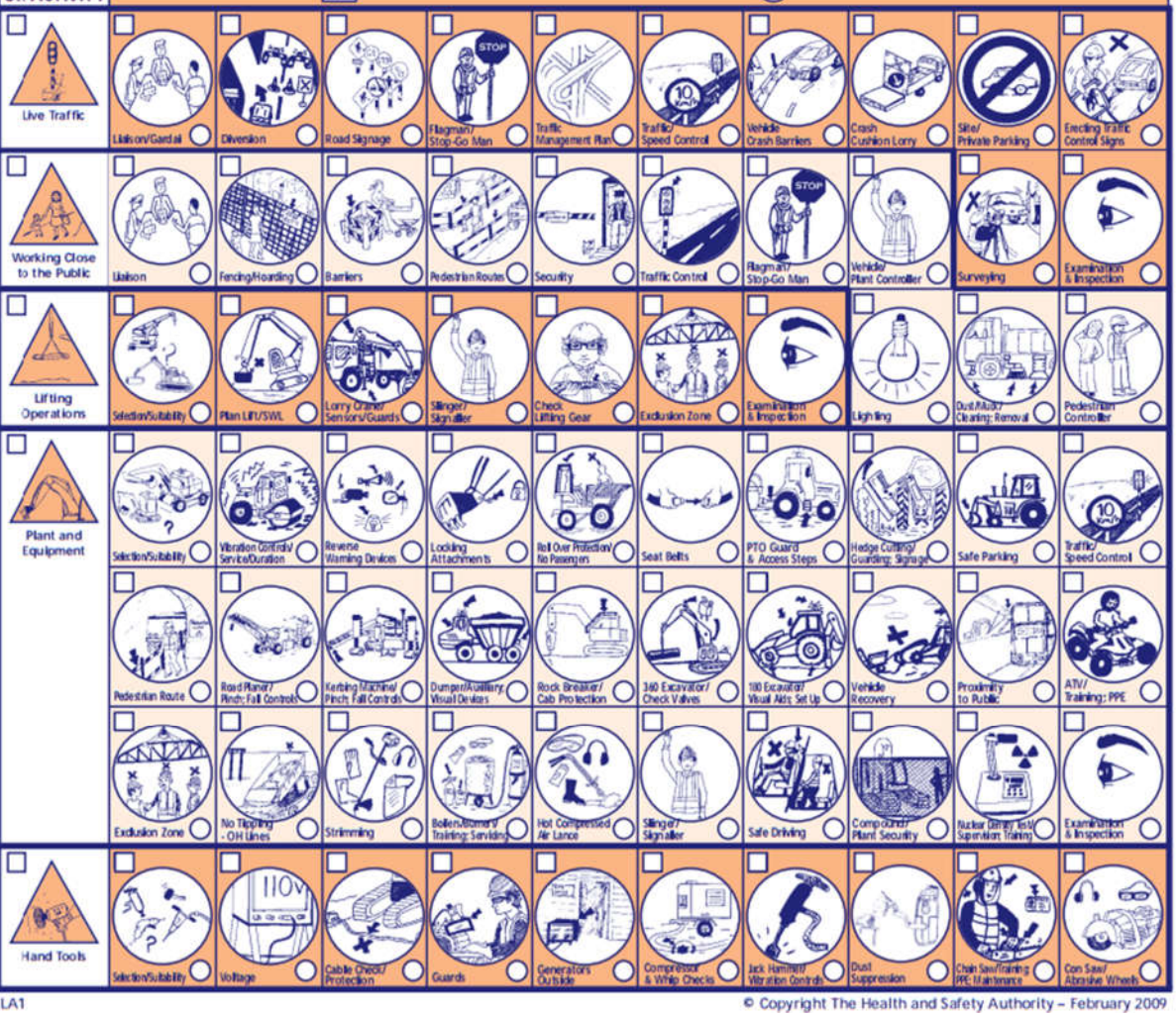
Job Details	Resources Required	Emergency Details
Employer Name: _____	Worker Skills: _____	Contact Names & Tel No.
Responsible Person/Supervisor: _____	_____	1. _____
Number of Workers: _____	_____	2. _____
Specific Location: _____	_____	3. _____
Description of Works: _____	Plant/Equipment: _____	First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

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

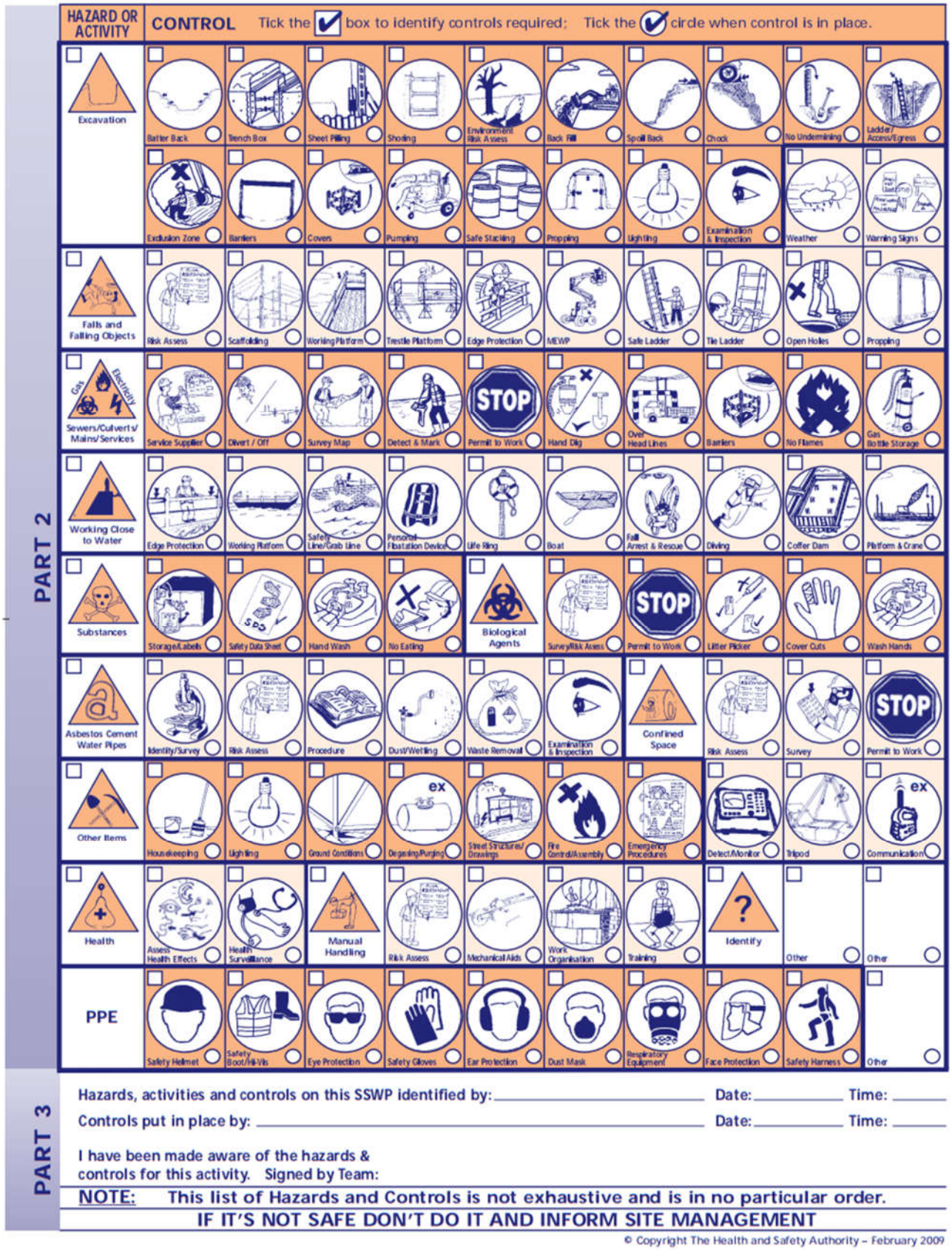
PART 2

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.



LA1


HAZARD OR ACTIVITY
CONTROL
Tick the box to identify controls required; Tick the circle when control is in place.
PART 2
Excavation
Batter Back
Trench Box
Sheet Piling
Shoring
Environment Risk Assess
Back Fill
Spoil Back
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
Tile Ladder
Open Holes
Propping
Gas
Electricity
Sewers/Culverts/ Mains/Services
Service Supplier
Divert / Off
Survey Map
Detect & Mark
STOP
Permit to Work
Hand Dig
Over Head 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
SDS
Safety Data Sheet
Hand Wash
No Eating
Biological Agents
Survey/Risk Assess
STOP
Permit to Work
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
STOP
Permit to Work
Other Items
Housekeeping
Lighting
Ground Conditions
ex
Degassing/Purging
Street Structures/ Drawings
Fire Control/Assembly
Emergency Procedures
Detect/Monitor
Tripod
ex
Communication
Health
Assess 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
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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 tick | A B tick | A C B tick | A D C B tick | A D C B tick

Width value (m) | Speed value (km/h) | Urban tick | 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 tick | Semi-Static tick | 2-way tick | All Stop tick | Stop-Go tick | Traffic Signal tick

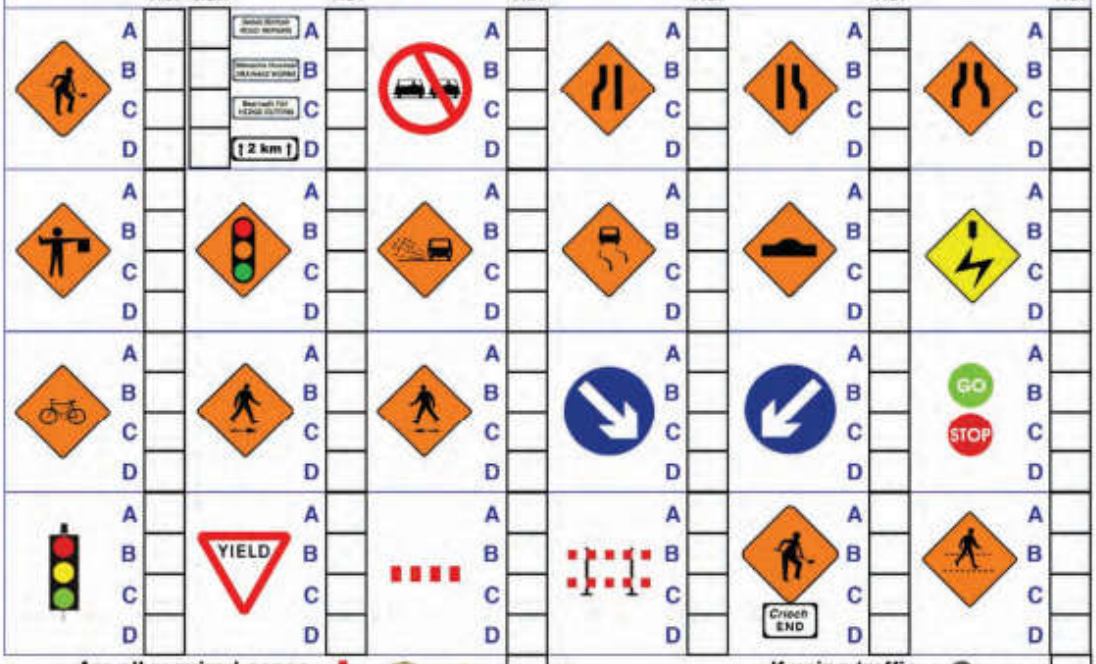
Marshall tick | Priority tick | Give & Take tick | Convoy tick

If using standard plan, ID reference

Step 4: Record Traffic Management Devices Implemented

Warn → Inform → Direct → End

no. tick | no. | no. | no. | no. | no.



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

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